

# Water works: what else can the water industry model deliver?

## Roundtable discussion

22nd June 2016

Indepen is a management consultancy working with clients facing the challenges of regulation, deregulation, competition and restructuring. We help investors, boards and senior managers identify and assess political and regulatory risk and to develop and implement internal and external strategies to manage their exposure.

Our clients are the organisations involved in financing, constructing, managing and regulating built and natural infrastructure – water, energy, transport, land and property. We have constructive relationships with relevant government departments and agencies.

Our team combines experience of public policy, regulation, corporate finance, communication and engagement and organisational development. We complement this with input from our associates – CEOs and chairs of FTSE and privately owned companies, regulators, government ministers and academics.

The Indepen Forum provides the opportunity for investors, government and business leaders to debate, under the Chatham House Rule, issues that if mis-handled could undermine well-intentioned policy initiatives.

## Table of Contents

<b>1</b>	<b>The topic.....</b>	<b>1</b>
<b>2</b>	<b>The discussion .....</b>	<b>2</b>
2.1	Framing the debate.....	2
2.2	Governance .....	3
2.3	Funding and risk.....	5
2.3.1	New sources.....	5
2.3.2	Water company financing models and risk .....	5
2.3.3	Combined funds.....	6
2.4	Customers .....	7
<b>3</b>	<b>Conclusions .....</b>	<b>8</b>
<b>Appendix 1- Is it time to consider a wider role for water companies in flood risk management?.....</b>		<b>10</b>
<b>Appendix 2 – Catchments if you can: making better use of England’s catchment spending .....</b>		<b>13</b>
Tackling investment shortfalls in catchment management.....		13
How much is spent on catchment management? .....		13
Who controls the spending? .....		14
The scope for better co-ordination and allocation of spending.....		17
Co-ordination efficiency .....		17
Allocative efficiency .....		18
Conclusions .....		19
<b>Appendix 3 – List of roundtable participants .....</b>		<b>20</b>

# 1 The topic

Over recent years, politicians have become more convinced by arguments for a catchment-based, integrated approach to managing flood risk and the water environment.

Flooding is a risk to national resilience. Yet, between 2010 and 2013, capital and revenue expenditure fell by 18% and 10% respectively. In 2014, the Environment Agency updated its long term investment scenarios for flood risk and noted that to achieve optimum flood risk investment then current levels of expenditure, £750m per annum, would need to rise to a long-term average of £860m per annum in real terms.

Following recent floods, Government has increased funding, but shortfalls against assessments of long term needs are still predicted, particularly for ongoing maintenance. Attempts to attract funding to partnership mechanisms have met with some success, but the processes can take extended periods of time to negotiate and rely heavily on public sector funding, albeit from different sources.

Water companies provide an important part of society's response to flood risk. In England, the water companies spend around £1.2billion each year managing sewers and water customers see minimising the effects of flooding from sewers as one of their top priorities. Since the Water Act 2014, Ofwat has had a duty to further the resilience of water and waste water services.

The funding mechanisms put in place when the sector was privatised have created a degree of certainty for investors and transparency for customers. This was underpinned by the public service ethos of the water companies, which provide functions that are of fundamental importance to society, public health, the environment and the economy.

This begs the question of why flood risk management responsibilities were excluded from the privatised water companies' role, and whether the conditions are now such that the water industry could help with the increasingly challenging requirement of creating and maintaining flood risk management assets.

Indepen prepared a background note to stimulate thinking on this topic which is attached at Appendix 1.

We have recently carried out a project for Wessex Water, Southern Water and South West Water to explore how much is spent managing England's catchments, and who controls the expenditure. Appendix 2 presents the key findings from this, which include the following.

- Annual expenditure on catchment services in England is £13.4 billion
- In each of the 100 catchments across England, some 30 separate organisations exercise a degree of direction and control over 50 blocks of spending
- The silo-ed nature of expenditure leads to inefficiency. For instance, in one water company scheme, £280m of water customers' money is being spent to reduce sewer flooding risk to 1,700 properties with a benefit to cost ratio of <2:1, whereas with

available levels of resources publicly funded flood schemes on average have a ratio of 8:1.

Indepen invited a panel of experts from the world of flood and water policy, management, insurance, investment and regulation to debate these issues in roundtable format on the 22<sup>nd</sup> June 2016. The attendees are a listed at Appendix 3.

## 2 The discussion

### 2.1 Framing the debate

The chair began by asking the panel to consider whether the two questions proposed for debate were the right ones, or if they could be better framed:

- If water companies played a greater part in contributing to, or brokering, partnership funding for local flood schemes, would this be an improvement on current approaches?
- Would stakeholders accept water companies taking ownership of more flood risk assets, adding to their Regulatory Capital Value (RCV) to generate funding through water bills?

The panel agreed that, although it was easy to make an economic case for more flood risk investment, it would be politically difficult to move to a situation where water bills increased. The priority was to look for improvements that could be made without additional costs ideally while delivering wider benefits. Several areas might offer this potential.

- Some of the Pitt Review's recommendations about flooding have not been implemented, particularly those relating to new developments
- Flood risk is only one aspect to be managed within the context of a sustainable, resilient water system
- There is significant scope for more efficient co-ordination and allocation of the existing £13 billion of annual expenditure in catchments

The chair suggested that a better framing of the question for debate would be

- Using current delivery models, could water companies help to accelerate investment in flood risk management?

The panel moved onto to consider three aspects of this question.

- Governance
- Funding and risk
- Customers

## 2.2 Governance

Several panellists gave examples of how the Dutch approach to flood risk spending operated. Key features included a single catchment level of governance, with elected local officials who considered the multiple benefits available. Flood risk outcomes were typically one of four or five outcomes. Many complex and expensive schemes were backed even without a formal appraisal of costs and benefits, because of the clear contribution of the scheme to multiple benefits.

The panel noted the similarities of this to England's Regional Flood and Coastal Committees (RFCCs), which play a role in overseeing flood spending. These include elected local government officials and some have water company representatives. The relatively narrow focus of these committees might be widened to more of an integrated catchment focus. This could incorporate the roles of other Environment Agency advisory bodies such as river basin liaison panels and, the now defunct, Regional Environment Protection Advisory Committees (REPACs).

The debate observed that there was a gap in regional strategic planning. Regional Spatial Strategies never had the traction that many in local government wanted, but the interest in regional transport commissioners was evidence of a need to fill the sub-national planning vacuum.

The transport link introduced the question of the role of the National Infrastructure Commission (NIC). One panellist questioned whether the NIC would treat flood risk investment needs as a national priority, but most felt it was. Some said that the NIC and the Natural Capital Committee could recommend that flood infrastructure needs should be considered within a broader catchment context. Others hoped that this would emerge from Defra's 25-year environment plan.

Notwithstanding the national need for flood investment, the panel agreed that the level of governance for water would ideally reflect combined infrastructure considerations at a catchment level. Several panel members noted the recent debates around the role and identity of a catchment system operator to carry out such a role. A range of views were expressed on this.

- It should not be discharged by a water company. To give a company this role would run counter to the water industry regulation model which involves them assessing the best solution to deliver against an externally specified standard as efficiently as possible. Other parties might not actively participate in such a process.
- An 'environment commissioner' elected in a similar way to mayors and police and crime commissioners could be an option, but it would be difficult to align political and catchment boundaries. MPs have, in the past, operated as 'flood ambassadors' with varying degrees of engagement and success.
- RFCCs could be a good choice, provided they were not solely focused on flooding. They might also need to be given more specific duties to find the funding.
- The Environment Agency's role in catchment governance is complicated because of its combination of regulation and operational functions and it does not have responsibility for all of the issues that need to be considered.

- Markets are effective at encouraging efficient delivery. A market approach would still need an overarching view on the integrated outcome required in the catchment.

On this last point, the panel discussed Wessex Water's nitrate trading trials in the Poole Harbour catchment. Instead of building an asset solution to strip out its share of nitrate pollution entering the estuary, Wessex has set up a platform to give farmers the opportunity to offer a price for a change in their land management practices. These land management changes have been assigned a nitrogen reduction credit, approved with environmental regulators. Initial results suggest that Wessex can generate sufficient credits to achieve its nitrate reduction requirements for 25% of the total expenditure that it would incur for a traditional, asset solution. Farmers gain from having a commercial, rather than regulatory, agreement that generates a reliable cash flow.

The panel noted that with the right incentives, farmers could do many things to increase water storage and reduce flood risk. One member reported that the damage costs faced by one hectare of farmland was of the order of several hundred pounds whereas a hectare of flooded urban area faced damage costs of around £7 million. This was not seen as a licence to demand flooding of farm land, but more of an indication of the scope for beneficiaries to pay.

Some in the panel felt that if farmers were given the opportunity to make bids against a known asset solution, to help manage floods or water storage, then a more efficient solution could emerge. Others noted that the transferability of benefits from one location to another might easily apply for nitrate reductions but would be considerably less feasible for flood reduction. This part of the debate observed that the risk reduction from the £35 – 40 million barrage proposed for the River Parrett might be achieved more cost effectively in part by changing land management practices and allowing land to flood.

In considering a flood risk reduction trading market, the panel noted that risk of collusion would have to be considered as would compliance with the Reservoirs Act. One panellist raised the role of HM Treasury in enabling a market to emerge in this area, possibly by offering tax relief on investments made by land managers to pursue the resilience agenda.

On balance, the panel felt that Ofwat had become more minded to support traded, dispersed solutions than in the past, partly because of its resilience duty and partly because of the focus on outcomes. The outcome focus has been backed by the Environment Agency too. Some on the panel felt there were additional incentives that could be offered, such as allowing more creative use of Totex savings to fund innovative solutions.

Throughout the debate on governance, the panel agreed that the differing geographical, social and economic needs of catchments would mean that there can be no single approach to system operation. One panellist noted how difficult it was to get local authorities to consider upstream payment options as solutions to their flood risk, and very few considered the wider value of more stable water resource availability as an additional benefit. Experimentation needs to be encouraged, but with a focus on the catchment as a unit.

## 2.3 Funding and risk

Indepen's work on catchment spending (Appendix 2) had found that annual spending on catchment management in England was equivalent to £582 per household. One third of this spend was funded from water bills, the remainder from multiple public sources (28%) or from other organisations under the direction of a variety of public policies. The report concluded that there was scope for more effective allocation of this spend through better co-ordination and prioritisation. The report noted that, under current arrangements, around £1 billion additional annual expenditure would be required to meet Government's flooding and water environment policy objectives.

The panel covered the funding debate under three headings.

### 2.3.1 New sources

One participant noted that the increase in Insurance Premium Tax (IPT), used to part-fund the 2016 increases in flood spending, was perhaps a consequence of government frustration that the insurance industry had not come forward with new solutions. Others warned that the attractiveness of IPT as a funding source should not be overestimated as it was likely that higher prices would lead to lower uptake of non-compulsory insurance products. A further comment was that insurance companies make money from pricing risk, not necessarily from reducing it.

The panel generally agreed that water bill increases or new local taxes and levies would be politically unattractive, although one participant noted that the negative reaction to local council tax increases in Somerset, to fund the Somerset Rivers Authority, had quickly subsided. One participant felt that this was in part due to the transparent explanation of the increase as a separate line on the tax bill, akin to the approach used for explaining the contribution to police and fire authority budgets.

The panel recalled that there had been debate in 2004 and in the Pitt Review of the opportunity to charge developers a floodplain levy and that this had not been taken forward. Other possibilities such as section 106 contributions, Community Infrastructure Levy (CIL) and Business Improvement District contributions are available, but subject to competing demands.

Despite the interest and the likely net gain to society that new funding would offer, the panel agreed that the priority is likely to remain how to get better value out of existing sources of funds.

### 2.3.2 Water company financing models and risk

A panel member noted that a feature of the Dutch approach was the consideration of whole life costs (i.e. total expenditure over the lifetime of the asset) and the provision of cheap finance from a 'water bank' run by the water management authorities and thought that the water industry financing model in England might be used in a similar way.



One panellist felt that this would require a clear statement of responsibility and liability, plus the ability to pool sources of funds. This latter was needed to avoid any increase in the overall costs to households. The panel noted that even if mechanisms were put in place to keep the overall costs the same, it would not be attractive to redistribute costs onto the more vulnerable parts of society.

The addition of flood assets to Regulatory Capital Value (RCV) raises the issue of changed risks and responsibility which could affect water company financing costs. From an investor's point of view, the RCV model is well known and understood and it could work, provided there were well-defined rules. However, one prospective panellist (who could not attend on the day) noted that we could not rely on the RCV to outsource political risk. He raised the example of Drax to highlight the issues faced by debt and equity investors when government's position keeps changing.

Several panellists pointed out that the water companies have diverse views about the attractiveness of adding flood assets to their RCV. Some felt that the absence of a consistent view across the sector would cause difficulties. In particular, it would not be tenable for customers if they were affected by flood risk in catchments where one company wished to take a broader role in flood risk but the neighbouring company did not. However, in the main water company boundaries align with catchment boundaries.

### **2.3.3 Combined funds**

The trouble with models that combine funds is that funders may be averse to lose control according to one panellist. Even so, provided the boundaries of ownership can be agreed combined models can progress, as evidenced by flood partnership funding arrangements.

One aim of flood risk partnership funding is to combine budgets. It has enabled local communities to put forward schemes that would otherwise not have been funded. The Government hoped that the scheme would attract more private funding, reflecting the resilience dividend that arises when areas receive greater flood protection. There has been limited success in this regard. The panel did not conclude why this was the case, but some did note the political risk of imposing any perceived burden on property developers.

One panellist recalled that the original name of the partnership funding scheme was 'payments for outcomes'. Adopting this thinking might help to reframe the debate around all catchment services, not just flooding.

The panel felt that the time was right to consider evolving the partnership funding model and that water companies could accelerate this evolution. This would be likely to require water companies to contribute to a partnership funding pool, which would require general customer support. Some panellists saw this as problematic, as not every water customer would benefit from the schemes. Others noted that water bills contain numerous cross-subsidies already, including payments for the costs of local highway drains which should, in theory, be met via council tax. A counter-argument was made to the effect that many schemes would protect catchment-wide infrastructure (for example, roads) and so all water customers would benefit. Another point made was that even a small shift by an organisation

as significant as a water company would create pressure for contributions from other sources – sometimes behaviour change was more important than the immediate outcome.

One panellist suggested that Totex savings could be used to contribute to a catchment fund, with the aim of delivering wider benefits in more innovative ways, instead of being used to reduce future bills. Companies could explore how infrastructure charges from developers could be used to create a funding pool for catchment infrastructure.

The panel highlighted Local Economic Partnerships (LEPs) as important agents in the funding debate who could help to mobilise efforts to combine funds. It was noted that the impacts of flooding at a household level are well documented but the disruption to small businesses and the consequent losses of productivity are less visible. One panellist felt that LEPs with the best strategic plans recognised the need for resilient infrastructure to attract investment, so the idea of building a partnership to combine funds to reap a resilience dividend would potentially be attractive. Again, it was noted that the preferred solution would be affected by regional geographies and regional economics, including the type of procurement/partnership model that LEPs might wish to consider.

## 2.4 Customers

Although Ofwat has its resilience duty, and water companies have a duty to ensure they effectually drain their service areas, general flood risk management is not an explicit duty of either. Ofwat is not in a position to mandate water companies to take on a wider flood risk role but, provided a benefit to water customers can be demonstrated, the panel felt that water companies could make proposals to Ofwat if they had customer backing.

The panel noted that customers experienced flooding as a general phenomenon and sometimes the mechanism of flooding was complex. In these situations, customers want a reduced flood risk and solving just one part of a problem may not give the outcome that customers think they have paid for. It was thought that customers could and would support resilience schemes that affected one part of a region affected by a resilience risk, on the understanding that their own risks would be treated in a similar way in future years. Severn Trent's customer research into its Birmingham resilience scheme revealed strong 'willingness to pay' support from customers in other cities in its supply area.

The panel felt that customer engagement would be important to justifying any wider role, including clear explanation of why the water company was not the lead or solely responsible authority. The scope of flood risk management is wider than just assets, said several panellists. Flood forecasting, warning and emergency response are completely different aspects and any debate would need to address the issue of responsibilities and consequences in the event of a flood occurring around an asset supported by a water company.

Customers as citizens within a community was another notion discussed by the panel. If water companies engage with communities about how they place demands on infrastructure, and to provide more opportunity for customers to be compensated for reducing this demand, then more innovation would be possible. In this context the chair

described a PhD thesis that is looking at the possibility of using a network of rain butts with intelligent sensors that would empty butts before storms, to create additional storage capacity.

Several on the panel felt that customers and communities would differ in their appetite for enhanced resilience, and that resilience encompassed the ability of communities to recover from incidents. They felt that water companies could help customers see all the different ways they paid for resilience and what the benefits might be from different approaches, including community actions.

## 3 Conclusions

National investment in flood risk management infrastructure is rationed and the average return on investment for flood schemes exceeds 8:1. It is easy to make an economic case for more investment in flood risk infrastructure, but a more realistic approach needs to focus on improving the outcomes from existing funds.

The roundtable considered the following question:

- Using current delivery models, could water companies help to accelerate investment in flood risk management?

The conclusions of the debate, supported by the panel with varying degrees of unanimity, were as follows.

### **Governance**

- Bringing together the parties that control flood risk management and catchment spending will create opportunities to improve outcomes. The ideal framework for such an amalgamation would be a broad set of economic, social and environmental objectives to be achieved from catchment infrastructure, not just a narrow focus on flood risk reduction.
- Water companies can display leadership in this area, provided they do not seek to take control of all the spending.
- Geographic and local economic needs vary widely. This will influence approaches to building partnerships for resilience. Many pilot schemes will be needed and frameworks to experiment must allow variation, as any solution will be place specific.
- The regulatory frameworks for water companies do not create barriers to them exploring wider roles in catchment management, provided these link to the outcomes of integrated river basin management. There is some scope for Government and regulators to give more support on appropriate engagement requirements to encourage companies to explore such options with their customers.

### **Funding**

- The flood partnership funding model is ripe for evolution, perhaps in line with a return to its originally proposed name as a 'payments for catchment outcomes' system. This would provide a helpful focus for water companies to explore.

- There is scope to explore market solutions, looking at how best to capture and share the costs and benefits of alternatives to asset solutions, valuing the wider natural capital value in the catchment. This would stimulate more parties to take part, generating innovation and efficiency.
- Local economic partnerships (LEPs) will be interested in growth opportunities that arise from a resilience dividend. Exploring this concept could generate greater impetus to combine funding sources for better outcomes.
- The Wessex trading platform, being trialled to fund more efficient nutrient reductions in the Poole Harbour catchment, is a model that could be adapted to trade a variety of catchment outcomes, including reduced flood risk. However, the increased importance of the location of any flood risk mitigation action could be a limitation.

### **Customers**

- Working with their customers and regulators, water companies can devise governance arrangements that assure the value of proposals to support innovative spending in catchments.
- Water companies could help customers to explore a wider set of choices around resilience, highlighting the full range of solutions and funding that could be used.
- In the longer-term, there could be an opportunity to use water companies' access to cheap finance to reduce the costs of flood risk management solutions. This would help spread infrastructure costs across generations. Such a step would require a more thorough examination of different models to apportion risk and responsibilities, the areas for piloting suggested by the panel would be relevant to this.

**Indepen  
July 2016**

# Appendix 1- Is it time to consider a wider role for water companies in flood risk management?

## Under-investment in flood risk management - parallels with water services infrastructure before privatisation?

Despite recent increases in spend, the history of flood risk management over the past decade has been of underinvestment relative to the economic returns that could be achieved. This is true even with regard to current conditions and applies even more so if the consequences of climate change are taken into account. Studies have suggested that floods spend would have to rise by between £50m - £150m per annum in real terms over a 40-year horizon to maintain current levels of risk.

**Figure 5 – Total FCERM Expenditure 2005/06 to 2015/16 (£m)**

	Total	5-Year Period	Total Real Terms	5-Year Period
2005/06	508.7	2,716.1	628.3	3,172.0
2006/07	506.9		609.5	
2007/08	499.8		583.9	
2008/09	567.6		646.9	
2009/10	633.1		703.4	
2010/11	670.1	3,228.1	724.4	3,366.7
2011/12	572.9		608.5	
2012/13	576.3		602.4	
2013/14	606.2		620.8	
2014/15	802.6		810.6	
2015/16	695.3		n/a	

Figure 5 shows that Central Government invested more than £3.2 billion in FCERM over the five years from April 2010 to March 2015. This includes additional funding announced on 6 February 2014 (£130m, split £30m 13/14, £100m 14/15) and in the Budget on 19 March 2014 (£140m, split £80m 14/15, £60m 15/16), in response to the flooding in winter 2013/14. Real terms figures are shown in 15/16 prices, using HM Treasury's GDP Deflator.

The marginal benefit cost ratio of flood defence projects has typically been in the range of 6:1 to 8:1. Typical internal rates of return on marginal flood projects might be in the order of 35%. Investment has been constrained by public expenditure limits, which also means that despite recent moves to long term contracting floods investment has suffered from a 'stop start' funding regime. This has been affected by spending reviews and the tendency of expenditure to jump up after a major event and fall back thereafter. This is true of capital expenditure and even more so of maintenance.

Floods have to compete for capital with more immediate transport schemes, even though a typical road scheme might have a benefit cost ratio of 2.5:1, with rail perhaps 1.5:1.

One reason for this is uncertainty as to when flood risk management benefits will be seen. While the time savings from road and rail investments will be felt as soon as the schemes open, practical savings from a new flood defence may be decades away. While studies show that congestion is a major detriment to UK growth and the supply side of the economy,

flood is an economic issue only in as much as the costs need to be insured and through one off sub regional dislocation. Finally, while the marginal road and rail schemes still benefit large numbers of people, many flood schemes benefit small communities: the economic benefit of defending against flooding in London having justified considerable spend in the form of the Thames barrier.

The parallels with water in the 1980s are marked. Then too there had arisen a systematic pattern of underinvestment. CAPEX had halved between 1974 and 1982 and had not recovered by 1986, when the National Economic Development Organisation (NEDO) highlighted the need for investment. This was most apparent in waste water – like flood defences, a poor relation in government capital allocation, and again like floods an area where in any one year there was a credible trade off to be made by skimping capex now at the expense of future generations.

The Thatcher Government accepted the NEDO analysis and this led to privatisation. Investment in the 6 years following was £17bn, compared to £9.3bn in the 6 years before. In effect, the 35% return required as a matter of policy on public expenditure on floods can be massively undercut by private capital, which will be happy with much lower returns than this.

### **The rationale for removing flood defence responsibilities from water authorities at privatisation no longer applies**

During the mid-1980s, when Government first actively considered water privatisation, the regional water authorities had responsibilities for land drainage, flood defence and a range of “public good” services relating to water resource management, pollution control, recreation and fisheries. This was as a consequence of the 1973 Water Act, which re-organised regional water authorities with an aim of establishing integrated river basin management.

Some regional water authorities argued for the creation of a privatised entity that retained all their existing duties. However, at an early stage, Government excluded land drainage and flood defence from a future model. Reasons have been put forward to explain this exclusion<sup>1</sup>.

- MAFF were developing legislation that would significantly reform land drainage and flood protection arrangements and felt that privatisation would hinder this process
- Flood defence and land drainage were deemed public goods that could not generate revenues – hence their inclusion would not be attractive to prospective investors.

Since the passing of the Land Drainage Act (1991), and MAFF itself, the first of these concerns no longer applies. The arguments around the “public good” nature of flood defence provision have also moved on.

---

<sup>1</sup> See, for instance, *The official history of privatisation*, Volume II, David Parker (2012)

## **The flood risk partnership model encourages private payments for public goods**

Since April 2012, the Environment Agency has operated the Flood and Coastal Erosion Resilience Partnership Funding model, a new scheme for allocating funding to specific projects. It aims to encourage non-Government sources to provide funding for flood defence schemes. The proportion of central funding that a project receives will depend on the benefits it will bring. The Agency noted that *"instead of meeting the full costs of a limited number of schemes, the partnership funding approach means that government money can help meet the costs of any worthwhile scheme [...] As a result, more schemes are likely to go ahead than under the previous 'all or nothing' funding system"*. The amount of money that the Government will allocate to a scheme is based on the numbers of households protected, the damages to be prevented and other benefits the project would deliver.

The rationale for the introduction of partnership funding is summarised in Defra's 2013-14 review of the model's success:

- The Pitt Review and the 2010 Flood and Water Management Act identified the need for more extensive flood protection which cannot necessarily be resourced centrally
- With the majority of costs being met by the taxpayer, there is little incentive for local innovation to achieve multiple benefits.
- The 'all or nothing' basis of funding meant that many high benefit schemes, but below the threshold created by capital rationing, were not funded.
- Previous system provided limited local choice, and a lack of transparency and certainty for local communities.

In 2013, the Environment, Food and Rural Affairs Committee report into Managing Flood Risk expressed doubt that private companies would make a significant contribution to partnership funding without regulatory acknowledgment. As one of their conclusions arising from this, they noted

- We regret that the current regulatory framework does not permit innovative investment in natural flood defences by water companies and expect Ofwat's next Price Review to rectify this.

There remain significant challenges to applying a water solution to floods, most notably how to create a revenue stream and a rate of return, and the need for this to work for very diverse range of water company financing structures.

# Appendix 2 – Catchments if you can: making better use of England’s catchment spending

## Tackling investment shortfalls in catchment management

The water environment - its quality, quantity, drainage characteristics and the wildlife it supports - is intimately affected by activity in its catchment, the area of land through which water drains.

We have defined catchment management as the combination of funding decisions, asset investment, advice provision, land use management and asset operation that shapes how society uses land and water to

- manage drainage and flood risk
- secure the availability of water for human use
- protect and restore the natural capital of the environment.

Government and its agencies have analysed the gap between current spending plans and the spending required to meet policy objectives in the areas above, using existing arrangements. Based on figures current in 2015, they concluded that there is a shortfall in spending in England of around £1 billion each year.

- £150 million per annum to maintain current levels of flood risk in the long-term
- £290 – 620 million per annum to maintain water supply and sewerage infrastructure resilience<sup>2</sup>
- £700 - 800 million per annum required to meet Water Framework Directive objectives

This report investigates whether these shortfalls could be addressed by a more effective allocation and co-ordination of the wider spending on catchment management.

## How much is spent on catchment management?

Following debate with stakeholders, Indepen defined two broad types of catchment management expenditure.

- Direct - Spending with a primary aim of protecting and improve England’s water and land environment. Indepen estimates spending on this to be £7.7 billion per annum.
- Indirect – Spending in a catchment to manage water for the benefit of society (for example, drainage, flood risk and water supply) where the amount spent could be

---

<sup>2</sup> Section 3.3, *Cumulative impact of regulation & policy on future water bills*, Defra, July 2015



reduced by actions to enhance the natural function or reduce demands on the catchment. Indepen estimates spending on this to be £5.7 billion per annum.

Indepen’s analysis of the total £13.4 billion annual spending in these two areas is given below.

<b>Annual spending on England's catchments (£m) - by purpose</b>				
Purpose	Total England (£m)	Total Southern Water region (£m)	Total South West Water region (£m)	Total Wessex Water region (£m)
<b>Pollution control and enhancing natural capital of land</b>	<b>7,653</b>	827	533	496
Rural land management	2,444	361	292	167
Water company - sewage treatment	1,877	174	100	116
Pollution control	1,831	157	60	111
Green infrastructure	761	67	24	45
Conservation management	354	35	31	30
Catchment regulation	302	30	18	25
Green growth	84	4	8	3
<b>Flooding, drainage and raw water for supply</b>	<b>5,699</b>	453	223	287
Water company - drinking water collection and initial treatment	1,389	59	63	46
Flood damage	1,280	112	39	74
Water company - sewers and drains	1,195	134	55	66
Drainage and irrigation	931	78	25	53
Inland flooding - capital	412	31	24	17
Inland flooding - operations	230	24	12	17
Research	165	14	5	10
Inland waterways	97	-	-	3
<b>Grand Total</b>	<b>13,353</b>	1,280	755	783

## Who controls the spending?

The Environment Agency has defined just over 100 major water catchments in England. In each of these catchments, typically 30 organisations manage 50 blocks of funding, under the guidance of around 20 coordinating plans or mechanisms.

<b>Organisations and plans that direct catchment expenditure</b>	<b>Outline of role</b>
Defra and its arms-length bodies, 34 across England	Defra’s arms-length bodies operate independently using Defra budgets to make their contributions to the overall Defra plan. The primary bodies are the Environment Agency (flood risk, water resource management, pollution control and regulation), Natural England (land management) and the Rural Payments Agency (EU payments to farmers).
Local authorities, 353 across England	Local authorities control expenditure on highways drainage, local flood defences, green spaces, climate change adaptation and areas of development planning aimed at improving green space and environmental infrastructure.

<b>Organisations and plans that direct catchment expenditure</b>	<b>Outline of role</b>
Catchment partnerships, circa 100 across England	Part of Defra’s catchment-based approach policy initiative, these partnerships co-ordinate local voluntary action within catchment, largely involving organisations and projects from the third sector. Defra provide funds to support the administration of the partnerships and sharing of best practice.
Catchment Sensitive Farming farmer groups, 75 priority catchment areas within England	Catchment Sensitive Farming is another Defra policy initiative, this time involving officers in Natural England offering training and advice to farmers on prevention of diffuse water pollution from agriculture. This includes advice on making applications for agri-environment grants.
River Basin Liaison Panels and River Basin Management Plans (RBMPs), 10 across England	The panels are non-statutory groups created by the Environment Agency that bring together key stakeholders affecting the management of the river basin in order to advise the Agency on the preparation and delivery of the statutory RBMPs.
LEADER Local Action Groups, 80 groups across England	Local Action Groups (LAGs) are local authority led groups that manage their portion of the £138 million LEADER budget allocated to England for 2015-2020. Each LAG decides which projects they will fund in their area. This depends on their priorities but all projects must support one or more of the 6 LEADER priorities
Customer Challenge Groups, 19 groups across England	Customer Challenge Groups (CCGs) were established for the PR14 process to provide challenge to water companies’ business plans. The CCG should ensure that local and regional issues are properly considered and that the views of the company’s entire customer base are taken into account.
Regional Flood and Coastal Committees, 12 across England	RFCCs are statutory bodies that work with the Environment Agency by bringing together members appointed by Lead Local Flood Authorities (LLFAs) and independent members with relevant experience. One of their core purposes is to promote efficient, targeted and risk-based investment in flood and coastal erosion risk management that optimises value for money and benefits for local communities.
Flood Risk Management Plans (FRMPs), 10 across England (one for each River Basin District)	The first FRMPs were due to be published by the Environment Agency at the end of 2015. FRMPs describe the risk of flooding from rivers, the sea, surface water, groundwater and reservoirs. They set out how Risk Management Authorities (RMAs) will work together, with communities, to manage flood risk and are important for delivering the aims of the National Flood and Coastal Erosion Risk Management Strategy for England.
Water abstraction groups (WAGs), 6 groups formed within England, others in development	As a response to developments in water and environmental regulation which placed new boundaries on water use in agriculture, since the 1990s a number of farmer “water abstractor groups” have formed, with the general aim of defending their rights to access a “fair share of water”.
Internal drainage boards (IDBs), 111 within England	Internal Drainage Boards (IDBs) are an integral part of water level management in the England. Each IDB is a

Organisations and plans that direct catchment expenditure	Outline of role
	local public authority established in areas of special drainage need in England. Their boundaries are determined by physical, not political, attributes. They have permissive powers to manage water levels within their respective Internal Drainage Districts. They undertake works to reduce flood risk to people and property and manage water levels to meet local needs.
Countryside stewardship statements of priorities, 159 across England, one for each landscape character area	These statements prepared by Natural England with the Environment Agency and Forestry Commission England map out the local priorities- in areas such as biodiversity, woodland planting, water quality, landscape and flood risk - that will inform assessment of funding applications.
Countryside Stewardship facilitation fund, £7.2m from 2015-2020 across England	This funding will pay for activities such as the costs of facilitation and training to deliver the environmental priorities set out in the Countryside Stewardship statements of funding priorities, 19 successful applications were funded in 2015.
Catchment flood management plans, 71 across England	The Environment Agency's Catchment flood management plans (CFMPs) consider all types of inland flooding, from rivers, groundwater, surface water and tidal flooding. CFMPs help the Environment Agency and their partners to plan and agree the most effective way to manage flood risk in the future.
Local Enterprise Partnership (LEP) EU structural and investment funds (ESIF) strategies, 39 across England	Each of the 39 LEP areas across England were asked to develop local ESIF strategies outlining how ESIF will be spent locally as part of the LEPs' wider Strategic Economic Plan (SEP). Around 5% of the regional development fund allocation to England is targeted at promoting climate change adaptation or preserving and protecting the environment.
Nature Improvement Areas, 12 within England	Nature Improvement Areas (NIA) were established to create joined up and resilient ecological networks at a landscape scale. They are run by partnerships of local authorities, local communities and landowners, the private sector and conservation organisations.
Areas of Outstanding Natural Beauty (AONB) Partnerships, 34 wholly or partly in England	The primary purpose of the AONB designation is the conservation and enhancement of natural beauty. Through the AONB partnerships/conservation boards, many different organisations and individuals contribute to fulfilling this purpose, alongside the dedicated staff teams.
Un Biosphere Reserves, 2 in England (North Devon and Brighton and Lewes Downs)	UN Biosphere Reserves are established by individual countries within a UNESCO programme (Man and the Biosphere) to promote sustainable development based on local community efforts and sound science. One of the aims of achieving international Biosphere status is to create an integrated framework for conservation and sustainable development policies and initiatives, including linking up urban and rural areas.

## The scope for better co-ordination and allocation of spending

### Co-ordination efficiency

In both healthcare and wider local authority social services, government has advocated arrangements to better co-ordinate fragmented budgets.

The creation of the Better Care Fund in 2014, an initiative to pool existing budgets across health and social care boundaries, was based on benefits observed from 16 initiatives piloted and evaluated between 2010 and 2012. Other experiments from combining local authority social services budgets showed that significant efficiency gains could be achieved, of the order of 8%.

Given that the situation in catchment spending is substantially burdened with administration, duplication and co-ordination, a gain of this magnitude would not appear to be unrealistic.

The average value per household of catchment management expenditure is £582 per year. Almost 28% of this is funded from public sources (general taxation, council tax and developer contributions, European grants) and around 33% comes from water customer bills. The remainder is funded from insurance and private sector costs that are recovered through the prices of goods and services.

Spend Area	Public - central (£m)	Public - local (£m)	Public - EU (£m)	Third Sector (£m)	Private (£m)	Total England (£m)
<b>Pollution control and enhancing natural capital of land</b>	<b>369</b>	<b>740</b>	<b>1,013</b>	<b>196</b>	<b>5,329</b>	<b>7,653</b>
Rural land management	57		966		1,420	2,444
Water company - sewage treatment	40				1,837	1,877
Pollution control	11				1,814	1,831
Green infrastructure	21	740				761
Conservation management	158			196		354
Catchment regulation	81		5		216	302
Green growth			42		42	84
<b>Flooding, drainage and raw water for supply</b>	<b>644</b>	<b>968</b>			<b>4,088</b>	<b>5,699</b>
Water company - drinking water collection and initial treatment					1,389	1,389
Flood damage					1,280	1,280
Water company - sewers and drains					1,195	1,195
Drainage and irrigation		845			86	931
Inland flooding - capital	253	110			49	412
Inland flooding - operations	217	13				230
Research	120				45	165
Inland waterways	54				43	97
<b>Grand Total</b>	<b>1,012</b>	<b>1,708</b>	<b>1,013</b>	<b>196</b>	<b>9,417</b>	<b>13,353</b>

There are a number of approaches to pooling resources in catchment services that already exist, both formal and informal. For example

- Defra and the Environment Agency's flood risk and coastal resilience partnership funding model. This creates a framework for providing some central funds for schemes that do

not meet benefit to cost thresholds, provided that other local beneficiaries make a contribution. The scheme has been operating since 2012 and has attracted additional funds, but largely from other government funding sources such as Growth Deals.

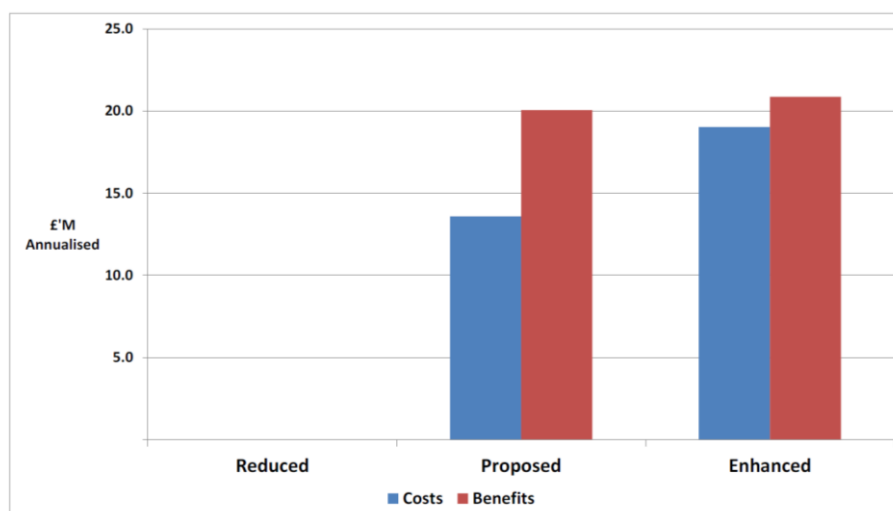
- Water company and local authority joint-working to tackle misconnections as part of a more cost-effective approach to achieving bathing water compliance.
- Pooling of Community Infrastructure Levy payments by multiple local authorities to offset risks of damage to Habitats Directive sites caused by growth.

There are other examples from the social care sector and overseas which offer learning opportunities.

- Great Western Capital is a charitable organisation that combines various charitable funding sources and social impact bonds to fund integrated social care outcomes.
- In Lake Taupo New Zealand, a nutrient trading market was created to combine pools of catchment service buyers and sellers, protecting a high value natural resource.

## Allocative efficiency

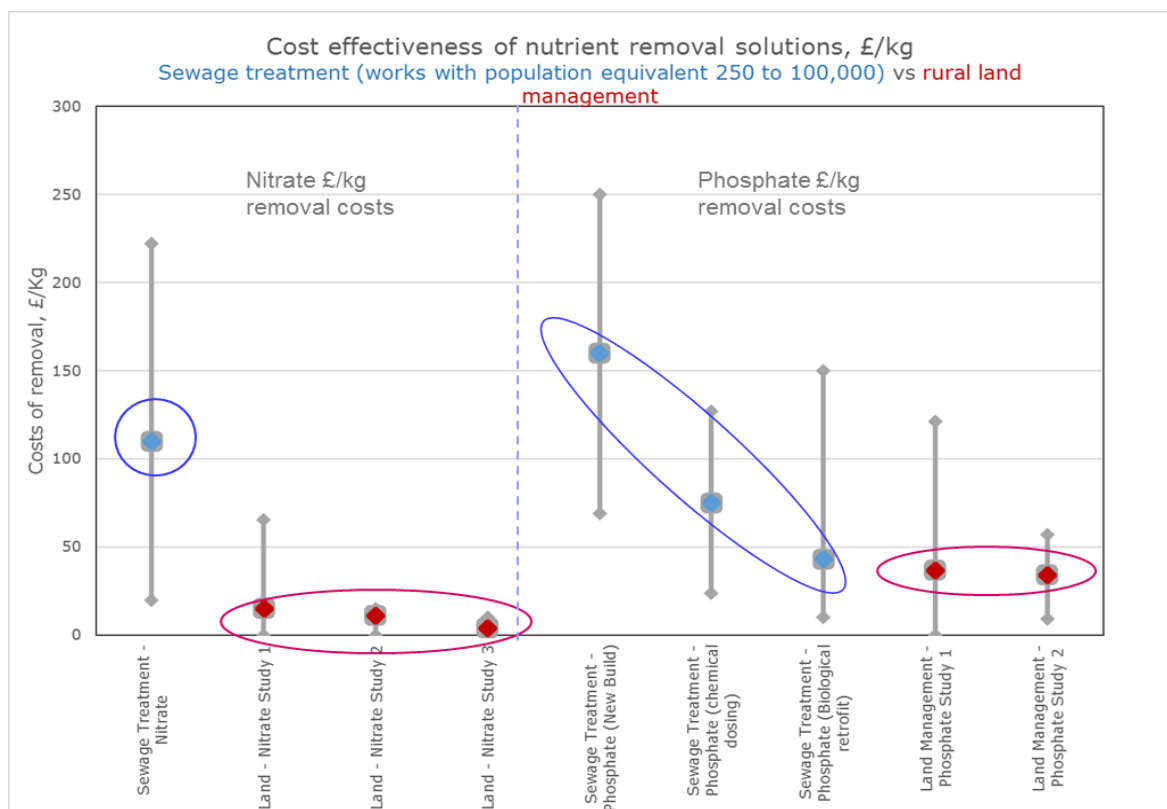
The typical benefit to cost ratio of flood schemes funded entirely from central government flood funding averages at 8:1. In contrast, some major water company sewer flooding programmes give benefit to cost returns of less than 2:1, on expenditures of around £300m, an example from one water company's PR14 programme analysis is given below.



Water company's face pressure to upgrade sewage treatment works to reduce phosphate and nitrate. The unit costs of removing these nutrients can be considerably cheaper at a catchment scale (£/kg of nutrient removed) by paying for land management changes.

In 2014, a research study in the Upper Thames sub-catchment estimated it would be 80% cheaper to achieve compliance with WFD phosphate standards in the catchment by using

land management measures rather than by sewage treatment works upgrade.<sup>3</sup>



## Conclusions

Better allocation and co-ordination of spending in catchment management could

- give better value to water customers – the equivalent benefits of outcomes from pollution control and sewer flooding schemes planned in PR14 could have been achieved for several £100m less with catchment management solutions
- protect the rural economy – catchment management solutions can offer another source of commercial revenue to farmers facing uncertain market conditions
- address the £1 billion annual shortfall in spending required to deliver Government’s flood and water policy objectives – better co-ordination of public sector spending might yield efficiency gains of 8%, the approximate value of the shortfall in catchment management spending required to meet these objectives.

Water companies manage the largest single source of catchment spending. They can lead the way with innovative proposals for catchment management co-ordination, provided they have informed support from customers and regulators provide the incentives.

<sup>3</sup> Adaptive strategies to mitigate the impacts of climate change on European freshwater ecosystems, Deliverable 6.12, REFRESH, 2014

# Appendix 3 – List of roundtable participants

## Chair

Prof Paul Leinster CBE	Cranfield University	Professor of Environmental Assessment
---------------------------	----------------------	---------------------------------------

## Participants

Name	Organisation	Role
David Elliott	Wessex Water	Director of Group Strategy and New Markets
Patrick Spain	Severn Trent Water	Head of Asset Strategy
Rob Scarrott	South West Water	Open Water Programme Manager
Stephen Almond	Defra	Head of Economic Regulation and Sponsorship, Water Services
Innes Thomson	Association of Drainage Authorities	Chief Executive Officer
Tony Smith	Consumer Council for Water	Chief Executive Officer
Aidan Kerr	Flood Re	Chief Operating Officer
Hannah Bartram	Association of Directors of Environment, Planning and Transport (ADEPT)	Chief Operating Officer
Diane Mitchell	National Farmers Union	Chief Environment Adviser
Daniel Johns	Committee on Climate Change	Head of Adaptation
Baroness McIntosh of Pickering	House of Lords	Co-Chair, All Party Parliamentary Water Group

## Indepen

David Baxter	Indepen	Partner
Martin Hurst	Indepen	Associate
Angie Hughes	Indepen	Executive Assistant