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Published by: **Relbon Ltd,** Company Reg 07488993
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Flood Risk

Flood risk investment

At the end of 2014, the Government set out the flooding and coastal erosion investment plans for the next six years.

There will be a £2.3 billion capital investment in defences with more than 1,400 flood defence projects set to receive funding providing better protection for over 300,000 properties by 2021.

Major schemes include:

Thames Estuary £196m
Humber Estuary £80m
Boston Barrier, Lincolnshire £73
Oxford Western Conveyance £42m
Tonbridge and Yalding, Kent £17m
Somerset £15.5m

It has been estimated that the £2.3bn investment will deliver over £30bn in benefits through damage avoided to homes, industry, infrastructure and farmland - including around 420,000 acres of agricultural land, 205 miles of railway, 340 miles of roads and 4 airports. As well as the national economic benefits, it is estimated that tackling the risk of flooding also brings an additional £4-9 per £1 invested in terms of benefits to the local economy.

Communities across the country are being given greater certainty about the funding available for projects in their area. This includes major construction projects with transformative potential for towns, cities and districts, and which will help communities affected by last winter's flooding such as Boston in Lincolnshire, Hull, and Yalding in Kent. In the Lower Thames, Oxford, Somerset, Lowestoft, and the Humber major new strategic plans to alleviate risk will be progressed. It is also estimated that additional contributions through Partnership funding will be in the region of £600m.

Transforming the investment Programme

The Environment Agency will put in place an ambitious set of improvements to deliver new ways of working, transform relationships between communities, risk management authorities and their suppliers, and maximise the benefits which can be delivered.

They are reviewing flood and coastal erosion risk management outcome and performance measures and in doing so look to learn from techniques developed in the private and regulated sectors, to maximise the benefits of our investments at all levels. New measures being developed will clarify the objectives and outcomes we expect the Environment Agency to achieve.

Efficiency savings of 10% can br reinvested to allow more projects to go ahead. Reducing costs and improving efficiency will also drive down flood and coastal erosion risk in the longer-term beyond 2021.

To accelerate delivery, £60 million of funding is being brought forward within the programme to earlier years. Better management of risk and contingency has also freed up significant funding within the programme. The Environment Agency will now consult Regional Flood and Coastal Committees and local partners about which schemes will benefit from this accelerated investment, and will publish an updated investment programme in February.

National Audit Office report into maintenance funding

The announcement in December came after a report released by the National Audit Office stated that the current spending on flood protection is insufficient to meet many of the maintenance needs that the Environment Agency has identified for flood defences.

Defra and the Environment Agency are operating with limited resources and currently only half of the flood defences are being maintained and these only to a minimum level.

Total funding has decreased, in real terms by 6%, between 2010/11 to 2014/15, despite by an additional £270m allocated by the Government, following the winter 2014 floods, which otherwise would have seen a 10% reduction.

With the Government's 2012 Climate Change Risk Assessment report saying that climate change will significantly increase flood risk, this will increase the load on flood defences. In order to maintain current performance it will undoubtedly mean an increase in operational costs.

The Agency has responded to the resource constraints by improving cost-effectiveness and prioritising service delivery which has provided a healthy return on investment. A saving of £44 million between 2011 and 2014 in respect of capital construction projects along with a robust process in place to prioritise maintenance spend, based on the benefits and risk identified by flood risk model data. However, the risk of more severe weather events will put pressure on existing budgets and the Agency recognises that it will need to make difficult decisions around whether it continues its maintenance of some flood risk assets.
In the areas where maintenance has been de-prioritised, typically, where there are a low number of homes, this will increase the danger of asset conditions degrading, so increasing flood risk.

The report recommends that Defra should consider how funding for flood risk management can be made more sustainable in the medium to long term.

- They should seek to ensure that the maintenance programme protects long-term value for money by minimising whole-life asset costs, improving value for money in procurement and analyse the effectiveness of the new partnership funding model.
- Improve the general understanding of communities about who has responsibility for flood risk.
- Further improve flood modelling and asset management

To read the full report click here

New long-term investment scenarios point to the need for much greater flood resilience

This blog was written by Daniel Johns, Head of Adaptation at the Committee on Climate Change.

Both Defra's six-year Investment Plan and the Environment Agency's Long-Term Investment Scenarios (LTIS) paint a positive picture of how much can be achieved in managing flood risk in the coming years. But the devil is in the detail, and these initial thoughts may evolve as we dig deeper.

Behind the headlines there is a stark message, that flooding is here to stay. Even if investment is pushed to the upper limit of what is worthwhile in the coming decades, and all cost-effective flood and coastal defence projects are delivered, the number of properties at high flood risk is still expected to increase over time. This assumes new development will not add to these numbers, and mostly ignores surface water flood risk. The projections are worse still if global greenhouse gas emissions do not peak in the next decade and then fall away rapidly.

- As a summary of the key points, the highlights of the two documents include:
  An overall net reduction in flood risk of 5% is expected by 2021. This is the first time the Environment Agency has quantified the impact of future investment on expected annual damages. The ministerial foreword to the Investment Plan talks of "winning the war" against flooding, recognising that whilst 300,000 households might be better protected by 2021 this will be almost entirely counteracted by the other four million homes at risk being slightly worse off as defences age and climate change eats away at standards of protection. The government is developing new metrics to track the overall net change.

- The long-term programme will benefit from £600m in contributions from external funders. Of this, £345m is expected to be banked between now and 2021, in line with the 15% contributions target previously announced. To help secure them, contributions from businesses will be tax deductible, at a cost to the Treasury of £5m per year.

- Certainty in government funding for the next six-years will unlock £230m in efficiencies. This is almost double the value anticipated. Savings will be re-invested in to the programme to deliver more schemes.

- £60m is being brought forward in the capital programme to deliver early benefit. Annual investment levels from 2016/17 to 2018/19 will be £20m higher, and the two subsequent years £30m lower. This will allow some schemes to be accelerated but may mean Treasury consider the baseline for the period after 2021 to be £385m, not £405m. This could depress capital budgets in subsequent years*.

- 1,400 schemes are being taken forward. 213 are already being built, and 39 new projects are expected to start construction by March 2016. A further 58 schemes may also start by then if contributions are secured. The remaining 1,100 projects won't start until later years. Half of these are subject to contributions being secured and around 200 schemes out of the 1,400 won't start construction until 2021 or later. This overview shows how important external funding has become to the delivery of the programme.

Overall levels of flood risk may fall over time, but the gains will be due to hundreds of thousands of properties that are already at a relatively low risk of flooding being even better protected. That makes good economic sense, as these investments yield the greatest overall benefit per pound spent. But some households already in the high risk category (1-in-30 annual chance of flooding or greater) are expected to remain so, and others will join them as the climate continues to change. These properties are likely to be in sparsely populated areas, where the density of benefits is lower and the relative costs of protection higher.

As well as the direct impacts of flooding for these homes, this will have long-term consequences in terms of the affordability of flood insurance, and perhaps mortgages and property values. At the moment the costs of living on the floodplain are subsidised by others. This is expected to unwind. The Flood Re subsidised insurance scheme will help smooth the transition over the next twenty-five years but the scheme's value for money is too poor to be a permanent solution (Flood Re delivers just 70 pence in benefits per £1 of cost). For those in the high risk category in the long-term the only cost-effective route is likely to be property-level protection and/or flood-resilient interiors. But at the current rate of rolling out property-level protection (1,800 homes by 2021), it will take 600 years to meet the cost-effective potential for such measures to be fitted.

This points to two immediate, broad conclusions. First, that new development must not add to the problem. Despite PPG25/PPS25 being in place, 4,000 new properties per year were built in areas of significant flood risk over the decade to 2011. More than 200,000 new properties were built in the floodplain during the first decade of this century. The new National Planning Policy Framework is based on the same broad principles as PPS25, but we have evidence that suggests smaller developments in particular are not being adequately scrutinised. We are currently collating data on new house building in the floodplain over the last three years.

Second, that there needs to be a much greater focus on managing residual risk. As one proposal, Flood Re could have the explicit aim of building awareness of flood risk and addressing it amongst its customers. Flood Re will be a public body spending public money, and will be required by law to act in the public interest. Whilst the need is recognised, there are as yet no specific proposals for how Flood Re will incentivise and support the uptake of flood resistance and resilience measures. Doing so could save Flood Re money, in reduced future claim costs, as well as helping insurance to remain affordable as the scheme is withdrawn.

If there is a final conclusion (at this stage), it's to reinforce the importance of reducing global greenhouse gas emissions. The Royal Society pointed out last week that resilience to extreme weather will depend on climate change mitigation as well as adaptation. We have the information we need to address both. As Lord Krebs wrote recently, it will be much easier to be resilient in a two degree world than in a four degree world.

* Something similar happened in 2010/11. The original capital budget for 2010/11 was £400 million before £20 million was moved forward as part of the 'fiscal stimulus' in the 2009 Budget. The 2010/11 capital budget was then reduced by a further £26 million shortly after the 2010 general election. Arguably the 2010 Spending Review reduced the capital flood defence budget by 35%, from £400 million to £260 million. Most people (and the government) use the post-fiscal stimulus, post-2010 election budget of £354 million in all year-to-year, and period-to-period, comparisons.

The Autumn Statement is already forgetting the floods of last winter

The temporary increase in funding for flood risk management after the Winter Floods of 2013/14 has not been sustained. To continue on this funding trajectory will inevitably mean greater flood risk throughout the country.

"Whilst belt tightening is part and parcel of life at present, there are some areas that must be protected – investment in sustainable flood infrastructure is one such area," says CIWEM Rivers & Coastal Treasurer, Jed Ramsay.

Even in the current economic climate, underinvestment in the UK's flood infrastructure is unacceptable, according to CIWEM. With climate change impacting the frequency and severity of flooding, CIWEM is concerned that this will become an increasingly pressing issue, weighing heavily on those that live and work in areas identified as being at risk of flooding. This will be compounded by the reduction in spending on maintaining existing flood defences.

"Failure to maintain our existing flood defences and invest sustainably and sensibly in new flood risk schemes will lead to continued loss of life and property, extensive damage to the UK economy and ongoing misery for millions of people," says Ramsay.

The Autumn Statement from the government does nothing to address the real and sustained levels of funding that will be required if we are to meet the challenges of climate change and the major flooding we see on an almost annual basis. And yet the past guides the way for us. In 1953 flooding killed over 2100 people (307 in England) which triggered investment in coastal defences. The net result was that the coastal flood in 2013 was larger in size than that of 1953 but resulted in no loss of life. This shows that we are able to manage flood risk to an acceptable level if the finances are in place. Investments in flood risk management provide some of the best returns, in damages avoided, that can be found in public sector investment. Put another way failure to invest adequately will cost the nation dearly in monetary and in socio-economic terms plus of course the risk to life will be increased.

Greater investment in river maintenance is needed

CIWEM believes that the current emphasis on capital investment to the detriment of annual maintenance works is increasing flood risk at a local level. The recent report by the National Audit Office stated that over the last five years maintenance funding has fallen by six per cent in real terms. Annual maintenance of rivers – such as maintaining existing crucial defences, weed and vegetation trimming and silt removal – are essential activities that have been cut to the bone through several decades of spending cuts. The continuation of this policy will result in ongoing degradation, which will then cost a great deal more to restore. Timely appropriate spending is not only better in maintaining appropriate levels of flood risk but also is environmentally better and cheaper in the long term.

'Partnership Funding' is muddying the waters

The partnership funding scheme has laudable aims – to increase the level of contributions to flood defence schemes from those benefiting locally – especially those who are perceived as able to pay. The reality on the ground has been that the majority of partnership funding has been met by Local Councils at a time when their budgets are being dramatically reduced.
This policy requires more work in order to leverage more private sector funds for schemes so that there is an appropriate balance between central government support for mitigating local flood risk and the direct beneficiaries of schemes also contributing.

Readying the defences across Devon and Cornwall

After the exceptional rainfall and storms of last winter, the Environment Agency has completed a record number of repairs to flood and coastal defences across Devon and Cornwall and is urging communities to make sure they are ready if flooding happens this year.

As well as repairing flood defences, the Environment Agency has improved resilience to flood defences and in some areas, created new defence systems. This work means communities are now better protected. Working around the clock with their partners and main contractor BMM (Bam Nuttall and Mott MacDonald), the Environment Agency has repaired nearly all the defences damaged during last winter.

In Devon and Cornwall, the Environment Agency and local councils have been carrying out repair works to 218 flood and coastal risk projects. To date, 188 projects have been completed and 30 projects are on-going. Where permanent repairs are well underway but not completed, the Agency can confirm that the standard of protection to communities has been re-established by the work already done or appropriate contingency arrangements are in place to ensure that no communities are at an increased flood risk compared to the pre-winter 2013/14 situation.

£18.2milllion of additional funding was allocated to complete this flood recovery work in our area. £12.7million of that funding was allocated to 10 local councils to carry out repairs to their assets at 132 locations. The remaining £5.48 million of funding went to repair damaged Environment Agency assets at 86 locations. This work has been done by Agency field teams and contractors.

A new coastal flood defence is being built at Dawlish Warren and is on target to be completed this Christmas. The original defence was badly damaged in the winter 2013 storms and a new defence will be built further in land to provide more robust protection to Dawlish Warren village.

Cornwall Council suffered some of the most significant damage to coastal defences in the country with losses of breakwaters and the destruction of complete lengths of coast protection structures. The council received an allocation of £9.1million for 66 locations, including Penzance.

The flood defences at Bude, which protect 100 properties, are now being repaired and temporary defences have been constructed to protect the properties during construction.

The Agency has also worked with communities to develop community flood plans or incorporate flood plans within their wider emergency plan. Sidmouth, Ottery St Mary, the Long Brook Street area of Plympton and Kingsbridge are just 4 of the communities who have recently completed their emergency plans to prepare for the possibility of flash flooding.

A further £150m into flood risk for Wales

Finance and Government Business Minister Jane Hutt announced in December that the Welsh Government would be investing a further £150m in priority flood and coastal risk management across Wales.

The new investment will be delivered using an innovative funding instrument, drawing on revenue budgets and building on the successful Local Government Borrowing Initiative. The scheme will deliver key flood and coastal defences in partnership with local authorities from 2018.

Funding for flood risk management is a major priority for the Welsh Government, with over £245m invested over this term of Government, supported by an additional £50million from Europe. The Finance and Natural Resources Ministers will today meet staff from Natural Resources Wales to find out more about their work to manage the risk of coastal erosion and flooding and to see examples of investment along the Severn Estuary.

Jane Hutt said:

"Ensuring that we have effective flood and coastal defences is a priority we share with local Authorities. Few can doubt that our flood defences will continue to be tested by adverse weather events in the future. We are responding to that challenge, by thinking ahead, being strategic and planning ahead.

"That is why I am today (10th December) announcing this new significant round of investment in flood and coastal defences, which follows the £245 million in capital and revenue funding we have already committed over the life of this Government. Through innovative funding schemes, we are able to complement our existing capital funding and ensure that Wales remains a safe, viable and attractive place to live and work for current and future generations. In 2014 alone, I have announced around £1.9 billion of new, innovative financial investment in our social and economic infrastructure."

Carl Sargeant, Minister for Natural Resources said:

"Minimising the effects of flooding and keeping our communities safe are key priorities for this Government. This has already been demonstrated by the £245 million investment we have made during this term of Government which has been complimented by £7.2m to repair and improve coastal defences following last year's storms.

"It's vital to keep looking to the future, however, and today's announcement will be welcome news for coastal communities across Wales. Our Wellbeing of Future Generations Bill makes it clear that we must plan ahead and work together to ensure the best possible outcomes for our communities. This announcement reinforces that commitment and is a clear message that the Welsh Government will continue to tackle flooding, and the risks associated with it, for years to come."

£300 million Thames flood defence contract awarded to CH2M Hill

More than 1.25 million people and $300B (£200B) of property are situated within the River Thames floodplain. Whilst the Thames Barrier and other current defenses provide a high level of protection, the effects of climate change, floodplain development and aging flood defenses need to be addressed.

The TE2100 Plan

The Thames Estuary 2100 plan covers the tidal Thames and its floodplain from Teddington in the west to Sheerness/Shoeburyness in the east. It was established by the Environment Agency in 2002 with the aim of developing a strategic flood risk management plan for London and the Thames estuary through to the end of the century.

The Plan primarily looks at tidal flooding, though other sources of flooding including high river flows as a result of heavy rainfall and surface water flooding are considered. The key driver for the project was to consider how tidal flood risk was likely to change in response to future changes in climate and people and property in the floodplain.

Additional to this there was an understanding that many of the existing flood walls, embankments and barriers were getting older and would need to be raised or replaced to manage rising water levels. It was time to plan for the future and make recommendations on what actions were needed to adapt to a changing estuary.

CH2M Hill has been awarded the Thames Estuary Asset Management 2100 (TEAM 2100) Programme contract worth £300m.

This contract represents the first 10 years in the 100 year programme to protect London and the Thames estuary from tidal flooding.

The project will become one of the largest flood risk programmes, worldwide and involves the planning, programming, optimisation and delivery of investigation, design, capital maintenance, refurbishment and replacement works on the existing tidal flood defence assets along the entire 170km length of the Thames estuary.

The capital works, include:

- Major refurbishment works of fixed assets, such as tidal walls and embankments.
- Refurbishing works of active assets (including major flood barriers)
- New assets such as pumping stations.
- Capital renewals and replacements
- Packages of major or complex maintenance works, such as repairing long lengths or fixed flood defence walls or subsidence of earth embankments.

Balfour Beatty will be working alongside CH2M Hill, as delivery partner, along with specialist suppliers including Critigen, Hunton Engineering Ltd, KGAL and Qualter Hall.

Paul Leinster, Chief Executive of the Environment Agency, said:

"We are pleased to welcome CH2M HILL as our partner to deliver this vital programme of works to refurbish and update the current flood risk management systems along the Thames Estuary."

Mark Thurston, CH2M HILL's Managing Director for Europe, said:

"We are delighted to have been named delivery partner for the TEAM 2100 Programme. This project is a vital piece of infrastructure that fits closely with our other major programmes in London, including Thames Tideway Tunnel, Crossrail and High Speed 2. Not only will this programme help maintain London as a globally competitive city, it also provides a significant boost to the British engineering sector and the creation of long-term employment in the UK jobs market, with the project requiring skilled engineers throughout the planning, investigation, maintenance and refurbishment works of the next 10 years.

"CH2M HILL has extensive experience of working on the Thames estuary and has a strong relationship with the Environment Agency from its work on various flood defence framework contracts. CH2M HILL brings experience of managing some of the world's largest water projects, whilst Balfour Beatty brings leading flood and coastal risk construction expertise from its long term work in this field. Working as part of an integrated team with the Environment Agency, we look forward to managing this project and playing a vital role in maintaining and developing tidal flood defences in the Thames estuary for future generations."

Royal HaskoningDHV wins major contract for coastal protection Bangladesh

Amersfoort, the Netherlands, 5 January 2015 – International engineering and project management consultancy Royal HaskoningDHV has signed a €10.5 million contract with the Bangladesh Water Development Board for engineering consultancy services to protect Bangladesh's vulnerable coastal zone, home to millions of people.

The next six years Royal HaskoningDHV will be responsible for the detailed design, construction supervision and project management support of hundreds of kilometres of embankment to protect 17 coastal polders and its inhabitants and their livelihoods from natural disasters and climate change. The total project area is some 1,000 square kilometres.
The contract is part of the World Bank financed Coastal Embankment Improvement Project, Phase-1 (CEIP-1) of the Government of the People's Republic of Bangladesh.

Taking into account climate change

Mr Sarafat Hossain Khan, CEIP-1 Project Director of the Bangladesh Water Development Board said, *"The vulnerability of the coastal population is on the rise due to climate change. Climate variability will accentuate the intrinsic risks facing coastal Bangladesh. These risks span cyclones and storm surges, river bank erosion and vulnerability of islands and chars, sea level rise, saline water intrusion, and coastal river erosion. A recent study indicated that if a 10 year return period cyclone hit our coastal area today, about 8 million people will be affected by inundation depths greater than 3 metres."*

Resilient to natural disasters

Royal HaskoningDHV's Project Director Mr Roelof Moll said, *"We are very proud to be part of the many projects the Government of Bangladesh is launching to protect their coastal zone. The area holds numerous natural resources including fresh water, oil and gas and minerals. Making the area more resilient to natural disasters and climate change will provide resilience to vulnerable communities and revitalise social and economic developments."*

The contract was signed 30 December 2014 during a special signing ceremony in Dhaka by Mr Sarafat Hossain Khan of the Bangladesh Water Development Board and Mr Roelof Moll of Royal HaskoningDHV. Present also were several high officials from the Ministry of Water Resources, Bangladesh, the World Bank, the Bangladesh University of Engineering and Technology BUET and His Excellency Mr Gerben de Jong, Dutch Ambassador to Bangladesh.

Royal HaskoningDHV will be working with a team of four sub-consultants: Danish Hydraulic Institute (DHI) and from Bangladesh: DevConsultants (DevCon), Design Planning & Management Consultants (DPM) and the Institute of Water Modelling (IWM).

New flood defences for the city of Galway

Galway City has taken measures to protect against flooding by adopting a temporary flood barrier solution. The solution chosen is AquaDam, a water-filled barrier that was used to great effect during the floods in Surrey last winter.

The AquaDams were supplied to Galway City Council by L & M Keating Ltd who were the successful tender winners. The AquaDams were delivered to Galway City Council and were immediately deployed ahead of the anticipated highest tides of the year.

The City Council has purchased three AquaDams, the longest one 80 meters long and all capable of holding back up to 1m of flood water.

One of the 16m dams has been deployed behind the Spanish Arch and the other is on standby ready to close off the area from The Long Walk if the flood risk increases.

The AquaDam flood barrier solution was chosen following a tendering process by Galway City Council and was selected because of the versatile nature of the dams and the ease with which they can be put in place. The AquaDams and moved into position, rolled out and filled with water pumped straight from the river.

Two of the AquaDams have been deployed alongside the River Corrib, close to the Spanish Arch, in an area that has been hit by flood waters in the past, and will remain in place until tides recede next week. The 80m dam runs from Wolfe Tone Bridge to the Spanish Arch.

For more information on AquaDam, contact sales@aquadam-europe.com or telephone 01793 251701

Do contractors measure up for flood protection works?

National trade body the Property Care Association (PCA) has revealed its rigorous application process for contractors and manufacturers seeking to join its new Flood Protection Group.

Applications to the PCA will be carefully vetted and contractors – as well as manufacturers providing flood protection products – will need to measure up to strict criteria and standards in areas including technical competence, financial probity, training and customer service.

By creating challenging standards the trade association says it will be able to signpost consumers to accredited specialists able to deliver reliable flood resistance and resilient solutions for homes and businesses across the UK.

The move will also help people to avoid historical problems with poor workmanship, carried out by unregulated tradespeople with little knowledge of flooding works, which has in the past created heartache for many homeowners affected by flooding.

Acclaimed flood protection campaigner and consumer champion, Mary Dhonau OBE, has recently been appointed to lead the PCA's new Flood Protection Group.

Mary became a powerful advocate for flood resistance and resilience after her home was flooded in 2000 and received an OBE in 2009 for her tireless campaigning on the issue.

Mary said:

"At last, the UK is on the road to having a recognised, assured route for flood protection works.
"For too long, people without any training or experience of this type of work have been allowed into people's homes and businesses to carry out repairs.

"The financial and emotional impact of their work has left many people in despair.
"Property level flood protection, where homeowners play an important role in building flood protection measures into their homes to counteract and limit the impact of flooding events, is the way forward and PCA members are in the best position to deliver these works.

"We've seen what professional works can achieve. PCA members have introduced property level flood defence and resilience measures installed after the floods of 2007, which have been tested recently and have worked.

"The result is dry homes that would have otherwise flooded or buildings that will be reoccupied in weeks rather than months or years.

"We want to see this type of work adapted across the country and help to dramatically reduce the impact of flooding throughout the UK."

Steve Hodgson, Chief Executive of the PCA, added:

"The Flood Protection Group will give consumers certainty in getting the right products for the right property – with future resilience features built-in - and provide insurance companies, property professionals and householders with access to consultants, manufacturers and contractors offering a recognised and reliable approach to prevent the flooding of buildings."

The PCA is noted for its training and technical expertise, with an industry-recognised training programme and a renowned technical panel able to share best practice and guidance with members.

It is also a scheme operator of Trustmark, the Government-backed scheme which aims to help consumers find reliable and trustworthy tradesmen when making improvements or repairs to their homes.

To find out more, log on to the PCA website at www.property-care.org or call 0844 375 4301.

The New Somerset Rivers Authority

In a Memorandum of Understanding, Defra and Somerset County Council have agreed funding for the Somerset Rivers Authority.

Local people in Somerset will be better able to manage flood risk after the Environment Secretary Elizabeth Truss announced £1.9 million funding for the Somerset Rivers Authority today enabling it to start work next year.

The Authority will receive £2.7 million in total from the Department for Environment, Food and Rural Affairs (Defra), Somerset County Council and the Somerset Consortium of Drainage Boards to reduce the flood risk in the region.

As a result, the Somerset Rivers Authority will be established by the end of January next year and will give local people the power to control and manage local flood risk in their area.

In a Memorandum of Understanding, Defra and Somerset County Council have agreed Defra will provide £1.9 million, the Council will provide £600,000 and the Somerset Consortium of Drainage Boards, along with the county's five district councils, will provide £200,000 for the first year of funding. A review will be carried out to identify a long-term, local funding solution from 2016/17.

Environment Secretary Elizabeth Truss and local partners at the signing of the Memorandum of Understanding

Environment Secretary Elizabeth Truss, said:

Last winter's floods were unprecedented. We experienced the wettest winter in 200 years, which took its toll on flood prone communities such as Somerset.

We have worked hard to protect Somerset from future flooding and to get those affected last winter back on their feet. The dredging of the rivers Parrett and Tone is complete and crucial works to raise key roads in the area has begun.

This funding will enable the newly formed Somerset Rivers Authority to make a real difference in its first year.

At a national level, we are spending £3.2 billion on flood management and defences over the course of this parliament. That is more than ever before and half a billion pounds more than in the last parliament.

The Somerset Rivers Authority forms part of the 20-year Somerset Action Plan which was developed at the request of the government in response to the exceptional floods last winter.

Councillor John Osman, Chairman of the Flood Action Plan Leaders Implementation Group and Leader of Somerset County Council, said:

This is an historic milestone for the Flood Action Plan.

The creation of the Somerset Rivers Authority is the result of intensive work and close co-operation between partners, with a strong determination on everybody's part to make this happen so that we can better protect our county from the impact of flooding.

Following the exceptional flooding in the area last winter, government provided £20.5m to Somerset to help get those affected back on their feet and to improve flood resilience in the area. With the majority of Somerset below sea level the land is vulnerable to both tidal and land-based flooding. The widespread flooding of the Somerset Levels and Moors over the winter of 2014 was just one occurrence in a long record of flood events.

The Authority will focus on enhanced maintenance of river channels and flood banks along the county's waterways, including maintaining the 2014 dredge on the Rivers Parrett and Tone.

New transparent offering for flood defences

IBS Engineered Products Ltd introduce new 'lightweight' version of widely used innovative glass flood defence system, now available in the UK & Ireland.

Drawing on the experience and the design of our already widely used glass flood defence system, the new sleeker product incorporates a slimmer frame design that maximises the view through the glass panels and provides flood protection up to 800mm in height and where the load criteria consideration is hydrostatic water head. This system has already been installed in mainland Europe and in the UK in South Wales.

Commenting on this recent addition to the product range, Ray Moulds, Business Development Manager, said *"we recognised that not all of our clients' designs required a system that could withstand an impact load as well as hydrostatic head, so we set to work to lighten the design and this is the result. We believe we already have the most widely used glass system in Europe, but the addition of this new 'lightweight' version will ensure that our customers are getting the optimum glass defence system for their project in terms of design, aesthetics and build costs."*

The IBS glass wall flood protection system is an ideal solution where traditional floodwalls are undesirable and temporary barriers cannot be installed due to certain logistical circumstances. Providing not only a spectacular alternative, the glass flood wall systems' benefits also include interchangeability, easily replaceable parts and maintenance free.

IBS glass wall flood defence systems have been installed around the country, including in Upton-upon-Severn in 2012, providing part of a solution to hold back floodwater from the River Severn and with the design enabling residents to view the river safely. With excellent feedback, the glass system at Upton was highly successful in holding back the Severn on at least one occasion as the river rose during the winter flooding of 2013/14.

£6.3m Albert Dock flood scheme

A £6.3 million Environment Agency scheme to improve flood defences on the River Humber at Albert Dock in Hull began In November.

The improved flood defences will reduce the risk of flooding to 300 local homes and businesses and will involve the construction of a 950-metre wall, one metre high, protecting properties affected by last December's tidal surge.

A further 600 metres of defences will be built within the Port of Hull to protect the city centre, and repairs will also be made to the Dunston Culvert, which is disused and dilapidated.

Construction is expected to be completed by June 2015.

The Flood Defence and Prevention Expo 2014

- 1,976 attendees
- 122 Companies
- 82 Seminars and Panel Debates

The ExCel in London was the venue for the first flood protection exhibition in the UK. The Flood Defence and Prevention Expo took place on the 4th and 5th of December and attracted approximately 2000 visitors over the two days.

The event provided the opportunity for both UK based and European companies to exhibit their products and services and with 122 companies on site to showcase the latest research, technology and solutions to help minimise, or even better- entirely avoid the risk of flooding, there was a wide range of solutions available for the attendees.

The event will showcase the latest research, technology and solutions to help minimise, or even better- entirely avoid the risk of flooding,

Attendees

The event attracted visitors from as far away as India and China as well many European countries, such as Holland, Belgium, Denmark and France. There was a large attendance from the Environment Agency as well as other Government organisations such as Defra and the Highways Agency. A large number of flood risk managers from local authorities, emergency planning officers from various fire and Police authorities and representatives from the power, transport and rail companies. Many other organisations and associations with an interest in flood protection were represented, such as the motoring organisations, Insurance companies, water companies, Institution of Civil Engineers and consulting engineeers.

Seminars and Panel debates

There was an extensive seminar and workshop schedule which included talks from industry profesionals, panel debates and live demonstrations on the Thames.

The wide range of seminars and debates covered topics such as how best to protect properties from the ingress of water, what the Government can do to further prevent widescale flooding, how natural techniques can be utilised in flooding and many many more.

The debates and seminars were well attendedimparting both valuable information and encouraging useful debate.

Live Demonstrations

There were several live demonstrations on the edge of the Thames including pumping equipment and a water filled AquaDam

above, Chris Wilde from AquaDam Europe Ltd, talks to interested visitors.

New ARC-Boat to help Shropshire prepare for flooding

ARC-Boat number 50 will be the newest Environment Agency recruit helping to issue quicker and more accurate flood warning information.

Environment Agency Water Resources teams were involved at the development stage of the boats and following initial operational success, staff quickly identified its ability to assist in the flood monitoring process.

In Shropshire, this boat will be used to measure flows at the Severn/ Vyrnwy confluence to improve flood warning models. During times of high river levels, the boat may be seen at sites along the River Severn including Montford, Shrewsbury, Ironbridge and Bridgnorth. The boat will be used to survey the river bed of the Severn, Teme and Tern, which will send important information to the Environment Agency teams.

The benefits explained

Rob Davies from the Environment Agency said:

These boats will enable us to measure a full range of flows at sites like Onibury on the River Onny near Ludlow. These measurements are really important as it gives us the data we need to give more accurate and quicker flood warnings to local communities.

The boats are manufactured by HR Wallingford in Oxfordshire and have been supplied to clients around the world including Canada, New Zealand, France, Azerbaijan. The Environment Agency already has around 30 of these boats in operation, but this one is special as it is the 50th boat to be produced.

Rob explained that the Environment Agency first used an ARC-Boat on the River Thames in 2011.

The boats are remote controlled and measure the speed and depth of the water to enable it to calculate river flow. They allow us to easily and safely reach places where humans can't, such as under bridges or during high-flows/floods. Ultra-sound pulses, similar to that used to scan pregnant women, are used to collect important data from the river. This data helps us to monitor flows in the river which in turn helps our flood and water teams assess what action is required, for example, to determine where defences may be required.

The 50th ARC-Boat

Keith Powell from HR Wallingford said:

Delivery of ARC-Boat number 50 is an important milestone for us. Handing it over to one of the Environment Agency's teams is particularly satisfying, as their staff played an important role in its development. With the ARC-Boats they are mapping more of our rivers and in greater detail than was previously possible, and the data they are collecting will improve the accuracy of flood warnings. We are pleased to be able to support their work.

CIWEM Events

Signposting new developments in asset management

29th January 2015
SOAS, University of London

The aim of this event is to raise awareness and increase access to emerging and new guidance in the field of Flood and Coastal Erosions Risk Management (FCERM) asset management, demonstrating the benefits and outcomes arising from application of the new knowledge base.

Join us to...

- Have increased awareness of and be able to access new guidance in FCERM asset management
- Understand when and where new guidance should be followed by practitioners within or supporting risk management authorities
- Appreciate the beneficial outcomes that will arise through use of the show cased guides
- Understand where use of new guides will assist in the management of professional and organisational risk including climate change; legislation; technical uncertainty
- Learn more about CIWEM's Rivers and Coastal Group (RCG) and how to get involved in its events and activities

Who should attend?

Water companies | Regulators | Political and corporate decision makers | Consultants involved with delivery of schemes | Community Groups | User groups and NGOs | Local government | Water Professionals

Please visit www.ciwem.org/events for more information and to book online.

Conference reflects on recent floods and the continued need for investment

CIWEM's one day conference on the 26th November 2014 focusing on the response to and lessons learned from the 1953 North Sea and 2013 East Coast floods.

Delegates and national experts gathered at SOAS, University of London, to discuss the lessons that have been learnt from two of the most significant coastal surges affecting the UK. The event discussed human and technical costs of these disasters, forecasting and warning systems to prepare for future incidents, as well as strategies for recovery post-event.

A critial element of effective disaster management is communication with the public, and the use of social media was discussed as an integral part of warning systems. Case studies were presented by Natural England, Environment Agency and the Met Office, key stakeholders in the preparation and forecasting for, as well as recovery from major coastal flood events.

Mark Pinnell from JBA Consulting and Chair of the CIWEM Rivers and Coastal Group said:

"The conference has reflected on the response of the FCERM community to the event of winter 2013/14 and importantly, in the week preceding the Autumn Statement, is a timely reminder of the imperative for continued investment in flood risk management."

Craig Woolhouse, Environment Agency and opening speaker said:

"In early December last year the east coast of England experienced the greatest tidal surge in over 60 years. Over 300 people died in the 1953 surge but by dealing with lessons learned after this event - the need for investment in flood defences and early forecasting and warning – impacts last year were thankfully much less. However, new issues arose last winter and this conference will help ensure the emergency response professionals understand what needs to change to minimise impacts in the next major coastal surge."

The event was sponsored by Mouchel in association with the CIWEM Rivers and Coastal Group. Outputs will be avaliable on the CIWEM website soon: http://www.ciwem.org/events/events-home.aspx.

SuDS & Surface Water Management

Communities left with flood risk after nine out of ten developments are **exempted** from SuDS

Communities have been left to face ever increasing risk from flooding, according to the Wildfowl & Wetlands Trust (WWT), after Communities Secretary Eric Pickles announced, in December, big exemptions allowing developers to continue directing rain water to sewers.

Nine out of 10 new developments have been automatically excused from installing SuDS – areas where rainfall can seep into the ground to reduce flood risk – and a large number of caveats have been added to rules governing the remaining developments. The decision will pile pressure on existing sewers, many of which are at full capacity already, while climate change is increasing the risk of storms.

71% of respondents to a recent Government consultation, including WWT, warned that the changes to the Flood and Water Management Act 2010 would mean water couldn't be managed sustainably over the long term. Furthermore a large number of respondents warned that the exemption of smaller developments could have a cumulative, detrimental effect on flood risk.
Despite the weight of public opinion and the Government's own figures backing the economic case for SuDS, Mr Pickles' written statement said that the changes had been brought in to avoid "excessive burdens on business".

WWT Head of Conservation Policy Jeff Knott said:

"SuDS are a really positive solution which can help address many of the major problems we face as a society. SuDS protect communities from flooding, they create valuable habitat for wildlife and beautiful open space in our crowded towns and cities which can measurably benefit human health and well-being. What's more, by the Government's own figures, the 'excessive burden on business argument' simply doesn't add up."

The statement by Mr Pickles, in December, announced changes to the Flood and Water Management Act 2010. The Act was instigated by Sir Michael Pitt's review following the devastating 2007 floods which affected more than 55,000 homes. The Pitt Review sets out the need for urgent and fundamental changes to adapt to more frequent periods of heavy rainfall, and particularly highlighted the need for "strong national leadership".

Responding to this, Mr Knott said:

"As the Pitt Review emphasises, Government has a clear role in providing leadership and guiding developers through this time of change. Instead, they appear to be cutting them loose. SuDS are generally cheaper than traditional drains, but whichever way you look at it, there is an overriding public need to not flood our communities.

"The Communities Secretary's decision to go against the recommendations of the Pitt Review and the findings of his department's consultation has come as both a surprise and a disappointment. WWT believe that SuDS are an invaluable opportunity to improve and protect communities. We will continue to support proven wetland solutions to the problems facing society today."

“Supersized” Hydro-Brake® Technology Holds Back Floods Upstream

Thousands of homes and properties in the UK could be protected from river flooding by a ‘supersized’ engineering solution, which uses proven principles of vortex flow control technology to deliver carefully-engineered flood protection, while creating biodiverse landscaping and wetlands.

On December 2, the Government published details of how £2.3billion of capital investment already committed for flood defence funding will be spent on more than 1,400 flood defence schemes to protect 300,000 homes as part of the National Infrastructure Plan. To make the most of limited funding will require the best engineering solutions and sustainable technologies like the Hydro-Brake® Flood Alleviation. Said Alex Stephenson, chair of the British Water Sustainable Water Management (SuWM) Focus Group and Group Market Development Director for Hydro International:
“With limited funding available for flood defences, the engineering community must provide judgement, professionalism and long-term vision. We should also be prepared to shout passionately about the best technologies that science and engineering can offer, many of them ‘home-grown’ and proven.”

Holding back excess flood water with Hydro-Brake® Flood Alleviation vortex flow control technology is an innovative and sustainable solution to protecting vulnerable areas, using a passive system that requires no power and minimum maintenance.

The Hydro-Brake® vortex flow control was invented and developed by Hydro International more than 30 years ago and has become an industry-standard method of flow attenuation. Increasingly it is being used as a lower-impact technology for upstream attenuation flood defences, with the largest schemes controlling flows in excess of 33 m3/s and holding back millions of cubic metres of water.

Alex Stephenson, continues:

“Hydro-Brake® vortex flow control technology is used extensively to prevent surface water and watercourse flooding. It is well proven and completely scalable from small schemes protecting a few properties to giant fluvial

dams that protect major urban conurbations.
"Tackling flooding requires a range of measures on an integrated catchment level, from holding back fluvial flooding in upland catchments to a range of at-source SuDS and surface water control for highways and in our towns and cities. Many of Hydro International's technologies are quietly not making the news today because they are just doing their job protecting many thousands of homes and properties."

The opportunities offered by upstream temporary flood storage have attracted attention as a viable, lower-impact solution to flood risk management of river catchments. The Hydro-Brake® Flood Alleviation flow control holds back water without the need for power or mechanical intervention. The geometry of every Hydro-Brake® can be optimised and upstream storage areas fine-tuned ensuring vulnerable properties are protected.

The Hydro-Brake® Flow Control's internal geometry allows water to flow through it unhindered for as long as possible. A self-activating vortex is created when the water upstream reaches a pre-determined height, for example in a flood situation, throttling back the water, and releasing it at a measured, controlled rate.

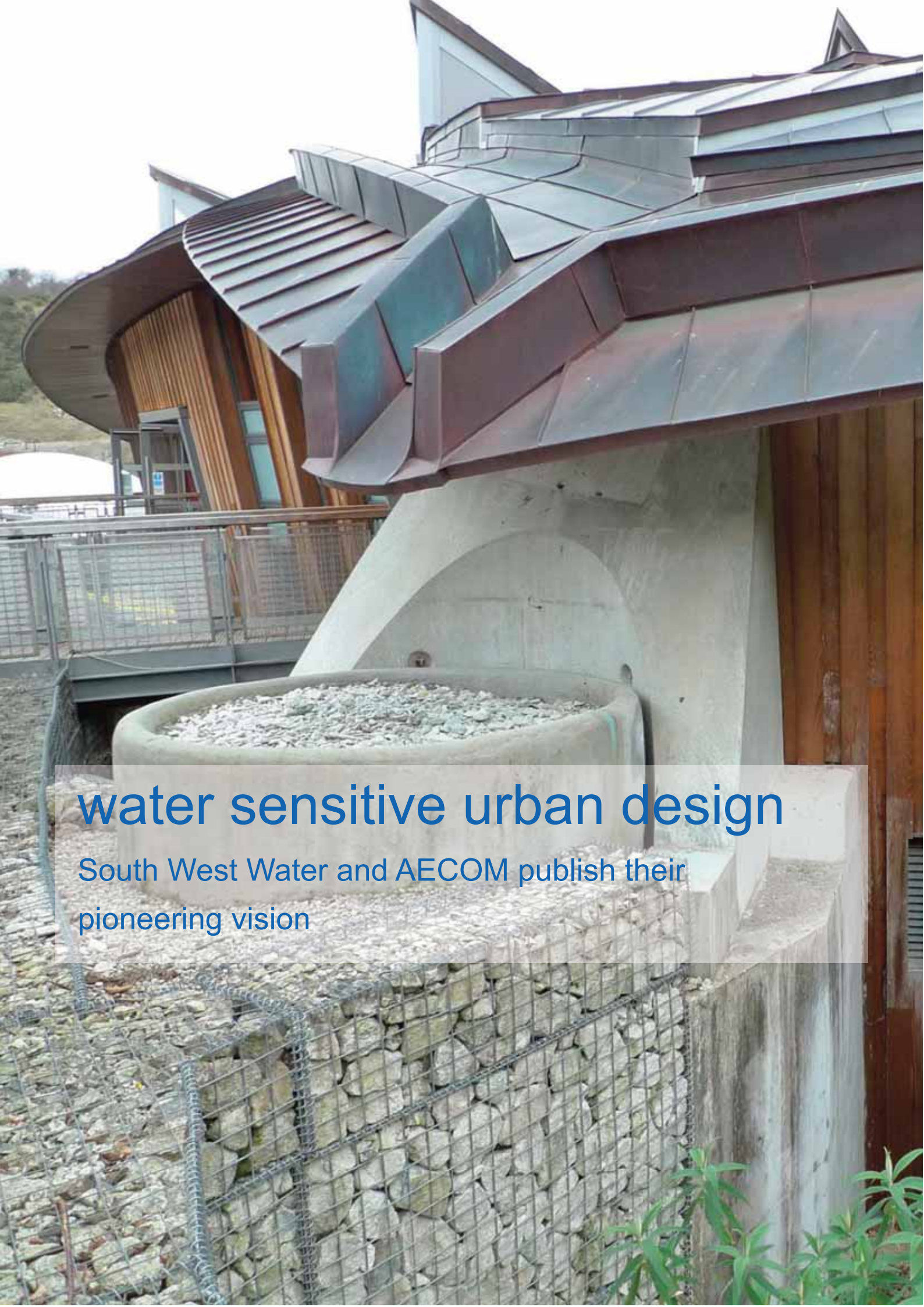
The self-activating hydrodynamic vortex control technology was pioneered in the UK by Hydro in the 1980s and used extensively to prevent surface water and watercourse flooding ever since. Most frequently used in much smaller dimensions as part of new and retrofit surface water drainage designs, the technology is completely scalable from small dispersed schemes with pass forward flow rates of a few litres per second, to giant schemes that protect major urban areas. 2013 saw the rapid acceptance of its most advanced design yet, the Hydro-Brake Optimum®.

"Two major benefits of the Hydro-Brake Optimum® are that the water storage requirements are up to 30% less than for a valve or penstock controlled scheme, and that the maximum inlet design flow can be varied ± 20% to allow for climate change increases," continues Alex.

Hydro-Brake® Flood Alleviation installations form part of Scotland's award-winning and largest flood alleviation scheme, the White Cart Water Flood Prevention Scheme where 1,750 urban and suburban properties are protected, including commercial and residential. The flow controls hold back water behind three dams creating temporary storage areas on agricultural land in the highlands above Glasgow. The water is released downstream at a controlled rate so that it does not overspill flood defences protecting properties downstream.

Two other multi-award winning projects are: a scheme in the valley of the River Douglas in Wigan which protects 610 properties from flooding in the nearby city centre, and River Gaunless in Co. Durham. Smaller communities from 70 to 300 homes have also benefited, for example at Portpatrick, Argyllshire, once devastated by flash floods through its streets, Weedon Bec in Northants and Devil's Bridge near Sheffield.

For further information call the Hydro-Brake® hotline: 01275 337937 or visit www.hydro-int.com .



water sensitive urban design

South West Water and AECOM publish their pioneering vision

A pioneering vision document has been launched by AECOM, in close collaboration with local government, academic and public and private sector stakeholders, identifying a more sustainable response to urban and rural water management throughout South West England.

The landmark document has come from the findings of a workshop initiated by AECOM and hosted by South West Water. The workshop showcased water sensitive urban design (WSUD) as a leading approach to securing a more balanced relationship between water, the environment and communities. The workshop addressed, and the vision document highlights, the benefits and the barriers facing the implementation and delivery of WSUD. Participating stakeholders included South West Water, University of Exeter, the Environment Agency, Devon County Council, Plymouth City Council, Torbay Council and Cornwall Council. Since the workshop event, follow-up meetings have been held with workshop participants demonstrating a commitment to drive the vision for a water sensitive South West.

WSUD is an approach that originated in Australia where AECOM was instrumental in its successful delivery. It focuses on giving a greater priority to water management considerations at the earliest stages of development and regeneration. WSUD can reduce the impacts of climate change and population growth in towns and cities in the South West and across the country. It recognises that all elements of the water cycle are linked and provides a smarter, cost-effective approach to resource efficiency and future resilience.

Delivering WSUD can help to reduce flooding through sustainable drainage systems (SuDS) that can include natural vegetation features such as wetlands, swales and rain gardens. It can also save water by securing new water supplies from the rain that falls on urban centres as well as create green, attractive public spaces that provide new wildlife habitats and a healthier urban environment.

The vision document outlines the three key actions agreed by the participants in order to transition to a water-sensitive future for the region. These include:

The identification of WSUD champions within organisations and communities
The establishment of partnership working arrangements
The agreement from participants to realise the benefits of water sensitive solutions and show commitment to their delivery.

Tony Barrett, principal consultant at AECOM's water practice in the UK, comments: *"This vision document serves as a turning point in the delivery of WSUD in the South West. There are undoubtedly challenges to the implementation of WSUD. Collaboration, ownership and education are the crucial keys to success. The support from South West Water, local government organisations, the Environment Agency and the University of Exeter is crucial to the planning and management of an improved urban water cycle and our future resilience. We are delighted that the momentum has been maintained since the workshop with continuing meetings with our stakeholders. It is this type of joined-up thinking that is critical to turn the vision for a water sensitive South West into a reality"*

Andrew Roantree, Head of Asset Management at South West Water, adds: *"With population growth, climate change and urban creep, there is an urgent need to find innovative ways of preventing flooding and pollution in the future. There are collaborative, low-cost and natural solutions that will reduce flood risk, enhance neighbourhoods, prolong the life of our sewers, and make much better use of the rain that falls on our towns and cities. South West Water is committed to taking this water sensitive approach and working with other agencies to develop these win-win solutions."*

Click here to view the document

Upstream Thinking is South West Water's flagship environmental programme. It is one of the first programmes in the UK to look at issues influencing water quality and quantity across entire catchments leading to improved land management.

River & Wetland Management

7500 fish in Christmas stocking helps revive West London river

The Environment Agency, working as part of the Crane Valley Partnership to restore the river's vitality following major sewage spills in 2011 and 2013, released 2000 chub, 2000 dace, 2000 roach and 1500 barbel into the river on Wednesday 3 December.

They were introduced downstream of Staines Road, North Feltham and were supplied from the Environment Agency's own Calverton Fish Farm where they were bred.

Volunteers from the London Wildlife Trust, Hounslow Council and the Thames Angling Conservancy helped with the restocking.

Technical Officer Neil Winter oversaw the operation. He said:

"Two major pollution events in 2 years had a devastating impact on large sections of the river's ecosystem, including its fish population.
Thanks to the combined effort of many organisations and individuals however, the river has already recovered to the point where water quality and food sources, such as invertebrates, can sustain fish once more.
Some fish have already migrated into the previously depopulated areas from other parts of the river, but this is a slow process.

We want to gently accelerate the increase in fish numbers, so are giving nature a helping hand by adding species commonly found in the Crane and surrounding rivers. We are doing this in a carefully phased way, so that we do not destabilise the river's recovering, but still fragile, ecosystem. Not only does the fish stocking boost the river's biodiversity, it will also return the river to a valuable recreational angling resource for the local community"

The new 4-year restocking programme replaces one put in place after the first pollution incident in 2011. That was caused by an illegal discharge of untreated sewage for which Thames Water was prosecuted and fined, but also made a voluntary £400,000 donation to the restoration effort.

A first successful restocking took place in December 2012, but the benefits of this were wiped out when treated sewage sludge flowed into the river as a result of criminal damage to a pipe carrying the sludge between Thames Water's sewage treatment plants in Iver and Mogden. Despite extensive efforts the culprits for this damage could not be identified.

Work to restore the Crane has been ongoing since that setback, led by the Crane Valley Partnership with the funding from Thames Water.

Roach going into the river

It is the first in a new 4-year fish stocking programme, funded by Thames Water, to help return the Crane back to a thriving waterway teeming with a diversity of fish and other wildlife.

Environment Agency Fisheries

A new lease of life for Crossens pumping station, courtesy of Bedford Pumps

Bedford Pump are delighted to have been awarded the contract to supply eight new pumps for the Environment Agency as part of the Crossens Pumping Station refurbishment project due to commence next month. This is the second time that Crossens P.S has benefited from Bedford Pumps expertise, having been the recipients of pumpsets from the company over twenty years ago.

Crossens, located in the North West of England between Southport and Blackpool, was constructed in the late 1950s and officially opened in 1961. At that time thirteen diesel engine driven pumps were utilised to pump three watercourses entering the station.

In the 1980's, nine of the diesel engines were removed and replaced by electric pumps, although four of the original diesel pumps were retained for back up in the event of power failure. In the early 1990's, due to the gravity bypass facility at Crossens being eroded by silt over the passage of time, three further electric pumps were installed by Bedford Pumps to replace the declined capacity. This took the total pumping facility at the site to 28.4 cumecs.

Now the four diesel engines that were previously retained have finally reached the end of their life. In addition four of the pumps that were modified by motors (but dated back to the original construction of the site) also need replacing. The Environment Agency has therefore developed a refurbishment project at a cost of almost £5M to overhaul the entire station.

Bedford Pumps have been contracted to replace all of the diesel engine driven pumps, as well as the 1950's modified pumps, with electric submersible pumps. These will consist of two submersible bowl pump sets, each operating at a duty of 1,190 l/s at 9m head, and six submersible axial pumps from their Fish Friendly range, each of these deliver 3,045 l/s at 4m head. The project also includes the installation of a standby generator to increase the resilience of the station.

The catchment area is prime eel habitat but the Fish Friendly pumps will ensure that that station is fully compliant with the Eel Regulations of 2007 and the pumping station will no longer be a barrier to eel migration. In fact at over 20 cumecs the station will have the largest eel friendly output in Europe. Furthermore the eight pumps from Bedford Pumps will be interchangeable with other Environment Agency stations in the North West greatly improving station resilience and control.

Bedford Pumps were delighted to work once again in partnership with the Environment Agency and their framework contractors in order to provide 660 properties from the risk of flooding, as well as 11 km2 of grade 1 agriculture land.

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

Environment Agency battles with 1000 tonnes of alien invasive plant in Cambridgeshire

Environment Agency crews have been hard at work along the Ely Ouse and River Cam removing tons of Floating Pennywort.

Maintenance teams are more than half way through a 6-week programme, removing the invasive non-native species (INNS) to try to stop it spreading further.

Using floating weed harvesters and lifters, the Environment Agency teams have removed more than 1000 tonnes of wet cut invasive weed, while another team followed up behind, hand removing and spraying the smaller pieces of weed.

Floating Pennywort is normally found in tropical aquaria and garden ponds. It is, however, being found more and more in rivers across the country. It forms very dense mats of vegetation which can grow rapidly (up to 20 centimetres per day) out from the riverbanks.

These mats have the potential to cause serious problems for fish and anglers by suffocating fish and preventing access to the water. The plant also obstructs movements of animals and boats, restricting navigation and recreational use of watercourses.

Darren Trumper, Environment Agency Operations Delivery Team Leader said:

Floating Pennywort has become a major problem for us all in the River Cam and Ely Ouse.

Some of the Floating Pennywort mats we are removing from the riverbanks along the Ely Ouse are 22 metres long and 10 metres wide, and can be a depth size of about 30 millimetres. In one location the teams removed a mat weighing 1.7 tonnes!

An especially worrying factor in the infestation is the invasion of the River Cam Washes, which is a Site of Special Scientific Interest (SSSI) and crucial to all kinds of wildlife.

The rivers and its tributaries in our area provide the perfect breeding ground for Floating Pennywort which has formed dense mats. These block out oxygen and light in what was very good aquatic habitats for fish, and native plants. It also deprives birds and creatures from feeding from the waters.

Native to North America, Floating Pennywort is a fast growing invasive species of freshwater plant. It is widespread and well established in the south and east of England and appears to be spreading rapidly north and westwards.

As such, this makes it one of many high priority invasive non-native plant species in Great Britain.

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The freashwater Pearl and it's last remaining stronghold

Mechanical diggers have been working to help a rare freshwater shellfish in its last remaining stronghold in Wales.

The freshwater pearl mussel, which was once common throughout Europe, has its last remaining "viable" population in Wales on the Afon Eden, near Trawsfynydd.

Now workers for Natural Resources Wales are excavating areas of land close to streams that feed into the Eden to improve water quality – critical for the pearl mussels' survival.

They will create 11 settlement ponds to act as a natural filter for nutrients, pollutants and sediment before they reach the river.

Elain Gwilym, Project Officer at Natural Resources Wales said: *"After excavating we will be planting 10,000 plants which will act as filters and help the ponds blend in with the surrounding area.*

"One of the reasons freshwater pearl mussels have declined so much is because they are very sensitive to changes in water quality.

"This work will help redress the balance on the Eden and improve the habitat of this critically endangered species.

"And the work has other benefits because improved water quality will also help the fish and other wildlife in the river, whilst the ponds will become home to frogs and small mammals like voles."

Freshwater pearly live to be over 100 years old, making them one of the longest-lived invertebrates, and they can grow as large as your hand.

Pearls in Peril (PIP) is a Life+ Nature project with 22 partners working together to restore river habitats benefiting freshwater pearl mussel and salmonids in 21 Special Areas of Conservation (SAC) rivers across Britain.

In Wales the work is located within the Afon Eden catchment and led by Natural Resources Wales (NRW). Pearls in Peril (PIP) has a total budget of £3.5million.

Work completed on a new wetland at Potter


Aerial of the new wetland at Potter. Photo by William Moorfoot Ltd

A new wetland has been created to optimise the habitat for rare breeding bird including bittern and marsh harrier which require reedbeds for breeding and feeding.

William Morfoot Ltd, a leading land drainage firm in Shipdam, Norfolk, has completed the work for Norfolk Wildlife Trust, adding 100 acres of wetland, including 50 acres of reedbed between the River Thurne and Candle Dyke near Potter Heigham.

This project at Potter Heigham was initiated by the Environment Agency to compensate for the anticipated loss of European-designated reed beds on the East Anglian coast due to future sea level rise and coastal erosion. To compensate, a perimeter bank and ditches with water control structures were initially constructed in 2013 and 2014 near the River Thurne by Fen Group.

As additional internal works were required to the area, the company was appointed in August 2014 to further enhance the wetland habitat, which has since seen marsh harriers now using it for hunting, as well as sightings of barn owls and a long-eared owl.

Tim Sisson, Managing Director of William Morfoot Ltd *said: "We have successfully conducted works in wetland areas for numerous years. We were delighted when we were appointed by Norfolk Wildlife Trust and The Environment Agency to complete works at this important site in Potter Heigham."*

He added: *"There are huge sensitivities around a project of this kind. Careful planning and working incredibly closely with Norfolk Wildlife Trust and The Environment Agency has enabled us to enhance the natural habitat for these rare bird species."*

As part of the five-week project, William Morfoot Ltd created seven open areas of deep water at the Potter reed bed creation site which link up to the internal perimeter ditch. The deep water pools are essential as they provide a safe area for fish, which become prey for the bittern species. Over 25,000m³ of soil was excavated in order to create the pools which are up to 1.5m deep.

The resulting spoil was spread over the neighbouring land in thin layers or in some cases as low ridges. The pools are now deep enough to prevent establishment by reeds so should stay open for many years.

Broadwood Conservation Management have planted more than 40,000 reeds around each of the seven pools to create the ideal feeding habitat for the bittern species. The network of reed-filled ditches across the site will also aid in the spread of reeds to compliment the planting of the reed plugs, grown from Hickling reed seeds by British Wild Flower Plants, as the site wets up.

Nick Carter, Wetlands Project Officer at Norfolk Wildlife Trust said: *"The additional works carried out will really make the site attractive to feeding bitterns and creates large areas of open water. The creation of this new wetland will attract many additional bird species, not only the two target species of bittern and marsh harrier, but also bearded tit, water rail, reed, sedge and Cetti's warblers and little egrets."*

Bure Marshes restoration receives Heritage Lottery Fund grant

Restoration of wetlands at Bure Marshes National Nature Reserve (NNR) is a step closer thanks to a grant from the Heritage Lottery Fund.

Thanks to a grant of almost £69,000 from the Heritage Lottery Fund, Natural England and its partners are a step closer to restoring the wetlands of Bure Marshes National Nature Reserve (NNR) in the Norfolk Broads, back to their former glory.

The funding will be used to further develop the Hoveton Wetlands restoration project, which aims to restore two shallow lakes (broads) situated in Bure Marshes NNR.

Hoveton Great Broad and Hudsons Bay, along with an extensive network of dykes, are all currently in a poor condition. Nutrient rich sediment, deposited over the last century, has created shallow, turbid and algal dominated conditions leading to a loss of plant and aquatic wildlife.

Natural England is hoping to undertake works to improve water quality, providing an opportunity for the wetlands to return to their previous wildlife-rich state.

A comprehensive package of restoration techniques is proposed, including an innovative technique that pumps sediment into sausage-like geotextile tubes to create new fen habitat. This technology was pioneered locally by the Broads Authority who have already used it to create fen habitat at nearby Salhouse Broad.

As part of the development of the project, the Environment Agency has already undertaken extensive fish surveys of the lakes and University College London are completing a detailed study of the lakes' seed bank.

The project will also create new opportunities to view this part of the Broads without compromising the valued peace and tranquillity enjoyed by visitors. A canoe access route will be established and increased educational opportunities for children and adults will be created through an improved outreach programme and externally-accessible media.

If successful, the project is expected to transform the lakes and dykes, returning them to a clear water state with an abundance and diversity of water plants, some of which have not been seen in these broads for over 40 years. These in turn would support a whole variety of animals, particularly waterfowl and dragonflies.

Subject to planning permission and further funding, restoration works will be carried out over 5 years, between 2016 and 2021.

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