



Environment, Food and Rural Affairs Sub-Committee

Oral evidence: [Future Flood Prevention](#), HC 115

Wednesday 29 June 2016

Ordered by the House of Commons to be published on 29 June 2016.

Written evidence from witnesses:

- Dr David Pirie, Executive Director, SEPA
- David Porter, Chief Executive, Rivers Agency, DAERA
- [Jeremy Parr, Head of Operational Risk Management, NRW](#)
- [Peter Simpson, Chief Executive, Anglian Water](#)
- [Dr Stephen Bird, Managing Director, South West Water](#)
- [Jo Harrison, Asset Management Director, United Utilities](#)
- Dr Adam Comerford, National Hydrology Manager, Canal & River Trust

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Members present: Mr Neil Parish (Chair), Chris Davies, Jim Fitzpatrick, Simon Hart, Dr Paul Monaghan, Rebecca Pow, Ms Margaret Ritchie, David Simpson

Questions 473 - 594

Witnesses: **Dr David Pirie**, Executive Director, SEPA, **David Porter**, Chief Executive, Rivers Agency, DAERA, and **Jeremy Parr**, Head of Operational Risk Management, NRW, gave evidence.

Q473 **Chair:** Gentlemen, thank you very much for coming to our inquiry on floods and floods resilience. It is great to have the nations of the United Kingdom here this afternoon. If you would like to introduce yourselves, then we will get down to business.

Oral evidence: Future Flood Prevention, HC 115

Jeremy Parr: I am Jeremy Parr, the head of flood risk management at Natural Resources Wales.

David Porter: I am David Porter, the chief executive of the Rivers Agency in Northern Ireland, the statutory flood defence authority for Northern Ireland.

Dr Pirie: I am David Pirie, director for evidence and flooding at the Scottish Environment Protection Agency.

Q474 Chair: Thank you very much. I will start with the first question. Naturally, this afternoon we are quite interested in drilling down on how you deal with floods in your particular nations and where we can learn best practice. How were your nations impacted by last winter's floods? Who wants to start? Scotland probably had the most, or was it Northern Ireland? I am not sure; it was probably a bit of both. Wales never gets any flooding, does it?

Dr Pirie: You obviously know that last winter's floods were exceptional. It was the wettest winter that we have had on record and the most significant events in over 20 years. It did result in significant flooding across the country. We had over 1,000 properties affected. It could have been a lot worse. That figure could have been doubled, apart from the recent schemes that have been built and put into place that protected a lot of properties. To give you a sense of the scale, the River Dee at Park recorded its highest level by 1.3 metres—that is quite a high level—in over 87 years. These were really quite exceptional floods. We issued over 2,400 flood alerts and flood warnings over the two-month period. To give you some sort of perspective, that is approximately the number that we would issue in a full year, so it really was quite exceptional.

The most interesting thing was that it was a succession of events that came one after the other. It really stretched us across the whole country. We had events happening down in the very south-west, then moving over to the Borders, up in Tayside and then in the north-east. It was the geographic extent and the length of the time that were really the exceptional elements.

Q475 Chair: If you need extra pumps and things, do you dare to cross the English border to get any of those or not?

Dr Pirie: That is getting into our roles and responsibilities. The Scottish Environment Protection Agency is the lead co-ordinating authority for flooding in Scotland, but we actually do not do the hands-on defences of deploying pumps and constructing and maintaining defences. We work very closely with local authorities, the police and the fire brigade in providing them with advice and information so that they can take those actions. There are good regional resilience-type groups that allow support between different regions within Scotland. It was geographically dispersed for a long period of time and it was that which caused us—

Q476 Chair: You have vast distances to travel as well, haven't you?

Dr Pirie: Yes.

David Porter: I will take you to Northern Ireland and give you an answer in two parts: first, to tell you how the draining systems reacted; and secondly, to explain a little bit about the impact. There are two different aspects that we need to focus on. In essence, we had a rain event that was constant over a prolonged period of time with very, very intense spikes within that. That caused a lot of our big rivers initially to react, particularly through towns such as Omagh and Strabane, where we had exceptionally high water levels. That then followed on as the water drained from those catchments. We have two main loughs within Northern Ireland, Lough Erne and Lough Neagh, and both experienced exceptionally high water levels. In public we were saying that Lough Neagh was at a 40-year high, because we could quickly get to 40 years of records and check them very, very quickly. We did more detailed analysis after the event, and the information we now have shows that it was actually at a 97-year high. There were exceptionally high water levels in Lough Neagh and very high water levels in Lough Erne—not quite as extreme, but still very, very high.

Similarly, as was described, there was a very prolonged flood event in terms of our response. We were basically operating 24 hours a day, seven days a week for a seven-week period, including Christmas day, Boxing day and new year's day. It was a very intensive time for the staff and I have many examples of staff putting aside their plans and going the extra mile. Particularly over the holiday period, we had people coming in off leave. We had people who had friends home to celebrate Christmas, and they left them in order to man the pumps and then went back to them after doing a day's work. I have many examples of how effective the multi-agency response was within Northern Ireland.

In terms of the impact, in some ways we were quite fortunate that the rain events impacted predominantly in the west and towards the south of Northern Ireland. Those areas are relatively sparsely populated and they also have a relatively low flood risk—we have managed to keep properties out of floodplains. Because of that, we had relatively small numbers. In fact, we probably had about 100 properties and dwelling houses that were impacted, and about 35 business properties, but huge swathes of agricultural land was also impacted.

Q477 Chair: How long was the land under water for?

David Porter: In and around the loughs, land was under water for up to about five weeks. We had some experts who advised us that grass will recover up to about 14 days. When you go over that 14-day threshold, you start to see significant impacts, and we are seeing that.

Q478 Chair: It helps when it is in the winter and not the spring and summer, but it still affects it, doesn't it?

David Porter: Absolutely.

Q479 Chair: Have you found that that land has recovered?

David Porter: Elements of it have, and anecdotally we are getting some feedback that the deposition of silt is as good as any fertiliser. That is one positive, but equally we are hearing from other farmers who are saying that their land is very black and that they do not see regeneration or regrowth of that grass. The other noteworthy aspect is that there was other material within the floodwater that has been left behind, particularly plastic bottles and floating material. If you have land that floods, this material is within the water. When it goes away, all that stuff gets caught in grassland and hedges. That is something that a number of farmers have raised with us: a significant amount of waste has been deposited on their land as a result of the floods.

The last aspect relates to our infrastructure. We were pleased that our significant flood defences, through places such as Omagh and Strabane, performed very well. The one area where we were vulnerable and had a number of issues was on our inlet grilles. An inlet grille is where you move from an open watercourse into a covered pipe system. There is a grille there designed to catch material so that it does not get into the pipe system, which it is impossible to get to while all the floodwater is there. Unfortunately, we had a number of grilles that caught too much material and became blocked. We had one very significant impact at the Linen Green, which is a designer shopping complex. There were 31 properties in it and every single one of them was flooded in the run-up to Christmas. That has a very significant impact, purely because of the nature of the infrastructure in that area.

Jeremy Parr: As you said at the start, Chair, we did not see quite the same impact in Wales, compared with Northern Ireland and Scotland. None the less, 150 properties were flooded, and for every one of them clearly the experience is devastating for everybody involved. It rained a lot; it was the wettest December on record, particularly in north Wales. The economy value in north Wales, for example, was severely impacted. The reason why it perhaps did not flood quite so much is that the rain, as colleagues have hinted at, was spread out a little more over that period.

Q480 Chair: In any of the nations, did you get the same intensity of rainfall over the 30 hours that they had in Cumbria?

Jeremy Parr: The rainfall in Cumbria certainly was exceptional. My understanding is that it broke all records. The other point to make is that it could have happened anywhere. It could have happened easily in Wales, and the number of properties at risk in Wales is very similar to the number in England, in terms of the proportion of properties. It is about one in 10 from rivers and the sea, and it is about one in six properties, if you factor in surface water. That is why, as colleagues and professionals who work in this area, we have things to learn from each other.

Q481 Chair: As a matter of interest, do you have anything like Flood Re in Scotland as far as insurance is concerned?

Dr Pirie: Flood Re is a UK-wide scheme, so it applies in Scotland.

Q482 Chair: Getting insurance is one of the big issues, but that covers the whole of the UK.

Dr Pirie: It does, yes. To go back to the point about the intensity, the storms in Scotland, although exceptional, were not of a similar intensity to those we saw in Cumbria. To give you some perspective, in Cumbria we were seeing 300 mm of rain in a 12-hour period. With Storm Desmond in early January we saw about 100 mm of rain in Scotland. With Storm Frank at the end of December it was 110 mm to 120 mm of rain, so quite a bit less.

Chair: It was the sheer intensity of it in such a short space of time. Areas that are prone to flooding will gradually build up if the rain continues for many days, but it is slightly easier to deal with on the whole than it is with that vast flash flood.

Q483 Ms Ritchie: You are very welcome, gentlemen. What are the key differences between the way your nation or region and England manage flooding, notwithstanding the risks involved?

Dr Pirie: Interestingly, each one of the areas takes a very different approach. The Flood Risk Management (Scotland) Act 2009 gave the opportunity to step back and design a system that fitted Scotland and start with a new approach. The Act really gave us the opportunity to take a risk-based, plan-led approach to managing flooding based on catchments. It very much looks on a catchment basis. Scotland is geographically big, but it is quite a small, tight community. It really played to the strengths of the agencies and the organisations that were already in place in Scotland, putting collaboration at the heart of it. It is set up with a framework in which a group called SAIFF, which is chaired and run by the Scottish Government, takes an overseeing role of the strategic implementation of how we go about delivering the Act. Then we play to the national flood management advisory group, which is chaired by SEPA. It is a technical group that brings all of the interested parties together, including responsible authorities and partner agencies. It is about the evidence and the basis behind flooding. Then we have local plan district partnerships, which are led by the local authorities. That brings together local knowledge and local evidence.

That approach in Scotland—having the strategic oversight led by the Scottish Government, the technical oversight framework led by SEPA and local knowledge and local understanding led by the local authorities through the lead local plan districts—is quite different. In practice, that means the roles of the different organisations are quite distinct. SEPA takes a technical evidence-based role, providing expertise to the other agencies. The local authorities very much take a delivery role, designing and building the schemes and putting them in place. Since the Act came into place in 2009, we have been working really hard. We have good engagement and buy-in from all those parties. Just as these storms were happening at the Christmas period, we launched the flood risk management strategies for Scotland. They are a very powerful set of documents that set out how we are going to address flooding for the future. It was very much done with that collaborative, partnership-type approach.

David Porter: I will deal with that and a number of different areas. First of all, Jeremy has already mentioned the numbers at risk in Wales. In Northern Ireland the number is

about one in 18. We have a different risk exposure in Northern Ireland from the one you have in England and Wales. I suspect that this answer probably sounded a little more robust last week than it does this week, but in essence our strategy is driven by the EU floods directive. That is really setting the strategic direction for flood risk in Northern Ireland in the way that we manage it. The floods directive sets out that we have to manage—

Q484 Chair: You do not need to throw the baby out with the bath water. We will sort something out, I expect.

David Porter: Absolutely. That is the point that I am coming to. The fundamentals of the EU floods directive set out that you need to take a proactive approach to managing flood risk, rather than the largely reactive approach that we had in the past. In the past, a flood happened and all our attention turned to that area. Before we had sorted out that problem, another flood had happened and that demanded our attention. We had this largely reactive approach.

The floods directive required each member state to carry out a preliminary flood risk assessment of the entire land mass, not because the entire land mass is at flood risk, but in order to identify those areas within the land mass that are at significant flood risk. For those areas we had to produce some very detailed maps and models and share those with the public. Most importantly, we then had to produce flood risk management plans—they have already been referred to—in which we set out what we are going to do about it so that the public understand what central Government are going to do, the role of local government and what communities are going to do to manage flood risk going forward.

Your point is absolutely right: irrespective of what happens with EU law and its grip on the UK, there is that fundamental systematic approach of identifying your flood risks, assessing them, focusing on those areas that are at significant flood risk, producing the information to inform land use planning decisions and emergency planning decisions and writing it all down in a systematic way that says, “Citizens, you can expect this and this time frame and there is other stuff that we cannot get to so quickly.” Writing that down so that people understand it and can react to it is hugely important, and it is a system that we advocate should continue.

Jeremy Parr: From a Welsh perspective, each of the devolved Administrations and each of the four countries is a little different. In Wales there are 22 local authorities and there is one main water company. One of the strengths of that, perhaps, is that all of the organisations can come together for that strategic planning and look towards the future. For example, last winter’s floods were not quite so significant in Wales, but a couple of years ago the coastal flooding in the winter of 2013-14 was very significant. We came together as different organisations and produced recommendations on how to take the flood risk management agenda forward. I echo what my colleagues are saying: at its heart, it is about understanding where the risks are and having a plan for how to manage it.

We perhaps do that in slightly different ways. In Wales, under the direction of the Welsh Government, there is lots of emphasis on risk to life, speed of flooding, depth of flooding,

speed of onset of flooding and social vulnerability. One of the differences in Wales is perhaps some of the new legislation that is coming in. In the evidence submitted, I mentioned the Environment (Wales) Act 2016 and the Well-being of Future Generations (Wales) Act 2015, which are two significant pieces of legislation. The Environment (Wales) Act, in short, very much takes a place-based approach to environmental issues, trying to look for integration across the piece. In many ways it enables that land management aspect of trying to manage the whole catchment rather than just one location. It should enable all of that. The Well-being of Future Generations (Wales) Act is about sustainable development, looking to the long term and looking for collaboration. You can see that those things could be useful in that regard for flood risk.

Q485 Chris Davies: This question is primarily for Jeremy, but also for David—the Scottish David; you will understand why I am not thinking about David Porter. You said that in Wales, Natural Resources Wales and the Welsh Government deal with yourselves, the 22 local authorities and one water company. As we know, when it rains, it does not just rain on one side of Offa's Dyke and the rain does not stop in the watercourses at Offa's Dyke. How do you liaise and work with the English organisations on that side of the border, and the same for you in Scotland?

Jeremy Parr: There are two bits to that question. Just to clarify, there is one main water company in Wales, but large parts of Wales are served by Severn Trent. There are three other small water companies as well. On cross-border collaboration, because water does not respect political boundaries, we spend a lot of time and effort working with colleagues, particularly on the Dee catchment, the Severn catchment and the Wye catchment in Wales. Some of those rivers go in and out of Wales and in and out of England. We have very close working relationships with colleagues in the Environment Agency, which we were once part of.

Q486 Chair: What happens when once side of a river is the English border and the other is the Welsh border? Say you wanted, for argument's sake, to dredge that river or do something to it, how do you work out who funds that?

Jeremy Parr: On an operational level, there are working relationships as to who takes the lead. In terms of strategic planning and flood risk management plans, which have been mentioned, they are produced jointly for those cross-border rivers, the Severn and the Dee.

Q487 Chair: Do you pay for it proportionately, then?

Jeremy Parr: Yes, essentially. Let us say we were going to do work in Wales that would have either a beneficial or a potentially detrimental impact in England, we would discuss that. The essence of it is that the beneficiary pays, to a degree. Some of the works will be very localised and not have any downstream impact.

Q488 Chris Davies: What happens when one side says no to a proposition?

Jeremy Parr: You may not believe this, but there are very few such occasions. I cannot think of many, if any, when we have come to a position where we have said no.

Q489 Chris Davies: Is that because there would be consequences for the one saying yes?

Jeremy Parr: Yes. As I say, I cannot think of examples where we have fallen into that area.

Q490 Chris Davies: Does Scotland have as good a relationship as Wales?

Dr Pirie: We do; it is very similar. The legislation forces us to take a catchment-based approach, essentially following the river from source to sea. We identify PVAs—potentially vulnerable areas—which are effectively discrete pockets of land that are at risk. We work very closely with the EA on that and have a really good relationship on the ground in the two cross-border areas. I do not think there are any PVAs that actually straddle the border—they tend to sit either in England or in Scotland—but the consequences of what you do in one location have an impact downstream. We completely join up on that catchment basis from source to sea and have a very good working relationship, not just in operational areas, but in the wider aspects of flooding: joint research and development projects; Floodline, as a joint piece of work shared by the EA and SEPA; and sharing best practice, going out and learning from each other. It is a very close relationship and one that works well.

Q491 Chris Davies: We have talked in previous sessions about further upland water catchments. One would assume that would lie heavily on Wales and on Scotland in this scenario. Times are changing, one would think. How open are we now to more forestry and further methods of upland catchment management?

Jeremy Parr: From a Welsh perspective, we are doing a lot of that work because it does have a role to play. I choose my words carefully—that it has a role to play—because, in extreme rainfall, as you have probably heard in other evidence, when catchments are already saturated and everything is full, it probably does not have such a high impact. Certainly, with smaller flows and smaller storms it does have a role. As an organisation, and in collaboration with many partners, we have done lots of work in peat bog restoration and tree planting. We have spent some time influencing Glastir, the rural development programme in Wales, with payments to farmers to encourage those sorts of practices. The Welsh Government make the payments, through the European funds, for that sort of activity.

There are lots of places where we do it. We are interested in doing more of it. One of the strengths of the organisation is bringing the different environmental bodies together so that we can talk holistically about the best thing to do in a location. We have forestry people and conservation people as part of the same organisation. It makes it that little bit easier in terms of planning and delivering some of this stuff. I would, again, caution that it has its place but it is not a panacea. There is no panacea; it is a matter of doing all of these things.

Q492 Chris Davies: I would be very keen to press you further on the EU relationship between all those bodies, but I was told earlier, when you were not here, that we are not allowed to delve further into that scenario.

Chair: Stop teasing and get on with it.

Dr Pirie: The picture in Scotland is very similar. It is part of our toolbox. It is not the complete silver bullet; it is just part of the toolbox. In the first cycle of our flood risk management strategies, we have identified 100 locations in Scotland where we believe that natural flood management has a role to play and is part of that toolbox. They are highlighted in the strategies as areas that we will be actively looking at and seeking to have taken forward in that first cycle.

Q493 Chris Davies: Not wishing to leave Northern Ireland out, one would assume that you have a similar arrangement with the Republic and that all works well.

David Porter: It does. It is a requirement of the EU floods directive that, when we were producing the flood risk management plans, they had to be on an international river basin district basis. There was very close collaboration with our equivalent, which is the Office of Public Works.

Q494 Chris Davies: There are no worries about a further agreement being put in place as and when necessary.

David Porter: We take each day as it comes.

Chair: It is something we need to be very much aware of.

Q495 David Simpson: You are very welcome, gentlemen. From a Northern Ireland perspective, I have to put my hand up and say that I initiated an inquiry into the levels at Lough Neagh through the DARD Committee, which the then Minister agreed to. I have yet to hear from that report, whether it is ongoing, stopped or whatever. It would be interesting to hear exactly where we are with that. I have listened to the three gentlemen putting forward a very positive, progressive image of all your industries, but I am sure that if you are talking to certain constituents you will get a certain amount of criticism. Of course, David Porter is the man we go for within Northern Ireland, because he is in charge of the Rivers Agency.

David, I know that there are a lot of problems around Lough Neagh and I appreciate the difficulties. The argument through the whole flooding process was, “Were the gates at Toome opened? Were they opened enough?” Rivers Agency is to blame for a lot of this, because it did not do the proactive work, but rather waited until a crisis time with levels such as around the Kinnego area, which you know very well. I also know that there are a lot of issues around Lough Neagh in relation to the dredging of the lough. That is going through legal issues at the minute with a couple of companies down there. What would your reaction be to that? Rivers Agency has been very blunt about it: “We are not up to the mark here.” And that is why we ended up with so many places being flooded.

David Porter: As I did on numerous television appearances during the flood to the DARD Committee, to the Regional Development Committee, to the Executive and to other Ministers, I will give the same answer to this Committee: Rivers Agency absolutely was prepared. We had the gates opened long before the storms appeared. There is a fundamental issue with how some of our river systems work. In particular, filling the floodplains or the high water level in loughs are not failures of the system. That is the way those systems are meant to work, either through nature or engineering design. The failure, in my view—if there was one—was allowing development into areas that we know are going to flood.

If we know that an area floods, either through nature, because of the way the river system will react, or because of the way we have engineered it—we know where the floodplains are—and we allow development to happen in that area, that is the real breakdown in the system, in a Northern Ireland context.

Q496 David Simpson: I am not disagreeing with you; I am just trying to get the information. What is your relationship with the planning service in Northern Ireland when it comes to that? What input have you, in a consultative or legislative role? How much of an input have you there?

David Porter: We are a statutory consultee to that process, even if it is a council planning officer making that decision, or if it is a strategic issue, which will now be part of the new Department for Infrastructure.

Q497 Chair: Similar to what the Environment Agency would have here?

David Porter: Yes, that is correct. We are a statutory consultee. In addition to that, the planning policy—which for us is PPS15—sets out a very clear presumption against development in known flooded areas. We have had flood maps in Northern Ireland since 2008. Those same maps, which are publicly available, are within the planning system. A planning officer can look at the planning policy, see the clear presumption on their system and see the flooded areas. It is a simple “no” in a case like that. If development wishes to take place in that, the opening answer in Northern Ireland is “no”, and then we would take a conversation from there if there was challenge.

Q498 David Simpson: David, I keep referring to the lough because, for me and my constituency, it was the biggest problem. A few years ago the lough was lowered, I understand. How often does that happen?

David Porter: The lough has been lowered on a number of occasions. It was lowered in the late 1800s. The most recent scheme was done in the early 1900s; it was completed in about 1940. There was a review in the 1970s and that brought the lough level down further. The lough is as low as we can physically take it to with the current structures. If you wanted to take it down any lower, we would need to make fundamental engineering differences to the lough by removing the gates at Toome and also by making significant changes to the water levels.

Q499 David Simpson: Is that a major investment?

David Porter: It is absolute telephone numbers. We know that for a fact. In order to significantly change the regime on Lough Neagh, or indeed Lough Erne, we are talking about numbers that mean you will never be able to justify the amount of cost-benefit. Even if you could justify it on a cost-benefit basis, the availability of funding would be such that it is hundreds of millions, not even single-figure millions.

If we take Lough Neagh as an example, it had very high water levels and there was an impact on three businesses in Kinnego. Most of the other properties that were threatened, which we sandbagged around and did our best to keep dry, are actually very old properties. They may not look like old properties because they have had a facelift over a period of time but, if you look at them, they are properties that date back 100 to 150 years ago, certainly long before we had any planning policy, long before we had flood maps and long before we had this new era of climate change and the uncertainty that that is throwing at us.

Any time I went out to properties, particularly around Lough Neagh, I was watching to see whether there were any new properties that had got through the system that we are trying to protect. To be honest, if it had been much higher, it would have started to threaten some more recent construction but, at the level that it was—as I said early, it was a 97-year high—the properties that were threatened were predominantly very old properties that have been redeveloped over time.

Q500 David Simpson: Lastly, those who live around the lough area may be fishermen, sand dredgers or whatever. We had seen some film strips of the mouth of the lough going into the lough that seemed to have a big build-up of silt. If that silt had been removed over a period of time, would it have helped the situation?

David Porter: It would not have made one iota of difference—not one millimetre, in fact. That is what I was quoted on by the press when I sat in a committee not dissimilar to this, except in Northern Ireland. It would not have made one millimetre of difference, and the reason I am so confident of that is that we have gauges on the river systems, so we know the value of water that is getting through that. The volume of water that was going down the lower Bann exceeded its design capacity. You would not have got that volume of water down that channel if there had not been a significant blockage in the system. The issue was not blockage—absolutely not blockage. The system is constrained by the physical size of the lower Bann and the amount of water that it can convey.

We know, because we also have gauges on the inflowing rivers, that we had about 1,000 cubic metres per second—1,000 tonnes per second—of flow coming in. We know that we had 350 cubic metres per second going out. If you have that relationship between what can come in and what can go out, only one thing can happen: you get rising water levels. To physically change a 60 km channel—from Toome to the city is a 60km channel—to the extent that it would be able to convey more than 350 cubic metres or tonnes per second, as I said earlier, would be a colossal civil engineering job costing hundreds of millions of pounds.

Can I answer the one question at the very start, in which you asked about the review? Very briefly, the review is ongoing. There is an independent review. The evidence gathering session is hoping to finish in the next couple of weeks and the report is due in September to the Minister.

Q501 Ms Ritchie: I have a supplementary, from a Northern Ireland perspective, to David. With the decision in the EU referendum, and particularly given that you, as per European directives, work in terms of cross-border catchment areas, you talk about Lough Erne being subject to flooding, but Lough Erne, both lower and upper, straddles into Southern Ireland, into Cavan and Donegal. I remember, as a former Minister in the Northern Ireland Executive, the issue of Ballyshannon coming into play in County Donegal and how that provided relief to upper and lower Lough Erne in the flooding issue. How do you foresee those issues being addressed in a new political dispensation and a new political scenario?

David Porter: There are elements of that question that are way out of my area of responsibility, but I will give you—

Chair: It is a real minefield.

David Porter: Absolutely.

Ms Ritchie: I see the Chair is getting you.

David Porter: I will answer as best as I can. You are right: the levels at Lough Erne are managed or controlled by a hydroelectric power system. Everybody uses the term Ballyshannon. There are actually two: it is a place called Cliff, which is slightly upstream of that. That, as you say, is in the south. That facility is owned and managed by ESB, the Electricity Supply Board. The legislation that determines the lough levels was a cross-border piece of legislation passed in 1952, pre-dating the EU floods directive by many years. That arrangement is still the legislative basis for the agreement that we have. The deal with that particular example is not compromised by any referendum or any decision. What the other implications are on flood risk management on a cross-border basis remains to be seen.

Chair: You make an interesting point. Quite a lot of old agreements will have to be dusted off and looked at, especially on fishing and other matters. We will not go into those today.

Q502 Dr Monaghan: Jeremy, I will perhaps start with you. How are national budgets in Wales allocated across specific areas and projects in relation to flood management?

Jeremy Parr: The principal source of the budget in Wales is from Welsh Government funds. The Welsh Government decide how much money to give to the risk management authorities—both the local authorities and Natural Resources Wales. This is on a prioritised basis. We were talking earlier about how we analyse risk, determine what the risk is and then decide what the solutions need to be. Then money is allocated on a risk basis, taking into account cost-benefit of various interventions.

That is the principal way in which it is done. Welsh Government budgets in the past have been augmented by European funds up to 2015. There are other sources of funding that can have a beneficial flood risk outcome as well. I was talking earlier about payments to farmers, for example through rural development programme funds. There are pots of money there that are available to landowners, farmers and voluntary organisations, such as the Wildlife Trust. We work in collaboration with quite a few of those to do some of the more local restoration work in terms of holding back water and restoration of peat bogs. Principally, it is Welsh Government funds that the Welsh Government allocate to the risk management authorities.

Q503 Dr Monaghan: Are the risk management authorities the same as the local authorities? There are 22 local authorities and one water company. Is that right?

Jeremy Parr: That is right. The risk management authorities are all the organisations that will have a responsibility around flood risk management, so that is the 22 local authorities, and it is Natural Resources Wales. It also includes some other organisations, for example the water companies. Just to be clear, the Welsh Government do not allocate the money to the water companies; it is to the public bodies. It is to the 22 local authorities and us. Water companies have their own mechanisms for funding. Some of the work that they do in surface water management, for example, is funded through the periodic review and AMP process.

Q504 Dr Monaghan: Is the analysis of risk undertaken by the local authorities or by the Welsh Government?

Jeremy Parr: Essentially, the analysis of risk is undertaken by Natural Resources Wales, as the body with the strategic oversight of the whole of Wales. We do this very much in collaboration with the local authorities, as we were talking about earlier, because we value good relations; the size of Wales helps to a degree in that regard. It is done in collaboration, but essentially one of the roles that the Welsh Government give us is for the strategic oversight of all sources of flooding, very similar to the other countries and very similar to the situation in England.

It does not stop there. It is not totally driven by a national prioritisation of flood risk; it is very much local understanding of flood risk as well and trying to meet in the middle in terms of what you do. Again, I was talking earlier around the Well-being of Future Generations (Wales) Act and the Environment (Wales) Act, which should enhance some of that local place-based opportunity as well.

Q505 Dr Monaghan: That is useful. Thank you. What happens if tensions arise between the local authorities that are effectively competing for prioritisation within that overall framework? How do you manage that process?

Jeremy Parr: Because it is the local authorities bidding into the Welsh Government for the money, in essence, quite a lot of the decision making is with the Welsh Government. We advise into that process in terms of the relative risk throughout Wales. We are working hard with all the partners now to move it a step forward, where we really embed

that risk-prioritisation approach across all the organisations and have an even more transparent process for the allocation of funding. As we have all said, the floods directive and the approach in it, even if you take the directive away, of understanding where the biggest risks are and what you need to do to manage them is the pillar for how we manage floods.

Q506 Dr Monaghan: Would you say that it works well?

Jeremy Parr: Yes, it works well. As always, we are not complacent. There is room for improvement and there is continuous improvement to be sought, but broadly it works well.

Q507 Dr Monaghan: David Porter, in Northern Ireland you have 26 local authorities. Is it a similar method?

David Porter: We had 26 and it has now gone down to 11.

Dr Monaghan: Google was wrong, then.

David Porter: That is one of the fundamental differences that you may be interested in: the local authorities have no role in flood risk management. They have a role in civil contingency, so in the management of a flood event, but not in actually managing assets, other than as a landowner—if they happen to own a park—where the same responsibility would be placed as on a homeowner.

Q508 Dr Monaghan: How are national funds distributed across areas and projects?

David Porter: In essence, central Government hold that responsibility. That is executed through Rivers Agency and we prioritise based on the information that we have from our river models and historical flooding agencies. We bid appropriately for that and we have a prioritisation within the agency, which then determines which projects are at the top of the construction programme and which ones are further back. There is no tension in Northern Ireland, because it is all within the one body. However, because of the floods directive and because of this change from a largely reactive approach to a more much proactive approach, we have identified that, in some of the areas that we were relatively comfortable with—or thought we were—the new analysis is showing that maybe we should not be as comfortable as we once were.

The other significant change is our ability to produce very detailed maps and models. Technology has moved on significantly over the last number of years. That has also highlighted areas where we thought we had them sorted and we were not too worried about it, but the new information is saying that we should not be as comfortable as we were. We can see that we will need some additional money to get through the now longer programme than we thought we had because of the work by the floods directive.

Q509 Dr Monaghan: In Wales, the local perspective probably comes from the local authorities. How do you capture the local perspective in Northern Ireland through that one agency?

David Porter: To be clear on how we capture that, there are two aspects of local. I am not terribly interested in what people's local view is in terms of their risk. Risk is something that you calculate by producing a model, identifying where the floodplain is and then identifying what properties are in that. People's opinion of whether they are at risk is not actually a factor. What is very important to capture in terms of a local input is what engineering solution or management solution you are going to put in place. That is much more important than having a discussion about, "Do you think you are at flood risk?" Flood risk is something that you can calculate.

What solution would we introduce? Are we not going to have any physical construction, because people quite like living beside the river? Can we put up a high wall and block them away from that? Can we have natural flood risk management or reshape a park to make space for water, as opposed to building concrete walls? That is really where you need to engage with people to get their opinion on what shape they want their community to be and what they want it to look and feel like; whether they want heavy engineering, whether they want natural flood-risk management or whether they just want a flood warning so they can move stuff out of harm's way. That is really where you need to focus your local engagement.

It is wrong to engage local people too early in the process, in identifying that flood risk, because that is a numerical calculation. It is not to block them out, but there is a science and a profession that can do that and reach that number. Then we engage with people: "Now you know what the flood risk is, what are we going to do about it?" That is where the conversation really needs to start with people.

Q510 Dr Monaghan: That is interesting. In practical terms, how do you go about that process of engagement?

David Porter: I will use one project that is very significant, the Connswater Community Greenway. If we had been delivering that project in and of ourselves as a rivers agency, our initial design was for walls to stop about 1,700 properties in East Belfast flooding. Through engagement with the local council and local community, instead of walls through that area, they have done what I described earlier: they have taken a park and reshaped it to form an area that will flood. Instead of building further walls and constraining the river, we have made space for that water. It is a very interesting project to look at as to the influence of local people.

The big benefit was that we were able to pull money from lots of different sources. We brought the flood risk management money and set that on the table. The local council brought money for community regeneration and making the town look better. We would never have brought that type of money to the table, but because it was a joined-up scheme, they were able to bring a different pot of money. Because of that, what we have is much greater than the sum of its parts. We have a project that has made a significant change to that area and will for years to come, but which, in and of itself, we would not have been able to deliver.

Q511 Dr Monaghan: Does it work well; the whole model of allocating funding and engagement, etc?

David Porter: It certainly works well in the sense that we have a relatively low flood risk: one in 18, as opposed to one in six.

Q512 Dr Monaghan: You seemed hesitant then. Is there something that you would change?

David Porter: No. It works well for Northern Ireland, because we are also of a scale where you can engage.

Q513 Dr Monaghan: That was my question. It works well for Northern Ireland.

David Porter: Yes. I would not like the Committee to think, “We have heard from Northern Ireland, which has a really good system, and therefore we will just say to England, ‘Get on with it.’” Scale is the issue. The clearest example to me is that I know every one of our significant flood risk areas personally. I have no issue with going to the media to talk about them, and if any one is brought up I know, because I have visited them all because Northern Ireland is small. I would not be as comfortable if I looked after flood risk in England to know that I can get a grip of the flood risk.

Q514 Dr Monaghan: That was not the question. It was just: in your view, it works well in Northern Ireland.

David Porter: For Northern Ireland, yes.

Q515 Dr Monaghan: David, turning to Scotland, with 32 local and highland authorities, how do we go about allocating the funding?

Dr Pirie: It is broadly similar to Wales, but different. Again, it is about the geography and the differences in local set-ups. We have to recognise the differences in roles of SEPA as compared to partner agencies. We do not plan and build. We have a co-ordinating, technical advisory role. Now that we have that technical advisory role, we have our maps, we understand the size and scale of the problem and we have clarity and agreement on where our priorities are, we can use that to move forward with the funding.

The discussions over funding are not led by SEPA; they are led by the Scottish Government. The Scottish Government provide the majority of the funding; similar to Wales, they provide 80% of the funding. Local government tends to provide 20% of the funding. The distribution of that funding happens through a group called the settlement and distribution group, which is chaired and led by the Scottish Government. It contains representatives from COSLA and the local authority heads of finance. It is there that the funding decisions are made. SEPA is not a formal member of that group; our role is to provide technical advice to that group, not to make the decisions. That is quite a different set-up from the rest of the UK.

It is early days. This is just the start of the first cycle, but we can see that we are in quite an advantageous position. We are neutral; we are the experts. We are telling you what the evidence is. We are not making those decisions on how much money and where that money is going to go; we are quite removed from that.

Q516 Chair: You would not be involved in any sort of prioritisation of where the money should or should not be spent.

Dr Pirie: We prioritise on the basis of risk and on the basis of the evidence. That evidence takes into account a range of factors.

Chair: The political decision is made at the Scottish Government level.

Dr Monaghan: That is the difference, isn't it?

Dr Pirie: That is exactly the difference.

Dr Monaghan: SEPA are the experts offering advice, guidance and evidence, but the decision is taken elsewhere, which is different from Wales and Northern Ireland.

Q517 Chair: Here, the Environment Agency are allocated a certain amount of funds; there is an argument about the amount of funds they should have, but, to a degree, they are the ones that look at the way that is spent. I can see that you have a different role.

Dr Pirie: The evidence is wider than just flood risk evidence; it also takes in social deprivation, economic factors and cultural and heritage aspects. What we provide is factual and evidence-based.

Q518 Dr Monaghan: What engagement do you have, David, as experts, with the local authorities and the highland authorities across Scotland to understand what is happening at the local level and what their concerns are?

Dr Pirie: Earlier on I described the lead local authority forum. Although there are 32 local authorities, they are broken down into 14 lead local authority forums. That brings together groups of local authorities so they are more on that coherent catchment basis that we have been describing. These groups are chaired by the local authorities, but we are an active member of all of these groups, making sure that that evidence is in there when they are discussing with the communities and when they are making their strategic decisions. We work very much hand in glove and in partnership with them on that. You would have to ask them, but my impression is that they very much value that technical expertise and find it very useful.

Q519 Dr Monaghan: It is fair to say, then, that SEPA has a much more strategic role in overseeing the local authorities.

Dr Pirie: Yes. We do operational delivery. Our operational delivery is more in flood forecasting, flood warning and providing planning advice, but not in the maintenance, upkeep and building of schemes.

Q520 Dr Monaghan: In your view, does all of that work well in Scotland?

Dr Pirie: So far, yes, but this is just the beginning of the first cycle. Flooding is a long-term game and we need to see how it pans out. So far, it has worked well.

Dr Monaghan: For the record, Chairman, David mentioned COSLA, which is the Convention of Scottish Local Authorities.

Q521 Chair: Does the maintenance work go down to local authorities? Do you have drainage boards? What do you have?

Dr Pirie: It goes to the local authority. We do not have drainage boards.

Q522 Chair: David Porter answered this just now, but this question is to David and Jeremy in relation to Scotland and Wales. Here in England, if you have a major flood the Environment Agency is usually in the firing line, as well as the politicians. I do not think it is the same in Scotland, and I would be interested to see what it is like in Wales.

Dr Pirie: It is a shared responsibility. We work very much in partnership.

Q523 Chair: My question is a bit more direct than that. Here in England, when the chairman of the Environment Agency did not turn up at various events, there was a big furore. Would that be the same if your equivalent did not turn up to a flood in Scotland?

Dr Pirie: We very much feel front and centre when these events happen. As was described earlier, at Christmas it was very hectic and our staff were in front of the cameras and did all of the extra hours and the extra effort.

Chair: It was quite similar, in many ways.

Dr Pirie: It was very similar, and we were very pushed because of the prolonged nature and the geographic spread, but the local authorities very much share that responsibility with us. Responders, the police and fire brigade, very much share that as well. The focus is not solely on us; we get a significant share of it, but others take their share as well, because of the collaborative approach that is at the heart of the Act.

Q524 Dr Monaghan: I would agree with that. From my experience of watching the TV during 2015, it is as likely to be the fire service that is being criticised as SEPA, the police or the local authority. It is really a shared responsibility.

Q525 Chair: What happens in Wales?

Jeremy Parr: In Wales we have a multi-agency response to flooding. There are lots of organisations that are responsible for managing flooding, both for responding to it when it happens and for recovery afterwards. It is very important that those organisations all come together, plan for it and enact those plans. The local resilience forum is predominantly where that takes place. Sometimes this can cause a bit of tension or difficulty in terms of the

public's perception of who is responsible for what. We are all very familiar with: "It does not matter where it is coming from; it is flooded."

Q526 Chair: Usually the public want to try and pin something on somebody when they are flooded, because it is a highly emotive and emotional time.

Jeremy Parr: That it clearly understandable. It is important that we all work together and plan, as I say.

Q527 Chris Davies: Before we leave this, it is interesting that you all have similar but different systems. You all think that your systems work for you, but do you ever stand there and look out over the fence or over the water and think, "My goodness me, the system that they have may be better for me"?

Dr Pirie: There are certainly elements of what my colleagues do that, in my own agency, we do not have the skills and expertise to do. When we set up the new Act in 2009, we looked at the bodies in Scotland that had the capability, the boots on the ground and the experience. We are the right people to have that technical evidence, to provide that objective overview and to co-ordinate. It would be very difficult for us to provide that on-the-ground operational protection and maintenance of schemes. That is not the sort of body we are.

Q528 Chris Davies: I will not pursue that any further. David, you mentioned Lough Erne. Forgive me, but I am not sure of the way it is all laid out in Northern Ireland and whether it would usually be a water company running it or whether you now, as Government, run it as a government agency. As you know, we have water companies coming in afterwards. I would like a brief answer from all of you. We have heard in previous evidence from some people who were affected by floods that they felt water companies were not quick enough to act, as far as reservoirs were concerned. Perhaps they should have let more water out beforehand, or perhaps they should not have—whatever the case may be. Do you have a good relationship with the water companies? Do you work with them well, and do they work with you well, as far as preventive management is concerned? Keep it brief.

David Porter: For clarity, Lough Erne is a natural lake that has engineered structures to control the water levels. It is not an impounded reservoir in that sense. We do anticipate flood defence; we have winter levels where we draw down the lough. Irrespective of the weather, we draw it down to a target level to provide flood storage. Within Northern Ireland, there is only a single water company, Northern Ireland Water, which is a government-owned company. Again, it is slightly different from the relationships in England and elsewhere. We have good working relationships with it.

Particularly where there is a reservoir, you tend to get the question posed, "Could they have done more?", but it is almost exactly the same as the question that David posed to me in terms of whether, with Lough Neagh, we could have done more. I understand why that question would be posed, but you have to look at the evidence of what difference it would have made to the flood event. As was said earlier, we deal with the extreme events. In Northern Ireland we tend not to have many river problems that happen frequently, i.e. at

very low return periods that you will get quite commonly; it tends to be when you get up into the more extreme events that the problems are caused.

Q529 Chris Davies: In Wales, in particular, I have heard criticism. In Elan Valley, for example, the River Wye passes quite close to my house. When Hereford was flooded back in the late 1990s, it was alleged that, when a lot of the water would come down, excessive release was made from the Elan Valley. Whether that was true or not, I do not know and will probably never know, but it caused problems; it caused disquiet. What is your relationship with the Welsh companies?

Jeremy Parr: There are arrangements for how the reservoirs are managed in times of floods. Typically there will be drawdown on the reservoirs before the flood is forecast to allow the capacity to go into there.

Q530 Chris Davies: Who takes the lead in this? Do you, as NRW, have the final say, or does the water company have the final say?

Jeremy Parr: I do not know the detail of it. I might have to reply separately on the detail. In essence, it is a joint decision between the different bodies. Elan Valley reservoirs, for example, are run and operated by Severn Trent, so there are arrangements with Severn Trent around those reservoirs. It is a joint approach to it. Rain has come in and we might need to take some action. You are right; it can be an emotive subject. When that reservoir is full and it is coming over the spillway, you will get large quantities of flow.

On the broader question, in terms of relationships with water companies, the other area that is very promising, particularly in Wales, is surface water management and sustainable drainage systems. The water company has led quite a lot of innovative work in Wales, in terms of trying to take water out of sewerage systems so you do not get such surface water flooding. There are really great examples in places such as Llanelli and Grangetown in Cardiff where we work collaboratively, with both the local authority and the water company, to try to green the local environment and put systems in that take water out. There are some really quite impressive results with some of the systems they have.

Chair: That leads us quite nicely on to what your question actually is.

Q531 Chris Davies: I knew you were going to push me at some point, Chair. You have different approaches to SuDS, basically, as far as each devolved nation is concerned. Do your stakeholders think that the delivery of SuDS is achieving the right balance between environment and economy?

Jeremy Parr: It is a challenging area. Where we are in Wales is broadly similar to the situation in England, as you may have heard, in that SuDS approval bodies are not in place. There are some interim design standards, and there are clearly different pressures on this in terms of housebuilding, developers, residents, managing floods, water quality and quantity as well. As well as that new build and the pressure around that, we have a

very big historical legacy of urban areas increasingly being paved over and increasing quantities of water getting into already over-capacity systems. That is where, for example, Dŵr Cymru—Welsh Water—has done some good work in terms of trying to take that water out before it gets into the sewer system. Some of the results are reducing flows from 53 litres per second in one case down to 2 litres per second, in terms of the peak flow that is coming through and the amount of water that is retained and then lost through evaporation, in some systems.

Q532 Chair: Are you going back over people who may have a lot of hard standings and things? Are you looking at where that can be perforated so the water can drain through them rather than drain off? What are you doing about that, because it is quite a problem everywhere?

Jeremy Parr: Welsh Water has done quite a lot of work in this area. Trying to increase the capacity of sewers and the pumping would cost an enormous amount of money, so largely, from a business perspective, it has been looking at other ways of trying to take that water out. There are some good schemes, such as the Llanelli scheme, which has also involved educating school kids, rather like recycling initiatives, to try to use less water. It is investing quite a lot of money in Wales—I think it is £80 million over a five-year period—in schemes like that, to try to take surface water out. That has multiple benefits: it can green up areas and improve water quality. We are very much in favour of that, as well as the rural parallel of that of trying to plant trees and increase infiltration into the ground to stop it getting into the rivers to begin with. To reemphasise that point, it will work up to certain flows and, after that, places will still flood.

David Porter: In terms of Northern Ireland, you asked whether we look across at other areas of the UK and say, “I wish we had that”. This would be one example of where we do so, and I would also acknowledge that Wales is further ahead than we are in terms of retrofitting SuDS to urban areas. The Executive have recently agreed a long-term water strategy for Northern Ireland. One of the policies within that is that SuDS should be the preferred option for new development. We also have a programme rolling forward called the Living with Water programme. That programme is starting to consider doing some of the work that has been outlined in Wales, where a water company would go in and make physical changes to urban areas in order to reduce the load on their combined systems predominantly or, if possible, storm-separate: have two different systems, one for foul and one for storm water, in order to reduce the flood risk out of those, but also to take some of the pressure off our water treatment works because they are energy-hungry processes and, with further development, they come under pressure.

If you have a vision of your town or city growing, you do not want it constrained because you cannot deal with sewage. It would be a bad thing to do, particularly if we are trying to encourage inward investment, to say, “We cannot do that because the sewage system does not work”. It does not seem like a very plausible thing, certainly in a developed country.

Chair: Can we keep the answers a little tighter? Time is going on.

Dr Pirie: In Scotland there is a lot of similarity and commonality, but some important differences as well. In Scotland SuDS have been a statutory requirement since 2005. They were originally introduced as a statutory requirement for water quality purposes; it was for water quality benefits. Since 2014 Scottish planning policy has had a specific requirement for new developments to include flood risk, so they are in there for flood risk as well. That is quite different from other parts of the United Kingdom. It definitely has helped; it definitely does play its part.

We have to recognise that it is back to the old problem that SuDS are only part of the solution; they are not the whole solution. We have some difficulties in Scotland. Those aspects are really positive and really good, but there is still quite a fragmented approach to design standards for SuDS. There is a fragmented approach to ownership and maintenance of SuDS. There are areas that we could seek to learn and improve on in that. There are some areas where I believe we have done really well in Scotland with SuDS.

I would like to talk about the Metropolitan Glasgow Strategic Drainage Partnership. That is quite a big partnership that looks at the Greater Glasgow area. It brings together seven local authorities, Scottish Water, SEPA, enterprise agencies, urban regeneration bodies—a whole wide range of partnerships. It has looked at a host of things, including traditional flood-alleviation schemes, like on the White Cart, but particularly in the west and the east end of Glasgow, in the Clyde Gateway approach, it is taking a strategic approach to SuDS before individual developments have come in place. It has looked at the landscape as a whole. It has thought about not just, “Are we going to put a factory or a housing estate in here and have a SuD manage that particular development?”, but strategically, across the whole area, “How are we going to have SuDS manage the water flow in the area?” That particular part of Scotland has a canal system in it: can we link up with the canal system? Can we use that? The SuDS have been put in prior to any development going ahead.

We believe it is an excellent example for urban areas of how we can take a more strategic approach, rather than an individual piecemeal approach on every small development. I would be delighted to provide the Committee with more details, if that would be helpful.

Q533 Chair: If any of you wants to give us any more written evidence when you go home and think, “We could have said a little bit about that”, please feel free to do so.

The final questions are on community, business and infrastructure resilience. How do you deal directly with businesses being more resilient, perhaps individual properties and resilience generally? Is it a similar approach to here in England or is it different?

David Porter: We have identified some pilot projects, some communities that are at significant risk and where there is no civil engineering project in the foreseeable future that we can deliver in order to deal with that risk. We have engaged with those communities so that they understand their vulnerability and they also can understand the limitations of the response from Government. When they get those two bits, they can then take a decision as to how they want to react. That has driven us towards communities taking responsibility for their own risk.

In essence, how it is triggered during a flood event is as follows. Whenever we get a Met Office warning and we know that it may well impact on one of these areas, they get a text or phone call from one of my staff that says basically, “We are concerned. Therefore, you should be concerned.” Because that community is concerned, the key people within it can trigger a whole series of reactions, which might mean opening a pre-deployed sandbag store that they have the code to get into, so they are not waiting for somebody from Government to come and do it.

Q534 David Simpson: What you are saying to us sounds good and I have no doubt that it is done right, of course. You are saying—or maybe you did not say it in this way—that it is up to communities to react themselves or to help themselves. For example, in the previous floods in Northern Ireland—and I am sure in the rest of the UK it was the same—a lot of farmland was destroyed. Yes, the silt has helped as fertiliser and all the rest of it. Currently, Defra is doing a 25-year strategy plan for planning and moving forward for all of that. Are you guys buying into that? Are you into that? Are you dealing with it or have you any input? I know the previous Minister in Northern Ireland did not have much of an input into it. Whether the new Minister will have or not, time will tell. How do we move forward? You are making the point, David: if there is a warning, how do we get that out to farmers? What preventative measures can they take? Is part of that removing livestock? You are talking about sandbags. How do you use sandbags when it comes to land? It is difficult.

David Porter: In essence, the communities we are focused on are typically in an urban area where there would be harm to people or property, where there is a risk to life or where there would be potential damage to property. Farmland is slightly different and we have not really grasped that one or had to grasp that one in Northern Ireland. In terms of the longer term strategy that you mentioned, we would have as a parallel processes the flood risk management plans, as required by the floods directive, which are on a six-year cycle. In addition, we have the long-term water strategy, which sets out the Executive’s plan over a 25-year period, so we would be similar. The reason we have not engaged previously with the Defra one is because flood risk management is a devolved matter, as you know. As I picked up earlier when you were asking a question about how England does things and the cross-border catchments, I have no comment to make on that because there is no influence from what happens here on the catchments that I have to manage at home.

Q535 Simon Hart: On the funding of risk management and risk assessment, you mentioned in Wales that a significant proportion is provided by the Welsh Government, a proportion provided by local authorities and then the balance provided through EU funding. As part of the risk assessment, risk management programme, I wonder what process you are now going through to look at the potential impact of Brexit on those funding streams. As we are talking about risk assessment, one assumes that would be part of the plan. Is that something you are looking into now?

Jeremy Parr: The history of it is that Wales benefited from significant amounts of money up until 2015 in terms of flood risk management. With all EU programmes, it is targeted towards specific areas. In terms of flood risk, that money came to an end in 2015. It is not

part of current EU funding, because the priorities are elsewhere—unemployment, wealth creation and jobs etc. The Welsh Government have some of their own central capital funds. What they lost in terms of the EU funding in the short term they have made up with their own capital funds. The amount of funding over the last few years has been fairly constant and steady.

Q536 Simon Hart: Does that reflect with the others? Is there a similar situation in Northern Ireland and Scotland?

David Porter: In flood risk management, we did not bid into EU funds and did not draw down any EU funds, primarily because it is a much more modest sum. If you want to bid into Europe, you need to have a bigger level of risk in order to justify the whole bureaucracy and burden that Europe brings to you. Northern Ireland intended to bid for road and transport schemes through the EU, as opposed to flood-risk management, so we will not lose that as a funding stream for flood-risk management. However, the entire pot will be potentially smaller if you cannot draw down money. Certainly, there are questions being asked about how that is going to be managed. I have no answers; it is just one of the wider implications.

Dr Pirie: In Scotland, the vast majority of funding comes from the Scottish Government and local authorities. Yes, there is funding that comes from SRDP for biodiversity initiatives and things like that, which enhance flooding works. It is exactly the same picture as Wales.

Q537 Simon Hart: If there is a gap, even a fairly modest one, are you now in discussion with the Scottish Government as to how to close it?

Dr Pirie: We have a very good relationship with Scottish Government, so yes.

Q538 Simon Hart: As the Chairman mentioned in his remarks about the resilience policy as far as communities and business are concerned, I was going to ask the question with a slightly different angle. The second part of the question is this: what assessment do you make of the impact on businesses and communities from a very risk-averse approach to flood management, in that there may be businesses or communities that are feeling rather stymied by over-restrictive caution when it comes to expansion in areas that, in some people's estimation, are at flood risk and, in others, are not. I have a particular constituency example of that, where the rules are being applied to an absurd level, which is impacting negatively on business on the back of a non-existent flood threat. Do you make an assessment of that?

Jeremy Parr: It is always important to get the balance right. Part of our role is to advise on flood risk, and we advise on that. If people have other points of view or other things that are pertinent to the argument, the door is always open; there is always dialogue. It is not us who makes decisions on planning, for example, in terms of where development is allowed or not.

Q539 Simon Hart: You are a statutory consultee, so if an application goes to a local authority, or indeed to the Welsh Government, the first thing they do is turn to you guys and say, “What do you think?”

Jeremy Parr: And we give our advice. That advice is based on our expert role in terms of understanding the flood risk. However, I would stress that there will be locations in which there may be extra information that is pertinent. It is important that a precautionary approach is taken. Having development in areas at flood risk clearly is not a good idea.

Q540 Simon Hart: To come back to the risk panel in a minute, the question is not that, which I think most people see as logical; it is what the reasonable definition of flood risk really is.

Chair: It is accepting it as well, isn’t it?

Jeremy Parr: That is an important point. It goes back to the point that it might not have happened in anybody’s lifetime, but it could. Linking that into the community resilience element of it, in Wales we have worked a lot with communities, businesses and farmers across the piece to try to explain the flood risk that they may be at. It is far easier if they have experienced, or have a relative who has experienced, recent flooding. But we are saying, “It might not happen this year, but it might happen sometime in the future.” I know you have heard evidence around the language that is sometimes used, in that “return periods” might not be very helpful there. We have put a lot of emphasis on this, and we have over 1,000 community flood plans across Wales. We have 400 wardens, who are people we have a relationship with to try to get that level of understanding that it might not happen now, but it might happen at some point in the future.

Q541 Simon Hart: Are you content, therefore, that your mapping system of flood risk areas is robust in that respect? There is of course a distinction between different forms of flooding, some of which might be rising sea levels or storm flooding as a result of waves coming over the seaboard and water coming down a river. Are you happy it is rock solid?

Jeremy Parr: Like most things, it is an area that is always under improvement. There have been a lot of advances in terms of technology and computing power to do these sorts of things. There are industry standards, almost, of how this gets analysed and, broadly, I think authorities would say the same thing. It is the same basis by which we produce flood maps. Flood maps are banded, with high, medium and lower significance. What is called the extreme flood outline is a one-in-1,000 return period—sorry to use that language, but it is part of it. People say, “Well, that will never happen.” It can. It did in Cumbria. It did in other parts of England and probably in Scotland as well. That is really important. It might not happen very often, so getting people’s engagement in a high-impact, low-probability type event is a big challenge.

Q542 Simon Hart: Is that a common view?

David Porter: Yes, it is. What I would stress—because I was quite straightforward and quite harsh earlier when I said, “Protect your floodplains”—is to protect your floodplains

from inappropriate development. It is not an absolute. When our position is “no”, if you come along and say, “Actually the development is to store timber” or “it is to build a playing field”, something you can make resilient and can recover, and you understand that risk, then we completely accept that planning decisions are on balance. Yes, you need to start with a very strict, “We protect floodplains from inappropriate development”, so there is some stuff that can be quite happily accommodated in floodplains. I would strongly recommend that we do not put on them old people’s homes, electricity power stations, public water supplies or things that will have a much wider impact when the flood occurs.

Q543 Simon Hart: The example I was going to raise was not the creation of a new enterprise such as that, but the expansion of an existing one, for example a hotel going from 30 bedrooms to 50 bedrooms being refused consent on the basis that it is on a floodplain, which presumably would mean that the 30 bedrooms that are already there must be in danger. Either you close down the whole thing or you should consent to the expansion. There are examples of where Natural Resources Wales and other authorities are saying, “No, we are going to decline that application. It is on a floodplain”. The logical thing is to tell them to take the building down and go away. I do not quite understand the logic of turning down that kind of application.

David Porter: There are two professionals in this decision-making process, the flood risk management professional and the planning authority’s professional. I can quite understand why the flood risk management professional will say, “Our policy is to protect floodplains. Our recommendation is that you do not allow that development to take place.” I can equally accept that there is another professional in that decision-making process who says, “I weighed up a whole range of advice and on balance”—

Chair: Margaret wants to come in on that. I am conscious of time now, so we need to wrap this up.

Q544 Ms Ritchie: I am not seeking to be provocative, David, but would it help the situation to increase resilience if there was one authority with responsibility for floodplain management including rivers and planning?

David Porter: I am not quite sure whether I would like one authority that deals with rivers and planning, but I agree with you that some of the distinctions—

Chair: It is definitely a Northern Irish situation.

David Simpson: She is referring to Northern Ireland.

Ms Ritchie: Just do not listen to David.

David Porter: The reshaping of Government Departments will break down some of the silos between those that look after rivers and the sea—Rivers Agency—and those that look after surface water, storm water and other risks that are within the water company. Instead of being in two separate Departments, we are now in a new Department for Infrastructure. That includes public water supply, road transport and rivers.

Q545 Chair: That is fine. As far as Scotland is concerned on the question that Simon asked, please.

Dr Pirie: One of the biggest reassuring things about the Christmas events was that the flooding happened pretty much where we expected it to. It very much reinforced that our modelling and understanding of the risk was correct. In terms of community and business engagement, knowing where the problem is likely to happen is the first step. SEPA does an awful lot of engagement in targeted areas: everything from going out doing school plays and awareness-raising to much more specific events with impacted households or impacted businesses. In terms of uptake and understanding, it would be fair to say it is higher in areas that have recently had flooding. It would be fair to say that we are always looking for a much higher uptake than we get. That is why we use these innovative approaches.

We are seeing really encouraging signs. We are seeing places where we get flood warnings and flood wardens in place and they help communities deploy property level protection. Stonehaven in Scotland is a good example of a community that has taken that approach. We are getting quite strong feedback from communities, which we completely agree with, about the limitations of some of our understanding. For coastal flood risk, our models and understanding at the moment are on static water height, and we all know about wave overtopping and wind-driven overtopping. The communities in some of these areas—this is of particular relevance to Scotland—are rightly saying to us, “You are underestimating the risk. You are underestimating the potential impacts.” The west coast of Scotland is also a good example of where there is infrastructure that is at risk.

On the planning policy point, in Scotland we have a 200-year plain for developments, which is the standard; for sensitive infrastructure it is 1,000 years. Your old folk’s home or your electricity and sub-station has a higher standard applied in Scotland.

Chair: Thank you very much, gentlemen. Before you go, perhaps you could give us an answer in writing. Here we deal with one-in-50-year, one-in-200-year and one-in-300-year floods or whatever. Everybody thinks that if they have had a flood then they are not going to have another one for another 99 years. It is not really working. If you have any other ideas on how we can get that flood risk out to our residents, I would be delighted to hear them. We are getting on for time, so if you would not mind my giving you a little bit of homework, that would be lovely.

I really appreciate, from Scotland, Wales and Northern Ireland, you giving us your perspective this afternoon on how you are handling it. It gives us information to put in our report and look at the way we are dealing with it in England as well. Thank you very much. We appreciate you coming this afternoon.

Examination of Witnesses

Witnesses: **Peter Simpson**, Chief Executive, Anglian Water, **Dr Stephen Bird**, Managing Director, South West Water, **Jo Harrison**, Asset Management Director, United Utilities, and **Dr Adam Comerford**, National Hydrology Manager, Canal & River Trust, gave evidence.

Q546 Chair: Right, lady and gentlemen—ladies first—would you like to introduce yourselves, please?

Jo Harrison: I am Jo Harrison. I am the asset management director for United Utilities, which is the water company in the north-west of England

Dr Bird: I am Stephen Bird. I am the managing director of South West Water. We cover Devon, Cornwall and a little bit of Somerset and Dorset.

Chair: I have a rough idea of where you are.

Peter Simpson: I am Peter Simpson. I am the chief executive of Anglian Water. East Anglia is a funny place to describe in terms of the geography. We go from Scunthorpe in the north down to Tilbury, and right the way across to Milton Keynes and Daventry in the west.

Chair: With a lot of hills in between.

Dr Comerford: I am Adam Comerford. I am the national hydrology manager for the Canal & River Trust.

Q547 Chair: Thank you very much and thank you very much for waiting. It is great to see you here this afternoon. I will start off with the first question, on infrastructure resilience and capacity.

Peter Simpson: How do we increase the resilience of our infrastructure? How do we increase capacity?

Q548 Chair: The question, in a way, is: can you increase your infrastructure and your capacity? Then that also gives us resilience. Can we incorporate all of it?

Peter Simpson: Okay. The first thing to say is that the more surface water we can get out from entering foul systems and combined systems, the more resilient our systems inherently become. A good example for us in Anglian is Milton Keynes. Milton Keynes is a new town. It was designed with separate foul and surface flows. When it rains heavily in Milton Keynes, the flows are managed very well through balancing lakes around the town. When the water comes in from Newport Pagnell, which is a combined system also on the same overall system, it is a very different story. There is definitely something in the idea of how we, as organisations, promote the idea of keeping surface water out of combined and foul systems. How can we use systems above the ground, like

sustainable urban draining systems, to better manage that? That helps. That is going to give more resilience; that is going to give more capacity.

As a business, we have about 7,500 above-ground assets, which would be water-treatment works, water-recycling plants, pumping stations on water and water recycling. We assess all of those in terms of risk of pluvial, fluvial or coastal flooding. Of course, we have a very long coastline and that is something acutely in our mind with such a low-lying area. We assess those and we flood defend those assets that we see as the most critical and most important.

That links into another point, which is about how you think about flood risk. We work very closely with some very good lead local flood authorities on assessing risks overall in the areas where we operate. It is no good us thinking about purely our assets and what happens with assets that we have flood protected if, for example, the local power distribution company has transformers which are flooded and the power goes down. It is really important that we join together. There are dependencies between all of our various assets in thinking about what the risk is overall. The lead local flood authorities play a really important role in that.

Q549 Chair: Do other speakers here have anything to add? I am interested in where capacity could take out water that potentially could flood, either with reservoirs or holding it in the land source. Stephen, I do not know whether you have a project in Exmoor that may fit that bill.

Dr Bird: Indeed, Neil. I will build on what Peter has started with. On releasing capacity from sewers by taking out surface water, we are definitely into that. I will come to that later, because we are taking the principles that we use in the upper part of the catchments, our upstream thinking process, where we work with partners in the head areas of catchments on natural engineering solutions—in other words, dampening and reducing the flows. It would be true to say that upstream thinking, when we first brought it into our planning 10 years ago, was much more focusing on improving the quality of the water that was entering the rivers because we were abstracting that water further down the river. That gave us the treatability benefit and, therefore, you could justify investing customers' money on land and assets we did not own, because customers would see the benefit of a reduced treatment cost.

As we started to do the research with universities like Exeter University on quantifying the benefits of that, it was also clear that, as we were reinstating peatland, moorland bogs and common grasslands, apart from delivering improved water quality, we were delivering significant attenuation or a sponge-like effect in the upper part of the catchment. If you take the work we have done on Exmoor—I know we have taken a number of visitors there in the past—we have five years' worth of data now where we have grown the Mires peatbog area on Exmoor, with 200 monitoring sites and endless analysis every which way. We have raised the water table by about 2 cm. That does not sound very much, but, in terms of the volume of water that will hold, it is about 6,630 Olympic-sized swimming pools. As a scale of natural management and attenuation of flow—

Q550 Chair: That would be a fairly large reservoir.

Dr Bird: It would, indeed. The important thing to remember is it suits the particular circumstances of the south-west because we have very flashy rivers. Our challenge is a rapid flood that rises and falls. We are trying to take the top off the peak of the hydrograph. You have to bring soft engineering to bear as well as hard engineering. As Peter said, we work very closely with the lead flood authorities, Exeter City Council and Devon County Council, down in Exeter. At the same time as we are delivering upstream thinking, we are also engaged in financing part of the Exeter flood defence scheme, which has been upgraded, given the experience of the floods back in 2012. We are also engineering parts of defending our strategic assets.

Q551 Chair: When you say you are involved in the scheme in Exeter, are you involved with that through direct funding?

Dr Bird: Both. We are partly financing. One of the challenges following the Pitt recommendations was to get a closer alignment of investment cycles in relation to lead flood authorities, highway authorities, the Environment Agency and water companies. We have tried to align our capital programme so that we can put money into a capital solution so that we get better value for money. Sometimes we will lead on delivering that. We delivered a scheme in Plymouth recently, with Plymouth City Council and the EA, where we built the scheme and they gave us their money, for Colebrook. That was very successful in terms of the situation of surface water drainage in Colebrook.

In Exeter, the EA is leading. We are partly financing some of that significant investment. We are also engineering some of the solutions around sheet piles to protect our strategic infrastructure at the head of the Exe estuary. It can be a mixed economy of delivery, but in my experience soft engineering and working with partners in the catchments is as important in a situation where you are facing flash floods as is the harder engineering.

Q552 Chair: Thank you. I do not know whether Jo or Adam want to add more to that question or whether it has largely been covered.

Jo Harrison: It has largely been covered. Like Stephen, we spent the last 10 years delivering sustainable catchment solutions across the Lake District and the Pennines. We have seen huge improvements in terms of the attenuation of water, primarily to actually improve drinking water quality. That focus on soft engineering solutions is something that has been established and thought through.

Potentially a bit differently, in the north-west we have a significantly larger amount of combined sewers than other areas. One of the things we are really trying to focus on is how we manage that combined sewer system that takes surface and foul water to enable that capacity to be realised. We are undertaking a very major scheme in Blackpool to basically take out as much of the surface water as possible and introduce sustainable schemes all around Blackpool, to try to better manage that situation, reducing spills from the sewers and the flooding associated with that

Dr Comerford: Our situation is quite different from the water companies'. The Canal & River Trust is first and foremost a navigation authority. We are a charity that looks after 2,000 miles of canal and river navigation across England and Wales. About 10% of our waterways are in Wales, and about 90% are in England. First and foremost we are there to manage water levels for navigation purposes. The question around infrastructure, resilience and capacity is a slightly different one for us.

Q553 Chair: Sorry for interrupting. Would your canals not be sources of water as well, for the water companies to abstract from?

Dr Comerford: They are, in that we have specific transfers in a couple of locations where the water is deliberately taken in, perhaps from one river, routed along the canal and then is abstracted later on for water companies. There is a link there. Generally, the purpose in terms of the way the canals were designed 200 years ago was to try to avoid the surface water inflows coming through in the first place during flood events. The canal engineers—my predecessors—very clearly understood this and designed structures to try to avoid the inflows taking place.

Q554 David Simpson: You are very welcome. Is sufficient data available to you to manage water management systems effectively? If not, what could be done to improve that? The previous witnesses talked about collaboration among different agencies. Has that been as effective with you or can it be improved as well?

Peter Simpson: It has moved a lot in recent years. Its starting point is information we get about the impact of weather on river flows. We are in a different place from where we were a few years ago, and it is excellent. Particularly the Met Office and the Environment Agency should be commended for some of the work they have done post Pitt review.

When you get down into what goes on in a regional area with local flood authorities, we share a lot of information through our GIS systems on the assets we have, the maintenance programmes we are doing, the capital investment we are planning, even down to the hydraulic models that we have in our systems, so we can get one view of what is going on. It is not an endpoint; there is always an opportunity to improve what you have. But in recent years, certainly in our area, we have come an awfully long way. Increasingly we are seeing a more common picture of what the consequences and impacts are and therefore what we need to do in terms of plans moving forward.

Jo Harrison: As Peter describes, the collaboration between local authorities, the Environment Agency and water companies has increased really significantly over the last four or five years. We are still sharing some of our thinking to some extent. One of the great learnings we have had from the Cumbria floods is the need to have a very joined-up approach to looking at water management in a catchment context and thinking about that from a top-down perspective. What you are looking at is not necessarily the sum of the parts of the individual needs of the different risk-management authorities, but you are starting to think in a much broader sense, looking at where you can best direct that investment.

Q555 David Simpson: It is a better partnership. Is that what you are trying to say?

Jo Harrison: It is going beyond partnership to really collaborative working and a top-down approach to water management within the catchment context.

Dr Bird: To build on that, I would agree that, since the Pitt recommendations and the floods Act, working with lead flood authorities has improved our sharing of information. If there is a weak area, I would say that some lead local flood authorities do not have huge amounts of data, analysis and real-time information about their highways and highways drainage. Given the impermeable nature of highways and the extent of it, that is a bit of a gap in terms of the models, to my mind. More could be done on the part of the lead flood authorities to increase the nature of their real-time understanding of floods. Throughout our sewerage systems we have sensors, monitors, eventuation monitors and flow monitors, and we can largely see that in real time. Therefore, we can potentially use real-time control to optimise the storage in sewerage systems, where we have big tunnel systems, as in Plymouth, for example. We can manage our flows to some extent, but there is not that nature of technology developed on highway drainage; it just turns up in some circumstances. There is a bit of a gap.

Q556 David Simpson: Improvement could be made there.

Dr Comerford: To add to what Stephen said in terms of monitoring our canal system, we have over 600 water-level monitors around the network. We share that data with the Environment Agency and Natural Resources Wales in real time. It is a live data exchange. In return, we receive water-level data from rivers and rain gauges back from those organisations. That helps us to make more informed decisions about water-level management on our canal system.

Peter Simpson: One thing that comes out of this is a much better understanding of where investment needs to be made. I think about what is happening in one of the areas that are more progressive in our region, which is Lincolnshire. With the Lincolnshire lead local flood authority, we now have an annual programme of work so every partner understands exactly what they need to do, what contribution they are making, what impact it will actually have, based on a much better understanding. Notwithstanding the point Stephen made that it is not perfect, it is a much, much better basis for investment than we have ever had before. That is terribly important.

Q557 Chair: Do you think that is a really good step forward? Do you need to build on it?

Peter Simpson: Yes. Of course, now, because Defra allows partnership funding opportunities, in the next few years we are investing £8.4 million into other people's schemes for joint benefit. That is a really positive development.

Chair: We would be very keen to have your money here. There is no doubt about that.

Peter Simpson: We all benefit. You get a bigger bang for your buck. That is the point. That is the benefit. We all benefit.

Dr Bird: Jo touched on the work we are all doing on voluntary SuDS: the removal of surface water from existing assets in order to free them up to take foul sewage rather than surface water. We have taken the upstream thinking principles into downstream. We are looking at the retrofit of SuDS, which is not as easy as it sounds, depending upon where the development is. If we are looking at redeveloping contaminated land etc, that presents different problems for developers than if we are redeveloping land that is fairly benign. The introduction of green infrastructure to slow flows down in urban areas and reintroduce that permeability that you talked about earlier is part of our toolbox. We are spending the equivalent on downstream thinking—about £10 million over the next five years—that we are spending on upstream thinking, because, again, in our patch all the people tend to live at the end of the rivers, in the estuary, on the coast. Therefore, it is important to give protection in an urban environment, as well as addressing the issues in headwaters.

Q558 Rebecca Pow: This links to some of the things you have mentioned already. It does swiftly go on; I am not going to waffle over all the information that a lot of you have already sent in, but I will look particularly at the role of water companies and how you might work better with the planning process, in order to potentially reduce the amount of water you ultimately have to treat, which ultimately costs you money. That might save you money, and might also help the planet and the environment. Rather than going over all the information I have here, how about if you each suggest what you would like? What would be good? What would help this? Would you like to work better with the planning system or would you like to take over some controls or powers?

Jo Harrison: The important thing is to remove the automatic right to connect surface water to sewers, because we have very little control around what comes into the sewers and therefore, when we see the impacts of new developments, that is really the primary impact that we see. A better focus and management around that would be one of the particular issues that I am focusing on.

Q559 Rebecca Pow: Does everyone agree with that?

Peter Simpson: Yes.

Dr Bird: Yes.

Rebecca Pow: Okay. We are talking especially about SuDS.

Q560 Chair: Playing devil's advocate, all you are doing is making sure that you do not have to fund that, and yet you are already being funded, to some degree.

Dr Bird: In terms of removal of the right to connect surface water, it is very much about surface water; it is not about foul water. That will continue. We have that duty and we will continue to discharge that duty. It is about being able to refuse surface water. It may be that sometimes the connection is the only answer, but giving us the right to refuse engages developers in thinking creatively about alternatives to that.

Q561 Rebecca Pow: When we spoke to the Housing Federation, a lot of them assured us that they had put in lots of SuDS and, in fact, they had done a lot of this work. What is your view?

Peter Simpson: In some big developments you see SuDS being used, and they are very effective and work very well. In others, you do not. Picking up the point that Stephen has made, particularly when you are talking about smaller development in already regenerated areas, for example, you sometimes do not have some of the land that you need to create SuDS. Sometimes you end up with hybrid solutions, where you may have some of the traditional engineering solutions, which might be bigger underground tanks, combined with attenuation ditches and swales, to come up with something where you have a little bit of both. You see some of that. You have to be careful about making broad generalisations. The point that Jo made is an important one: it would be good if a starting point was SuDS and you justified coming away from it.

Q562 Rebecca Pow: Do you think you should be a consultee on planning developments?

Dr Comerford: In terms of planning developments, we are already a consultee for our canal network and any planning applications that are close to our reservoirs or canal feeders that bring water from the reservoirs to the canal system. We get a chance to comment on those.

In terms of rights to connect, there is no formal right to connect to our canal network for surface water, so we get the chance to exercise discretion on whether we want to accept surface water run-off into our system from a developer or not, and we get to weigh up whether it is mutually beneficial and whether we want to accept that water or not into our system.

We do believe that, in terms of the SuDS provisions, the more formal provisions set out in the Flood and Water Management Act 2010 would be good if they were brought in, because that would ultimately provide a better understanding of the flows, better long-term management, better design of the SuD systems for those that are going to come into our canal network, so we can plan with confidence, knowing the types of flow rates we might expect to receive into the waterways.

Q563 Rebecca Pow: What would the other water companies like to recommend?

Dr Bird: I believe that it is appropriate that we are statutory consultees to planning. Currently, we are invariably consulted, and more often than not our advice is heeded, but not always, because each individual planning authority has its particular priorities. In reality, some planning authorities are better equipped to make judgments around

the associated flooding risk than others, simply because of a skill shortage or whatever.

If we were made statutory consultees, then we could introduce a broader catchment-based thought process into the planning decision. We could say, “What are we doing at headwaters? Is that likely to give you a benefit in 10, 20 or 30 years? What is possible in urban environments to green up the infrastructure over the next five or 10 years?”, so that any individual planning authorities can make those decisions in a much broader context. Even the EA would not have that whole picture.

Q564 Rebecca Pow: I was just bringing in Peter. The Environment Agency is consulted on lots of these projects, but not you. Is that right?

Peter Simpson: Yes, that is right. We are not statutory consultees, but we are engaged in the process. We all try to influence, through lots of different means. For example, lead local flood authorities are also statutory consultees and so they have the ability to influence. If we work with them and inform them, that gives the ability to have our voice heard. Stephen was not saying that we are not heard and do not have influence; we do, but, ultimately, being a statutory consultee is another level of potential influence.

Q565 Rebecca Pow: Do you think sometimes you are backtracking? Sometimes, something happens and is put in place, a development gets developed and you have to take the water conditions.

Peter Simpson: That does happen.

Q566 Rebecca Pow: Jo, you might find yourself having to backtrack, saying, “This does not work” or “There is too much water coming into the system.”

Jo Harrison: We have found significant benefits since lead local flood authorities have become statutory consultees, and we work very proactively with the planning authorities and the lead local authorities to try to ensure that we get the right outcomes in terms of surface water management. Looking retrospectively at some of the developments over the last five to 10 years, there are significant problems associated with the fact that there was not due consultation associated with a development.

Q567 Chair: What is the role of water companies in managing flood risks? Do you have a role? Should you have a role in managing flood risk?

Dr Bird: I believe we should, because we have extensive infrastructure scattered all over catchments. We have something like £8 billion or £9 billion-worth of assets spread across Devon and Cornwall, all of them potentially vulnerable to floods, whether that is coastal, storm surges, tidal influences or fluvial flooding. All of that is essential infrastructure in terms of the protection of public health, in terms of keeping regional economies going, etc—as important as road, rail connections and so forth.

Q568 Chair: You have all these assets. Do you think you are as connected into the Environment Agency and the local authorities as you should be, or are there other systems that could be put in place?

Dr Bird: Since the floods Act and the creation of lead flood authorities, as Peter has described, there has been an impetus on all those parties to get together and work much more strategically and coherently than prior to that. My view is that, while it is early days, it is working very well. There are some speculations around other experts. We referred to Dieter Helm's paper about the potential creation of a catchment operator that would control the activity. There are a whole range of beneficiaries from a catchment—

Q569 Chair: Within a catchment area?

Dr Bird: That is right. That is an interesting model, but my view is that at the moment lead flood authorities are working well and we are learning all the time. We can bring things to the party in terms of working in the headlands, because we have a range of drivers for that, and generally those bodies listen to us.

If there is one plea, it is this: it would be beneficial if Defra, in its 25-year vision and its guidance to Ofwat, could perhaps give a bit of a stronger steer on the water industry's engagement in the resilience agenda and a view about what it is reasonable for us to invest our customers' money in. Yes, we need to consult customers; we need to make sure that they are comfortable with the investments that we might make, whether it be in the uplands or in urban areas. We will need to take investors with us in the sense of what is appropriate for water companies—

Q570 Chair: You want Defra very much to take that on board.

Dr Bird: Given the long-term nature of threats around climate change adaptation, the experience of the floods in the north and the extremity of those floods, to my mind, we have to plan more aggressively for those sorts of events. They are so infrequent that they are very difficult to engineer for, but we need to think about how we plan for them. That is not something you can invest in in five years; it will take 25 years and it needs to be part of that vision.

Jo Harrison: Water companies are not risk-management authorities under the Flood and Water Management Act. We are members of the regional flood and coastal committee. We are active as part of the lead local flood authority organisation. We fully play our part in the whole flood hierarchy that exists. As Stephen said, yes, it is being established, but we are seeing it be really effective.

One of the interesting things we have seen in Cumbria is that the Cumbrian floods partnership has been formed, following the flooding in December, and now that is morphing back into the control of the established lead local flood authority mechanism. While there has been an additional hiatus of activity, which is understandable in those circumstances, it is recognised that the existing governance was appropriate.

Q571 Chair: It is about keeping up momentum, isn't it? That is a lot of the trouble with floods in this country. We have a big flood and it is all very hyped up, and then it dries up again and everybody goes back to where they were. It is making sure we keep it going.

Peter Simpson: I agree with everything that has been said. I would just reinforce a point: the lead local flood authorities are terribly important. We should highlight really good practice, try to identify what it is that leads to that good practice and encourage all the lead local flood authorities to reach the higher standards we are setting across the country. Water companies have a key role; we cannot not have a key role, for all the reasons that Stephen said. Resilience is an important word. We focused a bit in the conversation here on how we protect, how we avoid, and that is really important; and that is a key part of how we have been thinking about building a more integrated water supply infrastructure.

But we should also remember that resilience is about bounce-back and recovery. It is really important not to lose sight of the mechanisms that exist around local resilience forums and the response we make on the ground, which is so terribly important, after flooding happens. I just make the point that we should not lose sight of bounce-back in some of the discussions here. It is not just about how you prevent; it is also about saying, if it does happen, how we respond to that in a joined-up way.

Dr Bird: Peter makes a really important point. Our experience of Boscastle and its recovery was pretty formative in terms of getting infrastructure back in place. Our experience with the Dawlish seawall collapse and people having to leave their homes means that we are working very effectively with the local resilience fora, but we need to be ready to respond and particularly focus on vulnerable customers in those circumstances. We have a lot to bring to that management of recovery, because we are in touch with every single customer connected to the water and sewerage supply in Devon and Cornwall, so we know where the vulnerable customers are. That will not always be the case for the Environment Agency, the police or whatever.

Q572 Ms Ritchie: This is to the Canal & River Trust. How can waterways be managed to ensure maximum capacity over a catchment and minimise flood risk during extreme rainfall events?

Dr Comerford: First and foremost, our network is about 2,000 miles and we cut across many catchments. Our canals interface across catchment watersheds, across catchment boundaries, so they have the potential to take water from vulnerable areas into less vulnerable areas, but also vice versa. The design of the canals principally was set out to avoid the inflows of that water, as I said earlier.

There are plenty of examples in recent times where we have accepted run-off into our network, where it has provided a benefit to developers because it has enabled them to undertake a development that could have otherwise not happened. We have been able to receive that water and manage it effectively where we have the capacity.

On our capacity, it is important to say that what we call the freeboard—the tolerance in our network of accepting water—is quite modest. The ability to take large volumes of

floodwater is not always that great, and the canals can then potentially pose a flood risk to others if we do not manage that effectively. Our telemetry and water-level management systems help us to control that through automated structures that allow us to pass the water to other watercourses safely.

Q573 Ms Ritchie: How feasible is the idea of draining canals ahead of floods?

Dr Comerford: It is often put to us, usually straight after a flood event that has affected canals, “Could you not have emptied the canals beforehand, conveniently moved all the boats out of the way? Then the canals would have created this amazing flood-routing channel.” The practicalities do not really stack up. The canals themselves were never designed to take large flood flows. Their conveyance, the hydraulic capacity, is fairly modest. The impact on customers would be quite considerable and—dare I say it?—the flood and rainfall forecasts are probably not so precise that we could drain down specific sections of canal network to accommodate the flows and then provide a difference in terms of flood risk management.

It is worth saying, in the December floods, our canal structures were grossly overwhelmed with the scale of the flooding. In the Calder Valley, through Hebden Bridge, the canal was completely inundated with the flows from the river Calder. There was nothing that we could have done. If we had emptied out the canals beforehand, they would have provided a very modest benefit before they were filled back up and then more again.

Q574 Ms Ritchie: Have any plans yet come out of the Canal & River Trust’s work with the Environment Agency and, if they have, could you share those with us?

Dr Comerford: Yes. Even though we are not a risk management authority, we certainly work closely with the Environment Agency and we have been having a lot of follow-up discussions, following the winter floods, to look at locations where the canal and the river catchments are so intertwined that schemes that could benefit the river would also benefit the canal network and vice versa. There are a few examples in the Hebden Bridge area where we are looking at specific flood alleviation schemes that may take the floodwater into the canal safely, rather than it happening in an uncontrolled way, and then route it to a suitable point where it can return back to the river catchment.

Q575 Chair: As far as the water companies are concerned, playing devil’s advocate, what would you like to see the canals do, or are they absolutely perfectly run, as far as you are concerned?

Peter Simpson: I recognise the practical limitations of what can physically be done there. The worst thing in these situations is to imagine that these are possibilities and rule them into your thinking. It is better to be clear that they are not and work on other solutions. I recognise the practical constraints there.

Dr Bird: I was drawn by the parallels with the debate that often goes on about reservoirs. “If you can forecast a big event, why can you not empty your reservoir beforehand?” My

plea would be that you might replace one resilience challenge with another. Should that forecast rainfall not happen—

Chair: You would have no water.

Dr Bird: —you would be staring a drought in the face, a year or 18 months down the line.

Chair: The weather can turn very quickly. In the first two years of the last Parliament, we talked of nothing but draught and thereafter virtually nothing but flood. It can change quite quickly from having a lot of water to having very little water. I accept that.

Peter Simpson: You have to think about the different geographies as well. In the east of England our reservoirs are generally pump-storage reservoirs, so they play no part in this at all, even the really big ones. Up in the north-west, it is a different situation.

Q576 Chair: The part of Somerset where I have my farm is very flat and the water just does not flow very fast anyway, so there is no flow on the canals as well as the rivers. It is interesting.

Dr Comerford: I would have said the same. We have 74 reservoirs that are primarily designed for canal supply, and there is only one in the country where we already hold the water levels down to provide some flood attenuation. For the rest, we try to maximise the refill so we can get through the boating season the following summer.

Q577 Dr Monaghan: Jo, what investments is United Utilities making in flood-risk mitigation, including partnership funded flood defence schemes and national catchment management?

Jo Harrison: We spend about £100 million to £120 million every five years specifically on our sewer flooding programme. We have historically, as an industry, been quite focused on sewer flooding as a cause of flooding. It has been an area where we have moved from providing very civil engineering-focused, tank-type solutions, in terms of increasing the capacity on our networks, to more recently understanding the much greater benefit we get from improving operational and dynamic control of our sewers. We spend about that much, and we are really focused on making sure we reduce the impacts on our customers.

In terms of more general flood defences, we look to make sure that our treatment works are protected from the most extreme floods. A number of our water treatment works over the last five or 10 years have been protected to ensure that we would not have infrastructure impacts. That really followed the instances of flooding in Severn Trent's experience with their Mythe water treatment works a number of years ago.

We also jointly invest in coastal flood defences. We have undertaken some work with Blackpool and Fylde Council to build some coastal defences in the Rossall area on the Fylde coast. Then we are investing, as we have talked about, in the removal of surface

water in places like Blackpool, where it is particularly flat so we have continued issues with the management of surface water. We already talked about retrofitting of urban sustainable drainage. We are looking at a number of different schemes, to look at the viability of that, particularly in the Greater Manchester area.

Q578 Dr Monaghan: It is around £120 million currently.

Jo Harrison: Yes.

Q579 Dr Monaghan: Could it be more?

Jo Harrison: We have to balance the level of expenditure with customers' priorities. We could spend more looking at the problems from sewer flooding, but the expenditure of that much enables us to reduce the level and frequency of flooding in our area over the next five years by about 50%, which is a significant reduction. We would continue to plan for that level of improvement going forward.

Q580 Dr Monaghan: Stephen, what about South West Water?

Dr Bird: It is a similar range of things to those that Jo touched on. I touched on the investment in the upstream thinking catchment management initiative; that is about £10 million over five years. We are investing a similar amount in downstream thinking, SuDS and retrofitting SuDS; that is another £10 million.

In terms of the sewerage assets, we are investing in both upsizing them to accommodate growth and housebuilding, and additional storage, in this instance to protect bathing waters and shellfish waters in the south-west. They are quite a driver, because that gives us additional capacity in the winter, as a by-product of protecting those bathing waters in the summer from frequency of overflows. That will be of the order of £100 million over five years around those sorts of areas.

Again, like Jo, we make bespoke investments in what we would consider to be vulnerable assets. If we take the Exeter flood back in 2012 and the flooding of the railway in Cowley Bridge a few years before, we had invested in a flood defence scheme for Pynes water treatment works, which in the same valley—virtually the same location. That was a £4 million investment to protect that strategic supply for Exeter against—sorry to use the parlance—a one-in-100-year storm. The advantage of that particular investment in that infrastructure is that we can add to it. You could raise the level further if, when you look at climate change adaption, the need is to protect, say, against a one-in-1,000-year event. It has that sort of flexibility in terms of its structure.

In addition, as part of our local resilience forum responsibilities, and in the light of the Letwin review that is going on at the moment, we are reviewing investment in temporary flood defences—i.e. rather than building physical structures, having defences available so that you can deploy to protect a water pumping station that might be vulnerable or, indeed, work with power companies to protect power substations that might be critical to keeping our infrastructure going. It is that sort of mixture. It is that scale of investment in each five year cycle.

Q581 Dr Monaghan: £20 million to £25 million—something like that.

Dr Bird: It is of that order: £25 million to £30 million a year, if you add all those components together. It is £150 million to £200 million every five years.

Q582 Dr Monaghan: What do you think would encourage South West Water to have a greater involvement and private investment in all these mitigation schemes?

Dr Bird: One of the big challenges from our upstream thinking work is the inability to value some of the benefits that you get from managing the natural environment. As I said earlier, the prime value from upstream thinking for us was in terms of reducing the treatability cost for water that we abstract down at Pynes. That allowed us to ask our customers whether they were willing to pay a certain amount to invest in upstream thinking.

There is no value currently derived from delivering resilience services in terms of reduced flooding; there is no market in that. We are doing it and we are delivering a benefit, but there is not a value to that. Carbon sequestration comes from peat reinstatement and so on. Through the development of a market and a payment-for-ecosystem-services process involving beneficiaries of the activity in the catchment—that could be the lead flood authority as a beneficiary; it could be a water company; it could be a local business that might not be flooded because of that work, through business rates or whatever—if we can put a value on those services and monetise that, then clearly a number of different incentives would appear to our investors and therefore we could do more. Unless we value what we do in those catchments in a way that society can recognise, it is very difficult to justify to our customers, on just the treatability measure, to do much more than we are doing already.

Q583 Dr Monaghan: Have you any idea about how that value could be established?

Dr Bird: There is a lot of research on the part of the Natural Capital Committee, the body that is supporting the Treasury, chaired by Dieter Helm, to look at how we can quantify that. Exeter University and others are employing experts in their Land, Environment, Economics and Policy Institute to try to bring environmental value, economics and willingness-to-pay research together, so that you can create new markets and farmers can be paid for reducing an urban area's flooding risk, a water company's treatability cost or a business's insurance cost, because they happen to be located on a floodplain.

We are very supportive of that work. We are working very closely with that university and that particular group, and the hope is that Treasury and Defra will give that guidance when Defra comes to give the next level of strategic guidance to Ofwat in its price review process, which will trigger post-2020, so it would come in 2018-2019.

Peter Simpson: Shall I keep it brief? If we think about the pot that is associated with the sewerage system, it is £86 million over the next few years. That includes investment in sustainability urban drainage systems, where they are appropriate; it includes upgrading existing infrastructure. Within that, £8.4 million is this partnership funding that I

referenced earlier on, where we get a much bigger bang for our buck. Within that, for example, we have £3 million towards a £33 million scheme to protect Clacton-on-Sea—coastal flood defence.

Over the last few years, in the last AMP period, we spent something like £14 million on protecting those specific assets that I referred to right at the beginning. We looked across our asset base, identified those where felt there was the greatest risk and the greatest consequence of flooding and invested in flood protection around those. There is a programme that we have—

Q584 Dr Monaghan: The question is not so much about your assets; it is more about partnership-funded flood defence schemes and national catchment-management issues.

Peter Simpson: The £8.4 million is a contribution to partnership funding for other bigger schemes, which benefit our assets—obviously, our customers are the same—but have other benefits as well. That has been a really positive development—Defra making that available—because we all get a bigger bang for our buck. Rather than us flood-defending a particular point asset in that area, we take the money we would have put into that and contribute it to a bigger scheme and, lo and behold, as UK plc, we get a bigger benefit.

Q585 Dr Monaghan: It is £8.4 million for the year.

Peter Simpson: It is £8.4 million over the five years, and we are already working on the next tranche for the next price review.

Q586 Dr Monaghan: That is one point something million this year that you are investing into schemes.

Peter Simpson: We built the schemes in the last AMP period. We identified the opportunities for those investments with all our partners.

Q587 Dr Monaghan: It is a fairly direct question, I think. We are trying to understand the scale of Anglian Water's investment. From what you are saying, we have got to a figure of somewhere under £2 million for the year, which does not seem to be particularly significant. You may want to be clearer about what it is that you are doing.

Peter Simpson: The first figure I said was £86 million.

Dr Monaghan: What is over what period?

Peter Simpson: Over the five years of this AMP period. That covers the investment we are making in upgrading current assets; it includes some of the things we have referred to before in terms of introducing—

Q588 Dr Monaghan: Sorry, I am going to take you back again. It is not about your assets; it is about partnership working, flood defence schemes and catchment areas—your contribution to that bigger picture—not so much about your assets in particular.

Peter Simpson: Of the £86 million, our contribution to those partnership funds is £8.4 million, like the scheme I talked about in Clacton-on-Sea. We get a much bigger benefit. If you take Clacton-on-Sea, for example, that is a £33 million scheme. Our contribution to that is £3 million. That is £3 million that we would have probably spent trying to defend point assets around there; we would defend some of our individual assets from flood risk, but, by contributing to this bigger scheme, we get a bigger benefit and so does everybody else.

Q589 Dr Monaghan: You have said that already. What is it that you are contributing overall, on an annual basis, towards private-public partnerships?

Peter Simpson: The contribution to those broad schemes is £8.4 million over the five years, which is committed to schemes over this five-year period.

Q590 Dr Monaghan: That does not seem to be particularly significant. What would encourage Anglian Water to start investing more and having a greater involvement in private investment?

Peter Simpson: To be fair, the opportunity to identify schemes in which we could co-invest was something we were right at the forefront of. The £8.4 million is very much the start of what we hope will be a much bigger opportunity as we go into subsequent funding periods. If you went into the east of England and talked to the lead local flood authorities and the local authorities we work with, they regard this sort of investment as very positive. With them, we developed the opportunities across multiple schemes to make those investments, very much at the start of what we thought the opportunity was for the future. It is a very positive step.

Q591 Dr Monaghan: I am not disputing that. The question is much more about what would encourage Anglian Water to do more.

Peter Simpson: To demonstrate with our partners the success of the approach that we have taken.

Q592 Dr Monaghan: How would we go about doing that?

Peter Simpson: Show the schemes; show the value for money that has come out of the schemes. Have the schemes delivered, because I am talking about schemes that we are jointly seeing delivered at the moment. See them delivered and show the benefits that we all get as a result of them. That is the best. The proof of the pudding is in the eating.

Dr Monaghan: Similar issues to the ones that Stephen highlighted.

Dr Bird: Our downstream thinking initiative has only just started, whereas upstream thinking has been going 10 years. We are doing pilots to prove the benefits, because,

when you talk to customers about their willingness to pay, you have to be able to quantify why it is appropriate for your water and sewerage bill to finance that.

Q593 Dr Monaghan: You were very clear on that earlier. Adam, it is not really your area, but do you have a comment that you want to make?

Dr Comerford: From our perspective, we have not had direct involvement with any partnership funding, but there are a number of locations where flood alleviation schemes have gone ahead that are funded by others, where our assets are being changed, such as the Leeds flood alleviation scheme in the city centre. A number of our structures are being changed, funded by Leeds through that partnership-funding route, which will reduce the overall flood risk to the city of Leeds. We are involved with that, if not making major financial contributions.

Q594 Dr Monaghan: Is there scope for further activity, do you think?

Dr Comerford: Potentially. Our funding mechanisms are very different to the water companies'. As a charity, we get a government contract, but that goes into a general pot of investment, whether that be on reservoirs, locks, weirs, sluices, embankments or bridges. We have to pick and choose where our investment goes. We are not a risk management authority, as I said earlier, so undertaking a flood-risk management function is a very modest part of our responsibility. We are, first and foremost, looking out for and investing in our own assets that could reduce flood-risk liabilities to ourselves and risks to others—for example embankments and making sure our reservoirs are safe in terms of the reservoir legislation.

Chair: Thank you. Paul gave you a good grilling there on your funding, so well done, Paul. Can I thank Jo from United Utilities, Stephen from South West Water, Peter from Anglian Water and Adam from the Canal & River Trust? It has been some very good evidence. Thank you very much for coming along this afternoon. Can I also thank Margaret and Paul particularly for staying on here to the very end? That is most appreciated.