



**Cynulliad Cenedlaethol Cymru
The National Assembly for Wales**

**Y Pwyllgor Cynaliadwyedd
The Sustainability Committee**

**Dydd Mercher, 13 Mai 2009
Wednesday, 13 May 2009**

Cynnwys
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Cofnodir y trafodion hyn yn yr iaith y llefarwyd hwy ynddi yn y pwyllgor. Yn ogystal, cynhwysir cyfieithiad Saesneg o gyfraniadau yn y Gymraeg.

These proceedings are reported in the language in which they were spoken in the committee.
In addition, an English translation of Welsh speeches is included.

Aelodau'r pwyllgor yn bresennol
Committee members in attendance

Lorraine Barrett	Llafur Labour
Mick Bates	Democratiaid Rhyddfrydol Cymru (Cadeirydd y Pwyllgor) Welsh Liberal Democrats (Committee Chair)
Angela Burns	Ceidwadwyr Cymreig Welsh Conservatives
Alun Davies	Llafur Labour
Lesley Griffiths	Llafur Labour
Rhodri Glyn Thomas	Plaid Cymru The Party of Wales
Brynle Williams	Ceidwadwyr Cymreig Welsh Conservatives
Leanne Wood	Plaid Cymru The Party of Wales

Eraill yn bresennol
Others in attendance

Chris Mills	Cyfarwyddwr, Asiantaeth yr Amgylchedd Cymru Director, Environment Agency Wales
John Mosedale	Rheolwr Perygl Llifogydd, Asiantaeth yr Amgylchedd Cymru Flood Risk Manager, Environment Agency Wales

Swyddogion Cynulliad Cenedlaethol Cymru yn bresennol
National Assembly for Wales officials in attendance

Dr Virginia Hawkins	Clerc Clerk
Meriel Singleton	Dirprwy Glerc Deputy Clerk

Dechreuodd y cyfarfod am 9.08 a.m.
The meeting began at 9.08 a.m.

Cyflwyniad, Ymddiheuriadau a Dirprwyon
Introduction, Apologies and Substitutions

[1] **Mick Bates:** Good morning. Thank you for your attendance this morning at the Sustainability Committee. Are there any apologies or substitutions this morning?

[2] **Dr Hawkins:** There is an apology from Karen Sinclair.

[3] **Mick Bates:** Thank you. I have to make the usual housekeeping announcements before we get going. In the event of a fire alarm, you should leave the room by the marked fire exits and follow the instructions of the ushers and staff. There is no fire alarm test forecast for today. Please make sure that all mobile phones, pagers and BlackBerrys are switched off as they interfere with the broadcasting equipment. The National Assembly for Wales operates through the media of both the Welsh and English languages. Headphones are provided, through which simultaneous translations may be received. For those who are hard of hearing, they may also be used to amplify the sound. The interpretation is available on

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9.09 a.m.

**Ymchwiliad i Lifogydd yng Nghymru: Sesiwn Dystiolaeth
Inquiry into Flooding in Wales: Evidence Session**

[4] **Mick Bates:** It is a great pleasure to welcome representatives of Environment Agency Wales to give evidence to the committee's inquiry into flooding in Wales. We have already had two visits and on Monday we were in Gloucester to meet the agencies and the council to see how they dealt with the July 2007 flooding. It was extremely interesting to see how the agencies worked and how they have learned from that experience.

9.10 a.m.

[5] We also learned a lot. This morning, it is my great pleasure to introduce Chris Mills and John Mosedale of the Environment Agency Wales. I believe that you have a presentation. We have to finish promptly at 10.15 a.m., as we are launching a report in Techniquet at 10.30 a.m. Therefore, I would be grateful if you could make your opening remarks concise. You have approximately 10 to 15 minutes, if that is all right. It is over to you, Chris.

[6] **Mr Mills:** Thank you. My presentation might be slightly longer than that. It will be around 20 minutes. Is that okay?

[7] **Mick Bates:** Are there bits that you could move along?

[8] **Mr Mills:** I will try to move it along fast.

[9] **Mick Bates:** I will remind you. It is now 9.10 a.m. and I would like the presentation to finish by 9.25 a.m., if possible.

[10] **Mr Mills:** I will do my very best. I will start by thanking you for inviting us to set this context. I want to begin by emphasising the importance of climate change. In our written submission, we put forward that, if climate change predictions are correct, there will be more flooding from all sources and more severe flooding. We have to give the hard message that there will never be enough money and resources to prevent all flooding. Mankind has never yet nor ever will tame nature to that extent. We will continue to build flood defences, and we are investing more now than ever before. However, we also need to manage flood risk using a wide range of measures, which I will describe.

[11] At the very centre of all of this is what people need. The slide shows a diagram from the Pitt review, which sets out what people need to be able to deal with flooding. Superimposed on the diagram are the names all of the organisations, of which there are many, that are responsible for managing flood risk: the Environment Agency, local authorities, the water companies, the Welsh Assembly Government, the emergency services, and others. They are all necessary; we need all of these organisations to manage flood risk. However, we believe that overall effectiveness could be improved if there were more of a strategic overview. In certain areas, for surface water flooding, for example, there needs to be clarity as to who is leading and we also need a more co-ordinated response. Of course, that response depends on the nature of the flooding.

[12] I have four pictures on the slide that represent four different types of flooding. In the top left-hand corner, you will see that we have many rivers in Wales that are short and steep,

with sudden onset flooding, which can be quite catastrophic. It is difficult to warn of floods in these areas, and it is difficult to forecast floods. In the top right-hand side, you will see that we have larger rivers, such as the Dee and the Towy, which are longer, shallower rivers, for which you can usually predict with much more certainty the onset of flooding, and they tend to cause quite extensive agricultural flooding. In the bottom left-hand corner—a coastal defence in the Severn estuary is shown—we have coastal flooding. What you really need to worry about there is when you have stormy conditions—high winds, high tides—all coming together. You can then have pretty catastrophic flooding. In the bottom right-hand corner, you will see surface water flooding; it is a picture of Barry in 2007. In recent years, that type of flooding has given rise to some quite significant floods.

[13] I wanted to stress that, in certain areas—in relation to the Valleys rivers, for example—it is currently difficult to predict accurately rainfall events and therefore to forecast flooding. We are looking with the Met Office as to whether that can be improved, as it is quite an important issue.

[14] Another type of flooding is reservoir flooding. The slide is a picture from the 2007 floods; it is the Ulley reservoir near Rotherham. There was a fear that the dam wall would give way. Obviously, you could then have catastrophic consequences. We have a large number of reservoirs in Wales and we need to make sure that they are all safe.

[15] If we are talking about flood-risk management, we must concentrate on what exactly flood risk is. It is the likelihood of flooding multiplied by the consequences of flooding. Managing flood risk requires us to try to cut down the likelihood and the consequences. The important point to make is that, in the past, we have concentrated on flood defences, which are designed to cut down the likelihood. However, where you build a flood defence, if it is over-topped or breached, the consequences can be far worse. Therefore, flood defences are not necessarily a panacea. In reality, flood risk comes down to very local situations, and we need to look at local communities and situations in much more detail.

[16] What does the Environment Agency do? I think that you probably have a reasonable idea, but we manage a whole series of activities in relation to flood risk. I will look at some of those now. First, we need to understand where our areas of highest flood risk are. There are about 170,000 properties in Wales on the floodplain. The slide shows a map with the percentage of properties on the floodplain by local authority area. You can see immediately that the areas with the highest percentage are on the north Wales coast and parts of the Severn estuary. Those are the two areas where we have extreme risk from coastal flooding. In a survey of 373 local authorities in England and Wales, seven of the top 15 in the highest risk category are in Wales. Therefore, I stress that we have a great deal of flood risk in Wales.

[17] The Environment Agency provides extensive maps of the extent and depth of flooding in Wales. This slide shows the example of Carmarthen, where there is a one in 100 chance of flooding each year. The next slide shows a one in 1,000 chance of flooding. The extent has not increased markedly, but there is much deeper water, and with that comes much greater risk.

[18] On advising local planning authorities, one of the best ways to prevent flood risk is to avoid building where there is a risk in the first place. One of our key roles is to provide expert flood risk advice to the planning authorities as part of the technical advice note 15 process. Since its introduction in 2004, we believe that this process has improved markedly. Last year, 97 per cent of the decisions made by local planning authorities were in line with our advice; that is a marked increase. There are ways in which the process could be improved, but, for the sake of brevity, I will keep that for the time when you may wish to ask me questions about how it might be improved.

[19] We have put a lot of effort into trying to raise people's awareness of flooding, and we have provided examples in our submission. Despite that and despite writing to everyone with a property on the floodplain, a recent MORI poll showed that only 57 per cent of people at risk know that their property could be flooded and that only 32 per cent have taken action to prepare. We took over flood warning from the police in 1996, at which time no real direct warning system existed. Of those 170,000 at-risk properties, we are able to provide an appropriate direct flood warning to 107,000, which is 63 per cent. We are aiming to increase this to 136,000 by April 2013. It may never be possible to provide a direct flood warning service to all properties, but we have developed a very sophisticated flood warning system called Floodline Warnings Direct, which is available to people through a range of media. Currently, 47,000 people are signed up to that. In the past, it has been an opt-in system; we are going to change it to an opt-out system, and, through that mechanism, we are hoping to drive up the number of people signed up to it.

[20] We have come to the conclusion that, if we are going to meet some of the targets in the environment strategy action plan on engagement and ensuring that people are aware of the risks, we must have more community engagement. Some money is being put aside this year and next to start to trial the best ways of getting that community engagement. I wish to stress the point that it is not just about reaching the general community; it must also be about reaching certain parts of the community, and those who are vulnerable and hard to reach in particular.

9.20 a.m.

[21] Local resilience fora lead emergency planning. These are chaired by the chief constables and they ensure that we have effective and practised plans in place. Our general conclusion is that this is working well and the agency is the lead body for flooding.

[22] A number of organisations are involved in emergency response. The lead organisations are the local authorities and the emergency services, although Welsh Water leads on sewer flooding. We have an emergency workforce of 106 people, who go out during flooding to maintain our assets and provide an emergency response, and they can be deployed flexibly across Wales and used across the border as well. However, the big issue—and I will come back to this—is the lack of clarity regarding who leads on surface water flooding.

[23] On keeping essential services running, we ran a conference nearly a year ago on critical infrastructure. You can see from the slide that we have quite a bit of critical infrastructure that is at risk of flooding. There is now much greater awareness of this and the utility companies are doing things to try to improve the situation. However, I wish to make one simple point, which is that the critical thing that came out of that conference was the fact that different asset owners have different appetites for risk and, hence, the level of protection provided can be very different. There is no point in protecting a water treatment works against a one in 200 chance of flooding if the electricity sub-station that supplies it is only protected against a one in 100 chance of flooding.

[24] On the maintenance of existing defences, luckily, the sort of damage shown on the slide is very rare. During the 2007 floods, 0.2 per cent of flood defence assets that were tested failed. We have a very comprehensive programme of asset maintenance and inspection. The issue to point out here is that a significant number of defences belong to organisations such as local authorities, Network Rail and private individuals—these are third-party assets. The standards to which they are maintained may not necessarily be the same standards as those maintained by Environment Agency assets. We need to bring all these up to a common standard. Some of the assets form flood defence systems, and they are only as good as the weakest link.

[25] I have covered capital investment in some detail in the report, and I am happy to take questions on that. However, I wish to make the point that we have had quite a rapid increase in capital investment since 2001, and we have benefited considerably from European funding. The issue of recovery and building in resilience is important, but it is not one on which the agency leads; it is something that you may want to discuss with local authorities in particular.

[26] On future climate change, I have two statistics that I think, and hope, will bring forward in your minds the seriousness of this issue. Communities that live behind good coastal defences, which currently protect them against a one in 100 chance of flooding, will only have protection against one in five chance of flooding by the end of the century, assuming that business continues as usual—that is a massive drop off in effectiveness. The risk of inland flooding in the 2080s is expected to rise to between four and six times the present levels. If we are to have 20 per cent higher peak flows, how can that be accommodated in rivers such as that on the slide? You will either have to build up the banks immensely or widen the channel, both of which will cause considerable disruption.

[27] On surface water flooding, we will see more and more high-intensity rainfall. In 2007, we saw the chaos that that can cause. Sea levels will rise relatively slowly during the early part of this century until about 2040, but there will then be a much more rapid increase to over a metre by the end of the century. That is perhaps one of the more conservative estimates; some people would say that the level of the sea could potentially rise much higher. What does that mean? Areas such as that around Borth already get a fair old battering from the sea. Will living in such locations be safe in 100 years' time, with an extra metre rise in sea levels? If residents had to abandon specific locations because of increased risk, what help could they expect? How are we taking forward looking at this risk in a comprehensive way? Catchment flood management plans, the consultation on which has just ended, and shoreline management plans are the two ways of doing that. We lead the CFMPs; local authorities lead on the shoreline management plans. They are an important way of bringing together information about flood risk, sharing that with people and the communities that are at risk.

[28] Before we get on to the future—and I have galloped through a lot—I will summarise. We currently face significant flood risks here in Wales. With climate change, they will only get worse. Many organisations are necessarily involved in managing flood risk, but we need a more strategic overview to bring the activities of those organisations closer together, and, in certain cases—and I have highlighted surface water flooding as an example—a greater clarity of role is also needed. We cannot defend everywhere. We are moving to a system of more comprehensive flood risk management. Most importantly, we need to inform and involve communities when making decisions about the flood risk that they face now and in the future.

[29] Do I have time for my final slide, Chair?

[30] **Mick Bates:** Yes.

[31] **Mr Mills:** It is important to paint the outcomes that we need to achieve in the next phase of managing flood risk. Everyone at risk of flooding needs to be aware of it and needs to take appropriate action. That might sound simple, but it is actually pretty challenging to achieve. If possible, they should be able to receive a flood warning directly. We need to improve our ability to forecast rainfall and flooding events, and I have highlighted the Valleys as a particularly susceptible area. We also need to continue to consider the flood risk to high-risk communities and vulnerable groups. We need to clarify roles and responsibilities and provide the strong strategic overview of flood management. Critical infrastructure needs to be safeguarded and inappropriate development prevented. We need to make sufficient capital and revenue investment to keep pace with the increasing flood risk due to climate change, although I recognise that other demands will be made on money than for flood risk, such as for health, social services, or whatever.

[32] Lastly, politicians have a key role to play in providing the leadership necessary to deliver this challenging agenda, by explaining the risk to people, helping them to understand, and bringing all those organisations involved in managing flood risk together to try to eradicate that risk across Wales.

[33] **Mick Bates:** Thank you for that presentation and for your written evidence, which clearly addressed our terms of reference. I am certain that Members have many questions as a result of that. I would like to begin. During your presentation, you made reference to several things that you would like to put right. At the moment, we have the draft flood and water management Bill. How would you like that Bill to address some of the challenges that we face?

[34] **Mr Mills:** We very much welcome the draft flood and water management Bill. It is an opportunity to bring the legislation up to date and to frame the legislation to deliver flood risk management rather than just flood defence. It will address, we hope, some of the issues that I have already mentioned, such as the need for clarity in roles and responsibilities. The Welsh Assembly Government currently has a consultation out on that. On the detail, I will turn to my colleague, who can talk about some of the more technical aspects.

[35] **Mick Bates:** Could you introduce yourself first?

[36] **Mr Mosedale:** I am John Mosedale, and I am the strategy and policy manager for Environment Agency Wales, dealing with flood risk management.

[37] The legislation that governs flood risk management—well, flood defence, mainly—goes back 80 years to the 1930s, and was written for another time. In many ways, it limits what we can do, in that it gives us powers regarding flood defence but none to deal with the risk management side. So, this Bill will set out a new framework for how we will deal with flooding from all sources, not just from the main rivers that we have to deal with at the moment. We will bring into that—or it is intended to bring into that—issues such as ground water and surface water flooding, and we will be very clear about who will look after those.

9.30 a.m.

[38] We will be undertaking a consultation in Wales over the next three months, which gives us an opportunity to have a discussion with the other stakeholders and organisations involved in the delivery of that service to work out the best way. The Welsh Assembly Government has put forward some suggestions and we are generally content with those. We are quite happy with the general thrust of where it is going. As with all legislation, the devil is in the detail. However, we greatly support the general direction in which we are going. The Bill proposes an oversight role for us on flood and coastal risk management. The Environment Agency in England already has that, so we have a lot of expertise and skills within the organisation that we can bring to the principality. The Bill provides a duty for those involved to co-operate. In Wales, we have the Working Better Together initiatives, among others, which have become part of our everyday working. When people do not agree or it is not possible to get them to co-operate totally, we see that as being an important addition to the toolkit.

[39] **Mick Bates:** Thank you very much for that information. I would like to move on a little from that point. Do you think that the Environment Agency should take responsibility for all the fields that you do not currently have—surface water in particular, and water courses? Do you think that you are the appropriate agency to deal with all those?

[40] **Mr Mills:** I think that we have to be clear here. The Bill talks about an oversight role,

or a strategic overview, as it is called for England, although they are basically the same thing, I think. We are not proposing that we be responsible for delivering all those services. While these are all separate types of flooding, surface water flooding, for example, eventually ends up in the rivers, so there has to be a joining up of all these activities. That is what the strategic overview role is about. There are probably only two organisations that could do that work across Wales: the Environment Agency or the Welsh Assembly Government directly. There are 22 local authorities, but we are not suggesting that we take over the delivery of all these services; it is an overseeing, co-ordinating role to bring them all together.

[41] **Mick Bates:** I understand the strategic processes that are essential to bring about better co-ordination. However, if it is your house or business that has flooded, it is the delivery and the end point that is important—and that is already emerging as a critical issue for us. It is that delivery that I would like to see addressed in this answer. Who would be the appropriate people to deliver the strategic view that will give people more confidence that their properties are protected? Who will get out there and do it?

[42] **Mr Mills:** A variety of different organisations get out there and do it. What is set out in the Welsh Assembly Government consultation is that, for local flooding, it should be the local authorities. So, for surface water flooding, they would take the primary lead. However, they need support, and, at the moment, the agency provides support with surface water flooding. The emergency services also play an absolutely key role. However, they would be the lead for that. We would be the lead, as we are now, for main river flooding and for the coastal flooding of people and property. In the WAG consultation, it is proposed that coastal erosion continue to be dealt with by local authorities. The reality is that there will still be different delivery mechanisms, but someone needs to take that overview, applying high standards, and, where there needs to be good co-ordination, ensuring that those mechanisms are in place.

[43] **Mick Bates:** Thank you very much. I want to move on. Lesley is next.

[44] **Lesley Griffiths:** In your evidence, you mentioned managing flood risk and that people should look to protect their own homes and that you give them advice and guidance. Could you give us some examples of what people can do?

[45] **Mr Mosedale:** Yes. I suppose that the first thing that they need to do is find out whether they are at risk. It may sound obvious but, as Chris said earlier, only 50 per cent or so of people know that. We have put maps on the internet showing the extent of flooding, which anyone can access. We have also set up our Floodline service, which is available to anyone. I will give you the number now, as you may want to pass it on to your constituents: 08459 88 11 88. People who cannot access the internet, such as my mother, who has lost her sight, can ring that number, give their postcode and ask whether they are at risk. We will inform them if they are at risk. So, the first thing to find out is whether you are at risk. Secondly, you can make a flood plan, which does not take too long. One of our chaps says that you can do it over dinner. You just need to consider what you will do if you are flooded. What will you need, for example? We provide booklets free of charge to anyone who wants them, which explain what to do before a flood, so how to plan for it, and what to do during and after it. It is plain, sensible guidance. We have produced similar booklets for business, for example, and in Braille for the blind so that they can access the guidance.

[46] You can then move on to some of the structural things that you can do to your house. This is not applicable to every house, but you can buy products from companies—and you saw some being fitted into a doorway by our workforce. Those products include such things as to block up air bricks and doorways to slow the progress of water or to prevent it from coming into your house. We also provide links to those companies that have BSI registration for installing those products. So, that is a quick thrash through the things that people can do to

protect themselves. What is most worrying is people living on floodplains who would be less able to respond to the challenge of flooding, but we are working with local authorities through the local resilience fora to try to identify those people and how best they can be helped.

[47] **Mr Mills:** All that relates to the Environment Agency doing things and providing advice directly. The next stage that we want to move to is how we work with the existing mechanisms in communities. This is not only about us providing advice directly, which is not always the most efficient way. We need to consider how we can find routes within communities, so how people provide services and communicate within communities. How can we piggyback on those to ensure a greater awareness of flooding and of what people should do in the event of flooding? That will involve the important next phase, which is getting involved with communities directly.

[48] **Lesley Griffiths:** You mentioned in your evidence that you currently have 47,000 registered with you to receive flood warnings directly, and you hope that that will go up to 136,000 over the next five or six years. There is a small hamlet in my constituency where this system has been set up, so I have seen it, but how do you get those warnings to people whose needs are different? For example, you mentioned those who are hard to reach such as people with disabilities. How would you inform them?

[49] **Mr Mosedale:** That is difficult and I do not think that we have all the answers yet. With people who are physically handicapped in some way, as long as they can get to a phone or have a mobile phone, they can receive the flood warnings. There are also ways of relaying phone messages to deaf people. The bulk of people can receive a warning in some way as long as they can receive a phone call or have access to a computer. However, we are having to work hard now to cover those people whose situation is more difficult. Had we applied the 80:20 rule, the 80 per cent part would have been quite easy, but the next 20 per cent would be difficult. We are committed to doing that, however.

[50] **Mr Mills:** To give you some of the precise ideas that we are considering, we are trialling one system whereby a sensor in the river is connected up to a small group of houses, which will give them a quick alarm. That is a relatively low-cost option and we are looking at it. It is not exactly the same as Floodline Warnings Direct, but at least it provides some sort of alarm. The people who will struggle are those who are right at the top of the catchments, in areas where flooding may take place very rapidly, or those who are in remote situations. So, we are starting to think about how we can warn those sorts of people. It is challenging and potentially quite expensive. We will concentrate on trying to reach the majority, but we are beginning to think about how we can reach people who are difficult to communicate with, for technical or other reasons.

9.40 a.m.

[51] **Mr Mosedale:** Llandovery, for example, has an old people's home that is close to the river, and a local group was set up to help organise how to get the warning to it and to meet its needs for evacuation or whatever.

[52] **Mr Mills:** We also use flood wardens, who are people in the community who can act.

[53] **Lesley Griffiths:** So, did you facilitate the group that is involved with the old people's home?

[54] **Mr Mosedale:** It was a joint venture, following the town being flooded, between the town council, the county emergency planners and us. So, it was the three of us working together, following the flood, sitting around a table and discussing how we were going to deal with this.

[55] **Lesley Griffiths:** Can people receive flood warnings through the medium of Welsh?

[56] **Mr Mosedale:** Yes, they can.

[57] **Mick Bates:** Community resilience, as we have discussed, was a big feature of those answers. Leanne, Rhodri and Alun want to come in.

[58] **Leanne Wood:** You said that only 57 per cent of people have registered with you to receive warnings and that you are looking to increase that figure. Do you think that that has anything to do with the fact that insurance premiums can be high and that people may be on low incomes and cannot afford insurance, so they may not want to register that their house is in a flood-risk area as it might reduce the chances of their being able to sell the property? Is there an element of people not wanting to know?

[59] **Mr Mills:** That might be the case, although insurance companies have that information anyway. If that is the case, people do not have the accurate information. It is more to do with the fact that some people may never have been flooded; it may happen, but people do not get around to covering it. We can all examine our own behaviour over something that happens rarely or that we do not particularly want to face up to. We put it off. There is an element of people's common response in putting off those things that either do not mean much to them or that they do not want to face up to. However, if they are worried about insurance companies, there is no point because they already know.

[60] **Leanne Wood:** Do you have any information about how many people are not insured in high-risk areas? That will have an impact on recovery after an event.

[61] **Mr Mosedale:** I do not have the figures to hand, but the Pitt review explained a lot about insurance and it is quite complicated. A large number of people are not insured, for whatever reason, but probably because they cannot afford it; that is thought to be the biggest reason.

[62] **Leanne Wood:** Finally, you mentioned that people can invest in flood defences. Are you aware of any grant funding that is available to people on low incomes to buy those flood defences?

[63] **Mr Mosedale:** A grant scheme is run by the Welsh Assembly Government. As I understand it, the grant is available for schemes of over £3,000, so there is a de minimis amount, and it is administered through local authorities. People would apply through the local authority, which would submit the grant application to the Welsh Assembly Government.

[64] **Leanne Wood:** Presumably, that is available only to people in areas that have been identified as being high risk.

[65] **Mr Mosedale:** It is available in principle to anyone in Wales who is at flood risk. If there is no high flood risk, it is probably not worth protecting your property in that way.

[66] **Mick Bates:** Whether you get the grant depends on the consultant's report.

[67] **Rhodri Glyn Thomas:** Hoffwn ofyn cwestiwn ynglŷn â'ch prosesau ar gyfer mapio ardaloedd sydd mewn perygl o lifogydd. O edrych ar y sefyllfa yn weddol fanwl yn sir Gaerfyrddin, gwelaf fod gennych broses sy'n nodi'r ardaloedd hyn yn ôl eu cod
Rhodri Glyn Thomas: I have a question regarding your processes for mapping areas that are at risk of flooding. Having looked at the situation in some detail in Carmarthenshire, I see that your process identifies these areas more or less according

post, fwy neu lai, heb roi unrhyw ystyriaeth i dirwedd yr ardal honno. Felly, mewn rhai lleoliadau yn sir Gaerfyrddin byddai'n rhaid i'r dŵr redeg i fyny'r rhiw neu fynd dros amddiffynfeydd sy'n bodoli'n naturiol. Oherwydd hynny, mae pobl yn cael problemau cael caniatâd cynllunio a chael yswiriant ar eu cartrefi. I ba raddau yr ydych yn gweithio gyda chymunedau i ystyried yr wybodaeth sy'n bodoli o fewn y cymunedau hynny am y llifogydd sydd wedi digwydd dros y blynyddoedd?

to their postcodes, taking no account of the landscape of an area. So, there are locations in Carmarthenshire where the water would have to run uphill or breach naturally occurring flood defences. As a result, people have difficulties in obtaining planning permission and in insuring their homes. To what extent do you work with communities to consider the information that already exists in those communities regarding the flooding that has occurred over the years?

[68] **Mr Mills:** The issues to which you refer do happen, although they are much less common than they were, because we are developing much more sophisticated models. In preparing for this meeting, I read something about Criccieth castle, which you pointed out was on one of our flood maps but clearly was not going to be flooded. That was an anomaly to which we hold up our hands. If people point out something on a map that does not make sense, we will look at it and correct it, where necessary. However, the point is that that was much more of an issue three or four years ago than it is today. We are developing very sophisticated models, which can show in a visual way exactly how a flood develops. That is very powerful to share with communities: you can show them a map, but if you can show them how the flood outline, the depth and the velocity increases, it will very powerfully help people to understand the risks that they might face. Do you want to add anything?

[69] **Mr Mosedale:** I think that you have covered it, Chris. Our early maps were based on big squares of land where there were some anomalies. We have remapped and resurveyed the main river flood plains of Wales using a technique called light detection and ranging, or LiDAR, which gives a level of accuracy of plus or minus 5cm over a horizontal spacing, so it is very accurate mapping. That is not to say that there will not be anomalies because of local features—it is difficult to model every one of them. However, if someone has a concern, we are quite happy to listen to them. If it emerges that it goes against common sense, we are happy to go with that.

[70] **Rhodri Glyn Thomas:** I ba raddau yr ydych yn cyfathrebu gyda chymunedau pan ydych yn nodi ardal sydd o dan fygythiad o lifogydd, i wybod beth yw hanes yr ardal a'r tebygolrwydd o lifogydd yn yr ardal honno?

Rhodri Glyn Thomas: To what extent do you communicate with communities that you have identified as being at flood risk, to know the history of the area and the likelihood of flooding in that area?

[71] **Mr Mills:** The honest answer is that, historically, most of that engagement has been after flooding.

[72] **Rhodri Glyn Thomas:** It is a bit too late at that point, is it not?

[73] **Mr Mills:** It is indeed. What I tried to stress in my presentation is that we want to be much more proactive, through the catchment flood management plans and the next phase of that, by being out there explaining and talking about flood risk to communities before there is flooding, so that there is an understanding and awareness. In that way, we can also get local knowledge about the community's experience of what happened. We learn from that, but if I were being honest, I would say that most of that information comes out after the flooding rather than proactively.

[74] **Alun Davies:** I wish to pursue the issue raised by Rhodri. Mr Mills, you will be

familiar with some of the discussions that we have had about constituents of mine and people who have been affected by some of these decisions. All the strategic management is based on your mapping and understanding of how a flood will occur, and the context in which it will occur. In answer to previous questions, you gave the impression that you were very confident of your current mapping techniques. To what extent are you confident that the current mapping techniques, and their consequences, are robust? We know that you have made substantial changes to the flood maps of the upper Swansea valley, which I have specifically discussed with you, but are they as robust as they should be? The answers that were given by Mr Mosedale were given to me two years ago—'We are confident that this is the situation'—but that has now changed. How confident are you that you will not be changing these maps in two years' time?

9.50 a.m.

[75] **Mr Mills:** What I was trying to stress in my previous answer was that I think that things have moved on and improved considerably. I would hope that we would continue to improve them. I do not think that we will ever get to a situation in which we will say that that is the final answer. The technology has moved on enormously—our computing and modelling abilities. I am sure that you will know better than most, however, that computing and modelling are only as good as the data that go in. LiDAR has been a very big technological step forward. There is still a lot to be done. We update our maps on a fairly regular basis and I think that we need to be open to new evidence, new information and new technology on a continuing basis. Some of our mapping is still very crude. For example, we are starting to produce maps of surface water and we can look at surface water, but we cannot yet build into that all the implications of different drainage systems, which are obviously fundamental. So, in that particular area, we are in the infancy of producing maps. Compared with where we were three or four years ago, we have made great strides forward and I am confident that we will continue to improve the technology. As you said, it is the basis on which we make a great deal of important decisions.

[76] **Alun Davies:** Rhodri asked about working with local communities, and I have quite often gained the impression that the Environment Agency hands down tablets of stone to local authorities, saying, 'This is the situation; deal with it'. I do not get the feeling from local authorities, certainly in Mid and West Wales, which I represent, that there is positive two-way engagement with the Environment Agency. I get the sense that it is one-way traffic and that you have a map and you tell the local authority, 'This is the map and it might change, but this is the map as it is today and it delineates your flood plain and your flood risk in particular areas'. I do not get the sense that there is that positive two-way dialogue and exchange that you have described this morning. I get the sense that local authorities are told, 'This is the position', and that they then have to go away and deal with it, and there is no way of having a conversation that would enable you to make amendments or to increase your understanding of the context of individual communities and their flood risk.

[77] **Mr Mills:** If that is your experience, it is regrettable. I think that you are absolutely right about dialogue. I will just relate a very recent experience of my area manager in south-east Wales, who went up to Brecon to meet with the local authority to look at development proposals and what the flood risk might or might not be. That is the way to do it; it has to be a two-way dialogue. It was very productive, because what came out of that were some win-wins, where we were able to advise where it might be more prudent to direct development away from where it would only bring problems later on. So, you are absolutely right; it is about dialogue and it is about relationship building. If that is not happening at the moment, I am very hopeful that it will happen more often in the future. It does take more resources, although I suspect that, in the long term, it is probably more efficient. I think that a lot of the problems occur when people send e-mails or letters to each other. That actual dialogue is important. I take that feedback on board.

[78] **Alun Davies:** I am not sure that it does take more resources, with all due respect, Mr Mills; I think that it is about a different way of working. If you are determined to create that dialogue, you can do that without any resource implications. It is the approach that you take and the way in which you seek to create a relationship that really matters. Perhaps, in the past, the relationship has been very much, 'We tell you what the situation is and we are not interested in your response; you just have to go and deal with it', but I think that if the Environment Agency changed that way of working, resources could be saved, because you would be working in a more coherent fashion.

[79] **Mr Mosedale:** I am not denying what you say, but there are examples of where we have worked very well with local authorities. There was a situation in Swansea where a big development was proposed. We had concerns about that and we worked with the local authority to develop a very detailed model, which showed some incredibly deep flooding of 2m or 3m on a development where there would be many people visiting. I am sure that there is much more that we can do but there are cases where we have worked very closely with a local authority at the detailed level.

[80] Our mapping and modelling is on a large scale. For example, we have a model for Swansea that shows whether the sea will flood, which is very impressive, but it does not take into account the fact that there is an arch in the promenade through which the sea can just rush, because you cannot see that from the air. The more detailed information that you have on the ground, the better the result. The riskier the development, the greater the need for detail. I am reasonably comfortable that our maps, at the general scale, show where flooding will happen. The discrepancy will be around the edges. For example, in a Carmarthenshire development, where we did the detailed work, we found that there was a site that flooded to approximately 2m, or 6ft, deep. That scared the living daylights out of us because we looked at the map and realised that it was a primary school that would be flooded. Therefore, the first thing we did was telephone the headmaster to say, 'Look, you need to knock a hole in the wall'. It was just that the school wall would have been holding back the water.

[81] Therefore, we would not expect to pick up that sort of detail on our broad-scale models that we share with the local authorities and everyone else. That comes out when we do more detailed modelling at high-risk sites, but it is incredibly data-intensive and takes an enormous amount of time.

[82] **Mick Bates:** Thank you. I think that we understand the point. I call Angela and then Brynle.

[83] **Angela Burns:** I have a very quick question, Chair, on best practice in relation to flood warnings. Have you looked at other models throughout the world on how to disseminate information to people in a hurry?

[84] **Mr Mills:** I am not an expert on this but I know that, when the Environment Agency set up its Floodline Warnings Direct system, it looked extensively across the world, including, for example, at people who give warnings on things like hurricanes. Therefore, a great deal of research was done on that. There are probably ways in which it can still be improved but we certainly looked for best practice.

[85] **Angela Burns:** I would not mind doing a little more investigation because I take Lesley's points entirely about how important it is to make sure that people receive warnings. For example, I lived in a place in the United States for a while that experiences tornadoes. Within three or four weeks of living there, I knew how to spot a tornado coming, I knew what to do when the tornado came, and I knew all the warnings that came out. I was an 18-year-old student; therefore, in many ways, I was a disenfranchised group of the population. They were

very good at getting that information out. To go back to Lesley's point, there are many people who are very disenfranchised, such as people with disabilities, the elderly, and those who perhaps are not as literate, who will not go onto your computers, look at flood maps, or do the proactive bit themselves. I think that it might be worth having a little look at what we can do to protect those people.

[86] **Mick Bates:** There is an important role for the Environment Agency to work with the media, of course, as you know from your experience there. I now call Brynle.

[87] **Brynle Williams:** Just to go back slightly, I take your point that the mapping is a work in progress and is continuously updated. It is all right to give a warning about floods but you will hear the comments all too often that ditches and culverts are closed. How do we get across to the public that it has a role to play? It is all right to warn them, but riparian owners, as we have seen this week, have made water features of culverts along the backs of their gardens. How do we address this issue in Wales? We have seen it but we are not addressing it. I have seen it in north Wales after the 2000 flood. Suddenly, everyone—the Environment Agency and the councils—was cleaning the ditches, and we have now alleviated the problem. However, we can see that we are starting to drift back now. I know that it is not a direct role of the EA's to put pressure on councils—or maybe it is. I know that there are financial problems, but it will cost a damned sight more—and excuse the language—if we have floods once again, as we have seen in Mold, Ruthin and Towyn, in my region.

10.00 a.m.

[88] **Mick Bates:** It is a question of maintenance.

[89] **Mr Mills:** Yes, it is. The draft flood and water management Bill might help, in which it is proposed that organisations will have a duty to co-operate, which may give us more leverage. If the Environment Agency gets this strategic overview role, we may have more ability and powers to step in where there is an urgent need for things to happen. That is the making-it-happen approach to life, but there is also the approach of trying to get everyone to play their part. The other approach is better communication, from our point of view, with a whole range of different organisations and the general public, about the part that they can play.

[90] **Mick Bates:** We have heard a lot about better communication and all the duties that other groups have. How often do you meet all these other agencies to ensure that, when a problem arises, members have talked in localities? How often do you do that? Is it a part of your timetable to meet with all these people to discuss their preparedness for floods and what needs to be done?

[91] **Mr Mills:** Absolutely, and that is where the local resilience fora play a key role, because all these organisations—the local authorities, the emergency services, the water companies and us—come together on a regular basis.

[92] **Mick Bates:** How regular a basis?

[93] **Mr Mills:** It is at least once a quarter, I think.

[94] **Mick Bates:** You sounded a bit unsure about that.

[95] **Mr Mills:** I think that it is once a quarter but I can check on that and come back to you.

[96] **Mick Bates:** Please do so. Co-ordination is a fundamental issue for us.

[97] **Mr Mills:** In addition, local resilience fora produce multi-agency flood plans, so they have been a good vehicle for the key organisations to come together and prepare for flooding. I do not think that that quite addresses the issue that Brynle is raising, namely the day-to-day maintenance of a whole variety of features.

[98] **Brynle Williams:** What relationship do you have with the water authorities? We have many disused reservoirs in north Wales that could catch water during periods of heavy rain, which could slow rising water levels in rivers many miles lower down. In my village, Cwm Bach, there are five reservoirs that are drained and used for fishing. They could take a lot of water out of the river Alyn, which feeds the river Dee, which comes back to Lesley's area and flooding in Rossett. There must be other areas where that could happen. Do you have a working relationship in that respect with the water authorities?

[99] **Mr Mills:** We have a strong working relationship with the water companies. The Dee is a highly regulated river, but I do not know whether there is more capacity for storing water there.

[100] **Mr Mosedale:** Without knowing the details and making a hydrological assessment of the impact, it is difficult to say. I know that we looked at the impact of raising the Tregaron bog on the Teifi. It was a theoretical exercise and we found that it did not make an awful lot of difference to the levels of the flood by the time that got down to the towns below. In theory, it is always an idea that is worth looking at, but you must remember that a big safety responsibility comes with those reservoirs if they are kept full and there is a heavy commitment to maintain them. If they have been drawn down to a lower level, it is probably for reservoir safety reasons, so I would expect that bringing those levels up would cost an enormous amount of money to return the dam to a safe condition.

[101] **Mick Bates:** I would like to look at flood forecasting and then at the infrastructure in technical advice note 15.

[102] **Lorraine Barrett:** Can you tell us more about the kind of services that will be provided by the new flood forecasting centre, which I think opened just a few weeks ago? I can see that it is run jointly with the Met Office, but can you give us an idea of the sorts of benefits and services that it will provide?

[103] **Mr Mills:** This is one of the recommendations that came out of the Pitt review—to bring together the rainfall forecasting part of the business with people who try to forecast river flows and flooding. Experts from the Environment Agency and the Met Office are now physically co-located. At the moment, they are providing a service only for category 1 and category 2 responders, under the Civil Contingencies Act 2004. For the first time, we are now getting a five-day forecast of potential rainfall and its possible impact on river flows and coastal flooding. That goes out to local authorities and the emergency services and so on. It is a much more proactive approach. Every Monday morning, I will have one of these reports on my desk. One week, it might say that there is very little chance of flooding; another week, it might say that we need to be very careful because heavy rainfall is expected on Friday and there might be flooding.

[104] They are also trying to accurately forecast, and put out warnings of, severe rainfall events. That will help by trying to give a bit of warning of very heavy rainfall and surface water flooding. However, the system is still very much in its infancy, and it is incredibly difficult to forecast that. The maps will show an area and the probability of flooding; sometimes they are reasonably accurate, and sometimes they are completely wrong. However, again, it is about having that awareness. I am sure that the technology will develop. That is the primary thing that they are doing at the moment—taking a more strategic approach and

trying to forecast extreme rainfall and project more accurately where that might land. It is also about getting people into a state of preparedness in advance.

[105] **Mr Mosedale:** In the 2007 floods, the Met Office was giving a weather forecast or a heavy rain warning and the emergency services and all the responders were saying ‘So what?’. They did not really understand what it meant for them. By putting the hydrologists with the meteorological experts, we are able to say that there will be heavy rain and what we think the impact will be. Now, the emergency services are getting a five-day forecast that will tell them whether there will be heavy rain and they need to prepare; it might say that there will be heavy rain but that they do not need to prepare.

[106] **Lorraine Barrett:** Who do you tell to prepare? Is it the local authorities, the emergency services, or the communities that might be affected? Does something kick in at that point?

[107] **Mr Mills:** Yes, there is a system that kicks in; all of the category 1 and category 2 responders under the Civil Contingencies Act, which include local authorities and emergency services, receive that information. It is not a public service at the moment.

[108] **Mick Bates:** I am mindful of the time. Alun has some questions on infrastructure. There are also some questions on TAN 15.

[109] **Alun Davies:** One of the more frightening slides that you showed us in your presentation, Mr Mills, demonstrated the flood risk facing different parts of Wales’s infrastructure. The water infrastructure in particular seemed to stand out. That reflects the experience that we discussed and debated with Gloucestershire County Council on Monday. Its experience was that it could just about deal with the flooding, but that what really created a crisis for it was the loss of water, with the potential loss of power as well. It appears that the Welsh infrastructure is, today, facing a very similar risk. If there is an increase in episodes of flooding as you described, and which we accept, the water infrastructure is at serious risk, and the utilities infrastructure would be in particular. What is the Environment Agency doing to help to manage that risk? How are you working with other Government or public bodies to address that risk?

10.10 a.m.

[110] **Mr Mills:** The responsibility for protecting those facilities lies with the owners. However, as a result of the Pitt review, we did a great deal of work to provide information to the utility companies on where we believed their facilities were at risk, so a lot of work went into providing them with that basic information. A utilities group sits as part of the Wales resilience partnership, which is now looking in a more strategic way at what needs to be done. All of the different bodies, including the utility companies and the Welsh Assembly Government, sit on that group, which is looking at how this is being taken forward. The only other thing that I think that we can do is ensure that, when a flood is happening—and we are now much more aware of the need to identify whether critical infrastructure is still exposed—people are made aware of it through the gold commands, for example, so that the precautions that need to be taken can be taken. I do not know whether you want to add to that, John.

[111] **Mr Mosedale:** No, I think that you have summed it up.

[112] **Alun Davies:** Do you think that the action being taken is sufficient?

[113] **Mr Mills:** The big challenge, which is the one that I highlighted in my presentation, is that we somehow need to ensure that there is some joining up. We invited the utility companies to our conference, and we had the power and water companies and so on giving

presentations, and it became very clear that their approach—what I would call their ‘risk appetite’—is very different. How much they want to spend at the end of the day will impact on how much they protect their utilities. My concern would be around the consistency with which the protection will be given, because, as I pointed out, you can get ridiculous situations, where you protect one thing to a higher standard than another, and it just will not work.

[114] **Alun Davies:** I appreciate that. However, do you think that the utility companies are currently doing enough to manage the flood risk facing their own assets?

[115] **Mr Mills:** I am sure that they could do more. They also need to work together, not just in their individual fields.

[116] **Angela Burns:** Thank you for your paper, which is very detailed. You went into quite a lot of detail on TAN 15, so I suspect that I know the answer to this question, but I am still going to bash this one out, because I want it on the record. You state:

[117] ‘Developers are often making inadequate assessments of the risks to people from flooding from their development’.

[118] I do not think that anybody around this table would be remotely surprised at that statement. You talk about local planning authorities in Wales not being required to undertake a strategic flood consequence assessment, and the fact that you are encouraging them to carry these out. I wonder how well your encouraging is going. First, should we rewrite TAN 15? What would you like to have in it to make it far more statutory so that we no longer build on floodplains and so that we move this forward? Secondly, are you discussing it with the Government? Is there a mood in the Government to look at this whole area? Thirdly, if we had a stronger TAN 15, could we use it retrospectively to help us to define whether there are areas of Wales that we will have to abandon due to flooding?

[119] **Mr Mills:** I do not think that we need to rewrite TAN 15. There are some improvements that could be made to it. One is with regard to this issue of the strategic flood consequence assessment being built in to local development plans, and that perhaps ties in with what Alun was saying, because it would be a wonderful opportunity for that engagement to take place between the Environment Agency and the local authority to discuss where the best place to develop with regard to not causing flood risk. So, in our view, it makes a lot of sense—and perhaps it should be made statutory—to have a strategic flood consequence assessment in the local development plan. So, that is taking a more strategic view.

[120] The second thing that we recommended—and this is being taken up by Government—is that we build climate change into the flood consequence assessment and the whole life of the development. There is no point planning for the flood risk that exists now if that will increase considerably further down the line.

[121] **Mick Bates:** What about abandonment?

[122] **Angela Burns:** Yes, there was the issue of abandonment. Do you think that if we get a local authority to do this strategic flood consequence assessment, it should do it not only for new stuff going forward but also retrospectively, looking at what it has, which might help it to make some of the decisions that you say that politicians will have to make eventually, according to your map.

[123] **Mr Mosedale:** Our flood maps show those areas that are at risk already, and there are some substantial areas. Some areas, particularly by the coast, will face particular difficulties because of the sea-level rise and the increased storminess, and so on, that will come. As to whether you can apply it retrospectively, I am not quite sure how you would do that.

[124] **Angela Burns:** I do not mean apply it retrospectively in relation to its legality. If you are making a decision as to whether to abandon a particular area, because to maintain the safety of the people who live there is astronomically expensive, as has been done—if I get my east and west right—on the east coast of England, where chunks of Norfolk have been abandoned, you might want to use that kind of tool to make such determinations.

[125] **Mr Mosedale:** It is not for us to make a decision as to whether a community is abandoned. We can provide advice on the flood risk, but it is for the communities, led by the local authorities as their elected representatives, to make that decision. They may need some tools, and the Government may need to provide tools to help them, if they do want to abandon or evacuate the site. If you have a house, and you need another house, instead of building a defence to protect it, we need to buy it so that it can come down.

[126] **Angela Burns:** So, do you anticipate that the strategic flood consequence assessment could be one such tool?

[127] **Mr Mosedale:** It would certainly help that, as will the information that is in the shoreline management plans and the catchment flood management plans. They will all help that debate to happen on a factual basis, rather than be based on people's guesses as to what may happen. There is a lot of information in them that should make that debate a lot more helpful for everyone.

[128] **Angela Burns:** May I just ask one last, direct question? You couch your recommendations on TAN 15 in exceptionally diplomatic language. You have made some very good points on TAN 15. Would I be right in saying that you would not rewrite it, but that you would like it to be strengthened to include the observations and comments that you have made in this report?

[129] **Mr Mills:** Yes.

[130] **Mick Bates:** Rhodri, did you want to come in briefly?

[131] **Mr Mills:** Sorry, may I just make one last point? The other point that we made was on the need for somebody to be in a position to police TAN 15 and evaluate its overall effectiveness.

[132] **Rhodri Glyn Thomas:** The point about the strategic flood consequence assessment is very important, because there are a number of cases in my constituency where planning applications have been made, and individual applicants have had to do their own flood consequences assessments, which cost £12,000. The local planning authority says, 'The Environment Agency has said that this is in danger of flooding, so you have to do that assessment'. It is prohibitive for an individual applicant. How do you see the process of the strategic flood consequences assessment developing? As far as I can see—and this goes back to a point that Alun made earlier—there is no relationship between the Environment Agency and the local planning authority. The planning application is submitted, the Environment Agency says, 'This is in danger of flooding', and the local planning authority says to the applicant, 'You have to do a flood consequence assessment'. Anyone who has any understanding of the area that that application relates to would say, 'You have to do a very basic one', but the local planning authority says, 'You have to go the whole hog and have a full assessment'. How would you see strategic assessment being developed?

[133] **Mr Mills:** That is the crux of it, really. It needs to help to shape the local development plan. So, you would end up with developers coming along to a local authority, and it would say, 'Do not waste your time going there; we are not going to allow development

there as we know there is too much of a flood risk'. We would not then get stuck in a position, as you quite rightly point out, in which someone comes along and says, 'I want to develop here', spends a lot of money, and then gets turned down. It would be a much more efficient way of doing it. It builds a relationship with the local authority, so that we have those conversations and we help it to shape the local development plan in a way that will be resilient to flooding in the future. Let us be absolutely clear: we accept, as does TAN 15, that there will be circumstances in which there is a higher priority, which requires something to be built on land where there is some flood risk, if that flood risk can be managed. There are other priorities in society as well. It is not that we do not accept that. However, the sensible thing is for us to work together to try to direct things away from where it is foolish to build them.

10.20 a.m.

[134] **Mick Bates:** Thank you very much, Chris and John, for your answers this morning. A draft transcript will be sent to you to look at. I am certain that, during our inquiry, we will get various opinions. However, it appears to me, from your evidence, that community resilience will play a big part in dealing with those localised issues that have come out through the planning process.

[135] There is one paper to note, which is the Sustainability Committee's work programme. Our next meeting will be on 3 June, when we will be taking evidence from the National Flood Forum about how it assists communities with flooding and offers advice on how to protect your properties.

[136] The committee now has the launch of one of its reports, for which we will move to Techniquest. I ask Members to gather at the front for the taxis as we have to get you there together and quickly. Thank you all for your attendance. I shall see you in 10 minutes in Techniquest.

*Daeth y cyfarfod i ben am 10.21 a.m.
The meeting ended at 10.21 a.m.*