RURAL AFFAIRS AND ENVIRONMENT COMMITTEE

Wednesday 9 January 2008

Session 3

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RURAL AFFAIRS AND ENVIRONMENT COMMITTEE

1st Meeting 2008, Session 3

CONVENER

*Roseanna Cunningham (Perth) (SNP)

DEPUTY CONVENER

*John Scott (Ayr) (Con)

COMMITTEE MEMBERS

Karen Gillon (Clydesdale) (Lab)
*Jamie Hepburn (Central Scotland) (SNP)
*Des McNulty (Clydebank and Milngavie) (Lab)
*Peter Peacock (Highlands and Islands) (Lab)
*Mike Rumbles (West Aberdeenshire and Kincardine) (LD)
*Bill Wilson (West of Scotland) (SNP)

COMMITTEE SUBSTITUTES

Bill Kidd (Glasgow) (SNP)
Nanette Milne (North East Scotland) (Con)
John Farquhar Munro (Ross, Skye and Inverness West) (LD)
*David Stewart (Highlands and Islands) (Lab)

*attended

THE FOLLOWING GAVE EVIDENCE:

Professor John Mitchell (Met Office)
Steve Noyes (Met Office)

CLERK TO THE COMMITTEE

Andrew Mylne

SENIOR ASSISTANT CLERK

Mark Roberts

ASSISTANT CLERK

Katherine Wright

LOCATION

Committee Room 2

Scottish Parliament

Rural Affairs and Environment Committee

Wednesday 9 January 2008

[THE CONVENER *opened the meeting at 10:32*]

The Convener (Roseanna Cunningham): I welcome everybody to the meeting. One apology has been received, from Karen Gillon. She cannot be here, but she has kindly organised for her substitute, David Stewart, to come along. We welcome him to the meeting.

I wish everybody a happy new year, but I will not go round and kiss everybody now.

Bill Wilson (West of Scotland) (SNP): We are very hurt.

The Convener: Perhaps I will do so if we have a brief suspension later.

I remind everybody to switch off their mobile phones or put them into flight mode. Whatever you do, keep them well away from the microphones, as they create the maximum difficulty for the sound people when they are near the microphones.

I ask David Stewart to declare any interests that are relevant to the business of the Rural Affairs and Environment Committee.

David Stewart (Highlands and Islands) (Lab): I have nothing to declare beyond what is in my entry in the register of members' interests.

The Convener: Thank you.

Decision on Taking Business in Private

10:33

The Convener: Agenda item 1 is a decision on taking business in private. Committee members will remember that when we considered our work programme, we agreed in principle to have brief private sessions after oral evidence sessions to allow us to make initial comments on the evidence that we had heard and to flag up specific issues for the clerks in order to allow them to begin the process of drafting a report. That approach will give the clerks a good heads-up steer on what we want to do and our areas of concern. Discussions on the drafting of reports would normally be held in private.

Do members agree to take in private item 6 and equivalent items at later meetings during the flooding and flood management inquiry?

Mike Rumbles (West Aberdeenshire and Kincardine) (LD): I am happy with that on the understanding that we go into private session only to consider the general direction of travel, rather than to make any decisions. Can I understand that we will not make any decisions in private?

The Convener: We will simply have an immediate discussion of the evidence. That will be easier for us to do when the evidence is fresh in our minds, rather than in six weeks' time, when it might not be quite as fresh.

Is that agreed?

Members *indicated agreement*.

Rural Housing Inquiry

10:35

The Convener: Agenda item 2 is our rural housing inquiry. The two papers for this item have been circulated so members should find them easily enough. The first paper is simply a note on the stakeholder event that we held in Aviemore. The second paper raises issues for consideration on how our rural housing inquiry should be handled. Committee members may want to make general comments on that before we deal with the specific issues in turn.

An optional suggestion is that we should exclude land supply from our inquiry, but I cannot see how, politically, we could do that. I understand the reason for making that an option, which is that the housing supply task force is considering the matter, but I do not believe that we can have a rural housing inquiry that does not address land supply. We can acknowledge that a parallel interest is being pursued by the housing supply task force. That is my feeling on the matter. I can see by members' faces that they probably agree with that.

Are there any other quick comments on that issue before we consider more general comments?

Peter Peacock (Highlands and Islands) (Lab): Convener, I entirely support that suggestion. People in rural Scotland would look askance at us if our inquiry did not address the land supply issue, which raises its head so often.

Jamie Hepburn (Central Scotland) (SNP): The draft remit that has been prepared is excellent and I fully support it as drafted. I think that we should probably consider rural housing in general rather than affordable rural housing, as suggested in the paper, as that would be a bit limiting. That said, however—

The Convener: Let me just clarify that point. We need to ensure that we stick to rural issues so that we do not overlap into areas that are not our concern, but the paper also suggests that we might restrict the inquiry further by making it about affordable housing—whether for rent or for owner occupation—because otherwise the remit might be too wide.

Jamie Hepburn: Personally, I would not have a problem with the remit being slightly wider and about rural housing in general. That is my reading of it. If I have read it wrongly, I apologise.

The Convener: There is a more general issue about how wide or how narrow our focus should be. There is a view that, if our inquiry is too wide-ranging, we might have to take an awful lot of evidence across the board and possibly end up—this is my concern—coming to conclusions and recommendations that are not fully substantiated because we have not had time to take all the evidence.

John Scott (Ayr) (Con): I think that we should concentrate on affordable rural housing, so I take the opposite point of view from Jamie Hepburn. For the record, I think that we should focus on affordable rural housing because that is the really big issue. I do not say that rural housing in the generality is not an issue, but we should focus on affordable housing and the context of social need. That is where we should point ourselves.

Notwithstanding the suggestion that we should consider only the top five issues, I think that we should include the issue of water and sewerage infrastructure, given that anecdotal evidence suggests that the lack thereof is effectively a back-door planning constraint. We should take evidence from Scottish Water on that issue, because there is so much anecdotal evidence about it from elsewhere. Perhaps the location of the seminar affected the weighting of topics. The issue might not be as big in Aviemore or the north of Scotland, but it is certainly big in other parts of rural Scotland. Notwithstanding the topic's low score—it got 15 votes—we should address it. I do not know what other members think, but that is my view.

Des McNulty (Clydebank and Milngavie) (Lab): I am concerned that some questions almost predetermine the answers. Our questions should be more challenging; otherwise, all that will emerge from the inquiry is a reiteration of what might be seen to be a cosy consensus that has existed for 10 years, and we will not pursue matters further.

I have three suggestions. First, rather than focus on environmental sustainability generically, we should ask specific questions about building types, patterns and standards for energy efficiency. In many parts of rural Scotland, a series of detached houses has been built in the countryside, which produces homes that have low energy efficiency. Other approaches that are not being considered might need to be focused on as part of the Government's wider consideration of energy efficiency. That is probably the most specific issue that we could examine to deal with the climate change agenda, but it also concerns effectiveness and sustainability.

Secondly, to talk about a shortage of land supply is almost absurd, except in one or two parts of rural Scotland. The land supply is abundant; the issue is not even whether land is suitable, but whether it is made available and how the planning rules operate.

The Convener: That is presumed in the land supply question.

Des McNulty: I do not think that it is.

The Convener: For those of us who attended the Aviemore seminar, the land supply question was about how to make land available.

Des McNulty: The proposed question is:

"In what circumstances is a lack of suitable land to build on the main obstacle to meeting local housing needs?"

That could be better phrased.

The Convener: Perhaps, but if you had been at the seminar, the intention would have been clear.

Des McNulty: I apologise for not being at the seminar, but there were good reasons why I could not attend.

My third issue is about the implementation of planning decisions, rather than legislation or guidance—perhaps it is more about local authority practice, but that does not capture it. The criteria and mechanisms that are in place in Scotland for agreeing what houses should be built are different from those that operate in the Republic of Ireland, for example, where houses are springing up everywhere in rural areas. We could consider how planning rules and their application in Scotland differ from those in the Republic of Ireland. We should ask questions not just about the legislation, but about how planning authorities make decisions. I do not know whether we or they are right; I simply make the point that many people in rural areas say that obtaining permission to build anywhere in a rural area is a problem and that they cannot build in all kinds of places because planners do not allow that. That is not the case in the Republic of Ireland, so we should examine that.

10:45

The Convener: The Scottish Parliament information centre has already been asked to examine international comparisons, with a view to ascertaining why places such as Ireland can retain a much bigger rural population than we seem to manage. We are actively pursuing that side of things, and when SPICe has put that information together, it will be available to committee members.

That aspect is already part and parcel of the inquiry because it became clear in discussions that there is a different approach to planning in Scotland compared with some other parts of the world. That appears to have come about for real historical reasons—which may no longer pertain to the current situation.

Des, I have noted your point about sustainability because it is helpful. It would allow us to focus specifically on the sustainability of housing. I take it from what you said that you agree with the general thrust that we should not look at community sustainability but instead concentrate narrowly on the sustainability of the houses themselves.

Des McNulty: That is right, although there is also an issue with settlements, which we cannot ignore.

The Convener: We have to try to make the housing inquiry work—although it may prompt further questions that the committee will want to examine in the future.

Mike Rumbles: I want to focus on paragraph 1 of the draft remit and call for evidence in the annex to paper RAE/S3/08/1/3:

"The Rural Affairs and Environment Committee is undertaking an inquiry into [affordable] rural housing."

In the seminar at Aviemore, certainly in my group, there was a big discussion about affordability. Everyone around the table thought that they knew what it meant but, when we tried, we simply could not define what affordability meant, so it is questionable whether we should have it as a central part of our remit.

I would prefer to drop the word "affordable" and—I am not being prescriptive—substitute it with something else, so that the remit ran, "The Rural Affairs and Environment Committee is undertaking an inquiry into the supply of adequate housing in rural Scotland." Everyone knows what that means; nobody knows what affordable housing means.

The Convener: That is an issue; I do not know whether anyone else wants to comment on it. Affordability changes depending on the area of Scotland.

I would be concerned to ensure that any inquiry into affordability related to the living and working area, so that affordability was related to wage rates, especially considering areas in which wage rates are low.

I do not know whether it is possible for us to consider affordability in that context or whether we can ask SPICe for the wage rates for regions of Scotland, including travel-to-work areas. People such as us distort the local populations because we earn our incomes from outside, and that enables us to buy at far higher prices than local people can perhaps afford. The availability of affordable housing varies, depending on local wage rates and travel-to-work time.

Mike Rumbles: That is why I am questioning whether we should use the word "affordable" in our remit.

Bill Wilson: Is it not about the supply of rural housing to the local community? I do not know how we would phrase that, but it is a question of targeting housing so that it is available to the local community.

The Convener: We may need a slightly longer discussion about this. Most councils operate a policy of agreeing planning permission to housing developers as long as 25 per cent of the development is designated as affordable, so there must be a specific meaning that local authorities apply to achieve that. It would be useful to find that out.

John Scott: There must be a definition.

Mike Rumbles: If we can find a specific definition of it, I would be happy to use the word "affordable". My concern is about using it in the title of our inquiry when we are not sure what it means.

The Convener: I would want to avoid using the word without defining what it meant, at least for our inquiry. Affordable means something completely different in London, Glasgow and Lochaber.

Jamie Hepburn: Mike Rumbles's point on affordability is well made, and it is important to note that there are regional variations in affordability. However, from a couple of the workshop groups in Aviemore that I sat in on, I understood that the important point was not so much the regional variations in affordability but that, although someone might be able to afford a house somewhere, they could perhaps not afford to live there. If we are going to make the inquiry specifically about affordable housing, is it worth while asking how affordability is defined?

The Convener: If we choose to examine it, we would have to define affordability in the context of the inquiry. I am not saying that that necessarily works for everything. The same applies to rurality—rural Scotland is defined slightly differently depending on the context.

Jamie Hepburn: Should we ask our witnesses, in our call for written evidence, whether they have a definition of affordable?

The Convener: Local authorities must have a definition of affordability, because they apply one to developers' proposals. Can we, at least at this stage, keep the affordability issue in, but with the specific understanding that we will define, in the context of our inquiry, what we are calling affordable housing, so that nobody is under any misapprehension about what that means? Is everybody happy with that?

Peter Peacock: I want to pick up on John Scott's point about infrastructure. Notwithstanding the ranking that it got, which may have something to do with the approach that some of the people at the seminar were taking to infrastructure, I get the impression from what I have read that there is still an issue about infrastructure. We should ask people whether infrastructure is still an issue for them, so that we can get a feel for that. It would be a great omission if we have not sought evidence on it and we discover towards the end of the inquiry that it is an issue. We need to keep infrastructure in, to check that it is not an issue as much as to explore what the issue is.

The Convener: Are you talking about infrastructure in the context of water and sewerage, or do you want us to widen it out into something much broader?

Peter Peacock: I am thinking principally about water, sewerage, electricity and roads issues that affect whether a house can be developed. It is principally water and sewerage, but there are issues about roads and electricity in some areas.

The Convener: You are not suggesting that we address issues such as the availability of schools, health care and so on.

Peter Peacock: No. I am referring to the hard physical infrastructure that allows a development to take place.

Bill Wilson: I have a minor point. The impression that I got from many of the delegates was that the infrastructure that we are talking about had been a problem, but they felt that it was no longer a problem. I want us to be careful about the extent to which we introduce it, because the anecdotal evidence could be out of date. I support the idea of asking a question as a check, rather than including a full section on the issue. That means that we could redefine how we are addressing the issue if we find part of the way through our inquiry that every person we speak to says, "Hey, there's a big problem."

The Convener: We must decide on some specific issues that we have not discussed, which are outlined throughout paper RAE/S3/08/1/3.

The first one is at paragraph 10. We must decide whether to hold at least one external meeting during the inquiry. We are already doing so in the flooding inquiry. I seek the committee's agreement that we proceed on that basis for this inquiry. At this point, there is no need for us to say where it will be held, but obviously I expect that if we hold an external meeting it will be somewhere where rural housing is an issue. We could go to Fort William or Dumfries or somewhere like that. We can make a decision closer to the time, if everybody is happy to agree in principle.

Members *indicated agreement*.

John Scott: Given our discussion about the water and sewerage infrastructure, it might be

worth going to a different part of Scotland from Aviemore, which was in the old North of Scotland Water Authority. It might be worth going to the Borders or somewhere like that.

The Convener: We can make a decision on that later, as we have agreed in principle to hold an external meeting.

Paragraph 14 asks committee members to consider possible visits. Rather than have a huge long discussion about where they might be, I want to get agreement in principle to do what we did in respect of the flooding inquiry visits—split the committee up to ensure that the maximum number of places can be visited. After we get the committee's agreement in principle, we can come up with some proposals. If committee members have individual suggestions, they can communicate them directly to the clerk. Is that agreed?

Members *indicated agreement*.

The Convener: Paragraph 17 asks us to consider whether further reporters need to be appointed. As committee members will remember, I have already been appointed reporter to the Rural Housing Service's conference that is to be held in Dunkeld on 29 February. I do not want to be the reporter overall. If we are going to consider rural housing, we should agree in principle to use reporters as and when necessary on specific issues within the inquiry. Are committee members happy with that?

Members *indicated agreement*.

The Convener: The next decision is whether to appoint an adviser, as mentioned in paragraph 18. An overall adviser would probably not be particularly helpful, but it might be useful for us to consider appointing an adviser on the financial side of things. Somebody who has specific knowledge and understanding of the finances that are involved in, for example, land supply—which came up at the seminar—as well as housing finance could be useful. Appointing an adviser takes a fair amount of lead time and advertising, and committee members may feel that it is not particularly necessary. Are there any reactions or comments?

Bill Wilson: We need to know what questions we want answered. We could find that we have appointed an adviser who is not an expert in those questions.

The Convener: That is why I think that the only real issue on which we might need an adviser is finance.

Des McNulty: I am not sure whether he should be an adviser, but Professor Glen Bramley has done two big studies on the various housing supply issues throughout Scotland. Might we want to ask him to focus on a subset of that information in rural areas?

The Convener: We cannot identify individuals at this stage, Des. If we are going appoint an adviser, we have to go through a set process.

Des McNulty: I was pointing to an area of technical expertise.

The Convener: I do not immediately recognise Professor Bramley's name. However, he is on the list, so we might contact him in connection with the inquiry in any case, but not in the context of appointing an adviser. I do not detect a great groundswell of committee feeling on the appointment of an adviser.

The final issue on which we need to decide is whether research is needed. To be honest, it is premature to decide that now because we are not at a point at which we can say whether research is needed. However, I would not want to exclude the possibility. Although a great deal of work has been done on housing supply, there may be some distinct gaps or useful updates that SPICe cannot help us with. I ask the committee to allow us to defer a decision until we get a better steer from SPICe as to whether or not further research would be useful or appropriate.

Members *indicated agreement*.

Mike Rumbles: Could SPICe be tasked to remind us of the legal requirements on local authorities to house homeless people? In Aberdeenshire, the housing list has gone from 4,000 people to 6,500 people who are struggling to find accommodation. It would be helpful if we could have an update on those legal requirements.

The Convener: That is no difficulty.

I ask to the committee to agree on the record to ask SPICe to provide the international comparisons and information that we talked about earlier. Is that agreed?

Members *indicated agreement*.

John Scott: In addition, might it be helpful to find out the levels of homelessness in each local authority area and receive a breakdown of rural homelessness if one is available?

The Convener: Referring to what Mike Rumbles said, and bearing in mind the situation in my area, there is a distinct difference between homelessness and people who are on the housing list.

John Scott: Absolutely.

The Convener: If we just stuck to the homelessness figures, we would not really—

John Scott: Considering both those factors would give us a handle on the problem, anyway.

11:00

The Convener: It might be useful to ask local authorities to identify what percentage of their total list is classified as rural, as opposed to urban. Many local authorities have a component of both. We could find out what percentage of people on the lists are technically homeless. Is that the sort of information that you are talking about? That will keep us from just looking at the homeless figures.

John Scott: Yes.

The Convener: To recap on what we are asking of SPICe, we are seeking international comparisons on rural housing, and we are specifically interested in making comparisons with Ireland. We have all seen for ourselves the difference between rural Ireland and rural Scotland. We would like to find out how that has come about and how Ireland keeps its rural populations, whereas we do not seem to be able to cater for ours. However, we should not consider Ireland exclusively, if it is possible to get information from comparably sized countries with comparable rural areas. We want a like-for-like comparison.

We are also asking SPICe to give us an update on the homelessness legislation, so that we know exactly what responsibilities local authorities have. We will explore how to get information from local authorities on their housing lists and the percentage of their housing that is rural. The committee might be able to do that directly, through a letter from me to each local authority, rather than going through SPICe. We will explore how best to do that. I think that that covers the SPICe requirements.

That probably brings this agenda item to a close. I think that we have gone through everything that we need to. I should, however, summarise the position on the remit. Are we agreed that land supply has to form part of our inquiry?

Members *indicated agreement.*

The Convener: Are we agreed that the sustainability issues that we examine should be focused on the housing itself, rather than on wider matters of communities or settlements? Should we follow Des McNulty's suggestion and focus on energy efficiency issues? The information attached to that might have an implication for build costs, as opposed to running costs. There are two cost issues to consider.

We are agreed that we will look into the affordability issue, but that we will seek a definition of affordability to ensure that the housing inquiry has a specific definition, rather than a broad, non-specific definition of affordability.

Jamie Hepburn: What do you mean by seeking a definition? Are we asking for that under our remit? That is what I was suggesting.

John Scott: The clerks will work on a definition.

The Convener: We will examine the definition that councils use. We will consider that as part of our inquiry. We will not run the inquiry in general terms and then conclude with a definition of affordability at the end of it; we want to make a clear definition of affordability, within which we conduct the inquiry.

Bill Wilson: If we are to contact councils, could we contact a few voluntary organisations as well, just to get a broader view and avoid having only a council definition of affordability?

The Convener: To be honest, I am not sure—

Bill Wilson: I think it is worth having a—

The Convener: We are talking about councils because councils give planning permission on the basis of a percentage of any new development being affordable housing. Therefore, they are the bodies that are responsible for agreements about amounts of affordable housing.

Bill Wilson: Yes, but—

The Convener: I am not getting into an argument about this. If we start going back out to all and sundry—

Bill Wilson: I am not suggesting all—

The Convener: Bill, I said that I am not getting into an argument about it, okay?

Bill Wilson: I am not suggesting all voluntary organisations—just a couple.

The Convener: I said enough—right?

We will go back to local authorities and get the definition of affordability that they use.

Bill Wilson: It is a limited approach.

The Convener: Then we will consider the situation under the terms of that definition.

We have discussed sustainability, land supply and affordability and we have agreed that water, sewerage and roads will be included as part of our discussion, even if just to check the anecdotal evidence.

We will have to make some slight changes to the final remit, in order to reflect our decisions. Are we happy enough with the draft remit?

John Scott: Do you sign it off or does everybody do so?

The Convener: It would be better if you leave it with me to sign off; I do not want to open up every paragraph to discussion again.

John Scott: Quite—absolutely.

The Convener: Okay. I hope that the roof is still on by the end of this morning's meeting, given the wind.

European Commission Work Programme

11:05

The Convener: For agenda item 3, a paper has been circulated to members, which I hope they have looked at. I make members aware that a separate European Union update item will be on the agenda of our next meeting.

It is suggested in the paper that we ask for a tracking of the common agricultural policy health check and fisheries-related issues. Those are the most appropriate issues for the committee to consider, but does anybody see anything else in the paper that they would like the European officer to report back on?

John Scott: We might request a report on any forthcoming marine legislation that might apply to Scotland. Spatial planning and integrated coastal zone management will obviously be worth knowing about if for no reason other than educational purposes. It is worth keeping up with that topic.

The Convener: That is probably worth while in any case because we will consider the forthcoming flooding bill and then the marine bill. Such an update will be useful in both cases. Are there any other points?

Peter Peacock: I have one point that might fall within the tracking of the agricultural matters that have been highlighted. I read recently about so-called proposals for the electronic tagging of sheep. If that falls within the tracking exercise, we should certainly look at it to see what is emerging, given the parlous state of the sheep farming industry and the costs involved.

John Scott: That matter is part of the paperwork that we will agree later today.

Peter Peacock: That is fine as long as the matter is picked up explicitly.

The Convener: It is the subject of one of the Scottish statutory instruments that we will consider under item 4.

Peter Peacock: I was also thinking about the matter in terms of European processes and legislation.

John Scott: It is being driven by very old European legislation from which there has been derogation for the United Kingdom for many years. Regrettably, we are now moving away from that derogation.

Peter Peacock: I just wanted to make sure that nothing was coming up on the wider European agenda that would overtake us on that issue later in the year. We should ensure that we monitor the situation.

The Convener: Nothing appears to be coming up on the specific concerns that are raised in the Scottish context, but we will note the matter and ask for a separate check. It is not mentioned in our current paper, but we will ask for a weather eye to be kept on it.

Subordinate Legislation

Sheep and Goats (Identification and Traceability) (Scotland) Amendment Regulations 2007 (SSI 2007/559)

Foot-and-Mouth Disease (Export Restrictions) (Scotland) (No 2) Regulations 2007 (SSI 2007/562)

11:09

The Convener: Under agenda item 4 we have two Scottish statutory instruments to consider, which are subject to the negative procedure. No member has raised any points on either SSI and no motions to annul have been lodged. However, I am conscious that Peter Peacock flagged up a concern about sheep tagging, which we noted under the previous agenda item. I presume that he does not wish to raise his concern in the context of SSI 2007/559.

Peter Peacock: As John Scott suggested, I suspect that the matter has gone beyond the point of recovery. However, it is probably worth noting the impact that sheep tagging might have on the industry. I know that people are deeply concerned about it, particularly given the current cost structure of the industry, the value of stock and so on. It is something that the industry will, I suspect, find very difficult to cope with. That said, it is not clear to me that there is an alternative course open to us.

John Scott: I would, regrettably, agree—not because Peter Peacock raised the issue but because it is a matter of huge regret that we have reached this stage. Perhaps we should have opposed the SSI, but, like Peter, I do not believe that there is an alternative. Essentially, the derogation has been abused by the UK Government, and that is why the legislation is being forced on us now. There is no question but that costs are underestimated in the regulatory impact assessment, and there is, in particular, the hassle factor of double tagging sheep—especially on a day such as today, when people cannot get their fingers to work in the cold. It is hugely impractical for the structure of the Scottish sheep industry, but I do not know what the alternative is.

The Convener: I suggest that we defer our decision on SSI 2007/559 and, in the interim, ask the Cabinet Secretary for Rural Affairs and the Environment to give us a note on the costings. We will say that we are challenging the costs and that we are interested to know whether there has been any real impact—although there has, obviously, been a regulatory impact assessment.

John Scott: Yes, that would be helpful.

The Convener: I wonder whether it would be sufficient to flag up the fact that we are not just nodding through the SSI, even though we probably do not have an alternative in the end.

John Scott: Extraordinarily, when I was involved with the National Farmers Union of Scotland 10 years ago, I made representations in Brussels against such tagging to the then EU Commissioner on the subject—a Mr Pipliakos, I think. The Scottish sheep farming industry has tried to oppose this for the past 15 years, but we are stuck with it now. It might be even more helpful if the cabinet secretary could come and tell us why there is no alternative.

The Convener: We can ask the cabinet secretary to explain that, but I also ask those members who are better placed to know whether it would be worth writing to the NFUS in order to ask the organisation about the expected financial burdens and how they might differ from what is being officially suggested. I do not know, but it might be quite useful for us to get that information. Are we agreed?

Members *indicated agreement*.

The Convener: Could we therefore agree that we defer consideration—sorry, does Des McNulty have a question?

Des McNulty: I have one further question. I am looking at section 2.3 in the regulatory impact assessment document—

The Convener: Is this on SSI 2007/559?

Des McNulty: Yes. It is about the shift from movement tags to a UK tag.

The Convener: Which paragraph are you looking at?

Des McNulty: I am looking at paragraphs 2.3.2 and 2.3.3, on pages 2 and 3 of the RIA document. I am interested to know whether it is possible in the risk assessment context, and perhaps also in the context of tagging regulations, to have a specifically Scottish tag as opposed to a UK tag.

The Convener: "It's our sheep", you mean.

Des McNulty: We are supposed to tag sheep with the letters "UK", according to the legislation, with which I do not have a problem, but there is an issue about tracking the origins of animals—which improves their marketability—and whether, in that context, and also in the context of the concerns raised in paragraphs 2.3.2 and 2.3.3, there is an opportunity to have a specifically Scottish system. Perhaps our sheep could all be stamped with a saltire. I do not know about that—

The Convener: Tartan tags?

Des McNulty: I am just raising the matter as a possibility—if we are questioning the minister, perhaps that is a question that we could ask him.

The Convener: If we are writing to the cabinet secretary, does the committee agree that we will include that suggestion and question as well?

John Scott: And because of the points raised at paragraphs 2.3.7 and 2.3.8—

The Convener: I am really glad that everybody indicated in advance that this was going to be such an issue.

John Scott: I apologise, but we need to address the issue at our next meeting because it is urgent—if the system is to go ahead, the SSI indicates that it will go ahead in mid-January. That is why we need to address it at the next meeting if we possibly can.

The Convener: We will be within the time limits that are laid down if we get answers back by our next meeting. Because of the timescales involved, we can defer consideration of the matter only for a short time. The regulations come into force on 18 January.

Do we agree not to make any recommendations in relation to SSI 2007/562?

Members *indicated agreement.*

The Convener: It might be useful to have a five-minute suspension before we begin item 5. I suspend the meeting and ask everyone to be back by 11.21.

11:16

Meeting suspended.

11:21

On resuming—

Flooding and Flood Management Inquiry

The Convener: This is the first oral evidence session in our inquiry into flooding and flood management. It will provide a useful context for the remainder of the inquiry. I welcome the two witnesses from the Met Office: Professor John Mitchell, who is director of climate science; and Stephen Noyes, who is director of operations and customer services. Committee members have seen the submission from the Met Office, which we received after issuing our call for written evidence. If the witnesses wish to make an opening statement, I ask that they keep it to a maximum of five minutes. Thereafter, we will ask questions.

Steve Noyes (Met Office): Good morning and thank you for inviting us to give evidence to your inquiry. It is good to be here this morning. I will give you a brief overview of what the Met Office does. As you might be aware, the Met Office looks after weather forecasting and warning for the whole of the United Kingdom as well as climate change and predicting future climate for the UK and the rest of the world. The Met Office is world leading in weather forecasting capability and accuracy and in advising Governments globally about climate change.

John Mitchell's area of expertise, as indicated in his job title, is climate, and future climate in particular, so he will be responding to questions about that. My area of expertise is more to do with weather forecasting, so I will handle questions about forecasting rainfall and how it relates to floods and flood warnings.

We both recently gave evidence to the Environment, Food and Rural Affairs Committee in the House of Commons on the same issue in relation to England and Wales. Lessons from Scotland can be learned in England and lessons from England and Wales can be learned in Scotland.

The Met Office would like to invite the committee to visit our headquarters and operations centre in Exeter to learn a bit more about our expertise and what we do. If you are able to take the time and can afford a visit to Exeter, we would certainly like to host you.

Finally, given the current severe weather, would the committee like a weather forecast?

John Scott: Is the roof going to stay on?

Steve Noyes: The very severe winds are due to decrease during the day. As you might expect, the weather over the Highlands is pretty severe with temperatures around -2°C, quite a bit of snow and winds of between 70 and 100mph. The exceptional and awful weather up there will gradually improve as the day goes on. However, I am afraid that it looks like the rest of the week will continue unsettled, with more strong winds, more rain and snow over the higher ground.

Bill Wilson: Does that mean that my walk at the weekend is off?

The Convener: Forthcoming questions about specific forecasting ability might or might not relate to this weekend.

I will kick off with a general question. You might not have had an opportunity to read this morning's *Scotsman*, but have either of you read the article in it by Professor Gregory from the Scottish Crop Research Institute?

Professor John Mitchell (Met Office): I saw the paper but did not have time to read the article.

The Convener: It was about adaptation to global warming, with particular interest in the food and drinks industry. Of course, that specific issue need not detain us, but I wonder whether you have any comments on one paragraph that relates to the general issue of the weather that we might expect in future. The article states:

"Over the next 75 years, if gaseous emissions continue unabated, the climate of northern Britain"—

which I presume means Scotland—

"is likely to behave like this:

- 3.5C warmer in summer;
- 50 per cent drier in summer;
- 40 per cent wetter in winter;
- 90 per cent less snow;
- Four weeks earlier spring;
- More extreme temperature and rainfall events."

I simply raise the point because you have not constructed your evidence in that way. Of course, politicians like such bullet points because they are neat, simple and straightforward. Do you feel that Professor Gregory's assessment of what we might expect in future is realistic?

Professor Mitchell: I expect that in Scotland there will be an annual mean warming of 1°C to 3.5°C over the next 100 years. Some of that uncertainty arises from the emissions scenario and from uncertainties in the modelling itself.

We will almost certainly have wetter winters and perhaps drier summers, with warming tending to occur slightly more in summer than in winter. I would say that the figure of 90 per cent less snow that you quoted is not far off. However, there is considerable uncertainty about the amount of rainfall; the figure that Professor Gregory has cited of 40 per cent wetter winters is probably at the upper end, with the figure of 50 per cent drier summers probably at the lower end. The main point is that the climate will be different, and the present might not be a good guide to the future.

The Convener: So the figures that I have quoted are roughly in line with what you have been looking at, with perhaps a slight overestimation in order to make a point.

Professor Mitchell: The figures are slightly towards the upper end.

The Convener: Okay. That was quite useful.

Jamie Hepburn: I thank the witnesses for coming along this morning, and I especially thank Mr Noyes for his impromptu weather forecast. I half expected a map of the British isles to fall down behind him and was quite disappointed when it did not.

My question follows on neatly from Professor Mitchell's previous comments. In paragraph 7 of your submission, you indeed say that there will be "drier summers". However, in paragraph 8, you say:

"It is likely that there will be an increase in the proportion of summertime precipitation falling as intense rain."

I am only a layperson; I am sure that you can provide a sensible explanation as to why those statements appear to contradict each other.

Professor Mitchell: The situation in winter is simpler. Almost all the models show an increase in rainfall in mid to high latitudes, with an expected increase in intensity. However, the situation in summer is slightly more complicated. Most models show an increase in rainfall in high latitudes in the northern hemisphere, with a drying around the Mediterranean and southern Europe. The uncertainty arises because the boundary between that increase and decrease in rainfall falls across the middle of the United Kingdom.

Having said that, even where the mean rainfall goes down, it is possible to get increases in intensity. We only have to think of places in the tropics where, because of the warmth of the atmosphere and the amount of water that it can hold, in particularly showery weather there are more intense outbursts. To put a figure on it, if we consider just the amount of water that the atmosphere can hold, there is probably an increase of 6 to 7 per cent in intensity per degree of warming in the atmosphere. All other things being equal, that is a rule of thumb for the increase in intensity. There are other factors that increase intensity, but that gives you a rough idea of what to expect in the future.

The other point to make is that, as I said, there is considerable certainty about the increase in

winter rainfall. The United Kingdom climate impacts programme report in 2002 considered results from only one model, but there is of course a wide range of predictions from different models. The next UKCIP report will take that into account but, unfortunately, it is not due out until October.

11:30

Jamie Hepburn: What does that mean in layman's terms? To be perfectly frank, I could not quite follow what you said. Are you saying that rain will be less frequent in summer but that when we do get rain it will be heavier?

Professor Mitchell: That is right. It is more complex than—

Jamie Hepburn: That is what happened in England this summer.

Professor Mitchell: Yes. Steve Noyes will probably say a bit more about what happened in England in the summer but, in simple terms, it will be wetter in the winter with increased intensity and probably dryer in the summer but also with the possibility of increased intensity, although that is less certain.

Peter Peacock: Thank you for your written evidence, which is fascinating, and for what you have said so far. I pursue Jamie Hepburn's point about the intensity of rainfall. I will ask about one dimension of that, but I would also like to know what the implications are for public policy. We will consider the impact of climate change on the infrastructure needs of our nation and whether we have the correct systems to cope. When we consider investment, we have to think in the very long term. Investment may need to last for 50, 60 or 70 years.

Is a phenomenon occurring whereby rainfall is becoming more localised and more intense rather than more widespread and less intense? What would be the implications of that for particular river systems? Secondly, in relation to the long-term infrastructure, what is your advice to Scotland? Should we prepare to spend much more on flood prevention and management measures or should we take a cautious view because we are not certain about the future? Should we radically change the assumptions that we have had hitherto?

Professor Mitchell: I will take the second part of your question first because it is probably easier to deal with. Looking at the predictions, I think that it is likely that the climate will continue to warm over the next two to four decades no matter what we do on emissions. Along with that, we will get an increase in precipitation in rainfall and snowfall in winter. You have to take that into account in long-term planning. There is a range of predictions. We expect an increase of anything between 0 and 40 per cent, but that will become a bit clearer when the next UKCIP report comes out.

The intensity and locality of rainfall in summer is much more difficult to predict. Given our knowledge of meteorology, we know that, as we move towards warmer countries, we tend to get heavier, more intense and more localised outbreaks of rain. There is some evidence, but it is not yet compelling.

John Scott: In that regard, we are looking at a two-spiked problem. The problems are the intensity of summer rain and the sheer additional volume of winter rain. The intensity of summer rain is more unpredictable, but it is potentially more dangerous because of the greater runoff on land that will be dry then. Can you give us a handle on that? Is it 99 per cent certain that that will happen? Obviously, the legislation that we are contemplating would require huge public investment. We need to be certain that the changes are definitely going to happen. As the experts, can you reassure us that they will happen? What event should we try to cater for as the worst-case scenario?

Professor Mitchell: Things are more clear cut in the winter, but there is less certainty in the summer. The previous UKCIP report looked at just one model, which can be misleading. We know that there is some uncertainty, as climate modelling is not an exact science, particularly at a local level. One would have to take a risk-based approach by looking at the range of predictions, trying to understand what the most likely outcome is and then planning through risk management. Modellers will not say, "This is what the change will be," as that would be misleading and probably dishonest. Climate modelling is uncertain, but there are methods of dealing with uncertainty. In terms of risk management and considering what should be done, in particular with regard to the summer, that would have to be taken into account.

John Scott: Your paper discusses integrated probability modelling. In the simplest terms, are you saying that one-in-200-year events might well happen once every 15 years?

Professor Mitchell: That is the type of information that we can get. However, we have to be aware that the change in average rainfall is a relatively simple problem compared with changes in extremes, both statistically and in terms of physical modelling.

Steve Noyes: Perhaps I can help with that a little. One way of looking at the problem is that, as Professor Mitchell said, there is a winter issue, which is to do with the volume of rainfall, and there is a summer issue, which is to do with the potential for more intense rainfall events on a more local scale than we may get in winter.

There are two types of flooding that relate to those two scenarios. In winter, it is typically river flooding. There is occasional pluvial flooding but, more often, rivers burst their banks. In the summer, the big problem is the quantity of rain falling in a short period of time, hitting concrete and tarmac and then causing what we call temporary pluvial flooding. In that context, I recommend that the committee take some things into consideration. It ought to be possible to look at the areas that are most at risk of pluvial flooding in the summer months and focus efforts on the improvements that could be made to infrastructure there. That is significantly different from what would have to be done to defend against river and coastal flooding.

A lot of work has been done in the past on river and coastal flooding because it is easier to get one's head around those. However, not much thinking or investment has been put into pluvial flooding, which is going to become more of a risk in the summer months under climate change. We need to focus on that area and lots of organisations, such as the Scottish Environment Protection Agency and organisations that work with topography and terrain, such as Ordnance Survey and the Met Office, should be encouraged to work together more to consider this specific new problem for the UK as a whole—Scotland as well as England and Wales.

John Scott: We have not mentioned coastal flooding, sea level rise and inundation. Could you give us some predictions on sea levels and potential coastal flooding?

Professor Mitchell: During the past 100 years, the global sea level has risen about 25cm. The predicted scenarios for the next 100 years range from a rise of about 10cm through 50cm to 75cm, which is the highest level. That is obviously a key contributor to coastal flooding. Again, there is a range of uncertainty in the predictions, but the global mean is typically up to about half a metre. I am sorry to introduce uncertainties again, but that is the way the world is. There is quite a wide range of regional model predictions and that is one area where we do not know what the geographical distribution can be, so it could vary locally by a factor of about three. There will certainly be increases in the sea level, which will increase coastal flooding.

The second issue is winds and storm surges, which are a real issue in the southern North Sea, hence the work on the Thames barrier and so forth. It is probably less of an issue for Scotland; there are surges, but they tend not to be such a big fraction of the rise in sea level. I know that there was a tragic incident in the Western Isles recently, which was probably related more to waves and sea level than to a surge.

Des McNulty: How has the approach in your discipline, in which you have worked for some time, changed? Is the same shift operating in the design and engineering of flood management and flood prevention schemes? It strikes me that, originally, much of the science of long-term forecasting depended on extrapolation from past practice. Now you have moved to a situation in which you can incorporate in the mathematics external factors and systems that you could not include previously. You have been able to feed in an anticipation of the fact that the climate is changing. However, it seems that the disciplines that are associated with civil engineering are still working with an analysis that is based on the historical record—they speak of 100-year and 200-year flooding incidents. They have not been able to feed in and to respond to the new predictive science that you have been able to incorporate in your discipline. Is that a fair comment?

Professor Mitchell: Yes. That is why in my opening statement I made the key point that the past may not be a good guide to the future. When we are dealing with long-term infrastructure, we must look at long-term trends. You referred to changes in science. Until recently, much of the work on climate change was about establishing that there was a human effect on climate. Global models were adequate for that purpose. Now we are looking at adaptation—how we respond to changes in climate—which requires much more local knowledge of climate change. We are pushing climate models to provide that information. I am mindful of the fact that the committee must make decisions about infrastructure today and I advise members to be cautious, because we know that there are limits to models' ability to simulate on a very local scale. We are doing our best to improve the models and are seeking more resources to increase our ability to produce regional predictions. The current science suggests that in winter there will be heavier and more intense rainfall and that we should consider the possibility of phenomena such as more extreme flash flooding in summer.

Des McNulty: The predictions that you make are at a broad, generic level. You can make predictions for Scotland and, perhaps, even for parts of Scotland, but I suspect that it is difficult to predict how incidents on the Clyde will affect particular areas of Glasgow, for example. How robust is the modelling that can be used to translate your big picture predictions into more localised responses, perhaps by modelling river flows?

Steve Noyes: Are you talking about climate scenarios or weather forecasting for flooding?

Des McNulty: I am linking the two. How do forecasts of climate change translate into

forecasts of floods in general and of the tolerances of flood prevention measures in particular locations?

Professor Mitchell: At present, many climate predictions are made using global models that have a resolution of 150km at best. That is pretty crude for the British isles. To downscale, we take the output from those models and create regional models, which currently have a resolution of 50km down to about 25km. That is still fairly crude in terms of catchment and flood engineering.

One caveat is that global models contain inaccuracies that feed into regional models. The fact that we can run a model with a resolution of 25km does not mean that it is accurate to that degree, so UKCIP is looking at the range of answers that models yield.

We want to allow engineers to take a risk-based approach; we do not want simply to say to them, "This is what is going to happen, so this is what can be built." Because of the uncertainties, that will be the only way to make progress. Engineers are well used to working in that way.

I will now pass over to Steve Noyes, to allow him to talk about weather forecasting, which is another interesting topic.

The Convener: Before we discuss forecasting, I want us to continue discussing climate change.

11:45

Bill Wilson: The witnesses say that there will be a meta-analysis of a wide range of studies, in order to allow better predictions. Sea levels are predicted to rise, so there will come a time when we have to say that we will not build new developments below a certain height above sea level. We cannot wall the whole coast. Can you predict what that height will be?

Professor Mitchell: Taking such an approach would be sensible. It is possible to consider a range of predictions and then choose a certain height as a cut-off point. Uncertainty will depend on two things, especially in the longer term. The first is the modelling, which we are working on; and the second is the predictions for emissions, which takes us back to socioeconomic scenarios. Over the next three to four decades, what we do in terms of emissions scenarios will probably make very little difference, so, over the next 30 or 40 years, we will probably be better able to consider the contribution made by climate change than the contribution made by natural variations. That may allow us a way forward.

Bill Wilson: So you are not in a position to make predictions at this point. Obviously, we do not want to wait 30 years before deciding what the minimum height above sea level for buildings should be, because by that time lots of new buildings would be below sea level.

Professor Mitchell: What you can do is establish a minimum that you believe you will have to work to. However, you should plan in such a way that, if work has to be augmented, hooks have been left in. That would be better than building things and then having to start all over again, which would be more expensive. This is not my area of expertise, but there are ways of approaching the problem that take uncertainty into account.

The Convener: I have one more general question before we move on to specifics. In paragraph 3 of your written submission, you say that the Met Office

"provides storm tide and surge warnings for the coastal flood watch service introduced by SEPA in 2007."

You go on to say:

"The historical data required by SEPA to develop an effective coastal flood warning system is not available".

Such data would be useful. Why are they not available, and how could investment change the situation? If investment is to make a difference, there must be records.

Steve Noyes: What we are referring to is the ability to link forecasts to impacts. That is relatively straightforward, and the Met Office already produces forecasts of storm surges that can be connected to predictions of tides, for example. We can also forecast waves and overtopping. That allows us to build up a picture of the state of the seas along the coast. The bit that is missing is what that will mean. We have to consider what level of sea is required to cause coastal flooding and inundation, so that we know how to specify alert levels around the coast of Scotland. That has been worked on for a long time in England, specifically down the North Sea coast. Along with the Environment Agency, we can now specify alert levels. What happens is rather more sophisticated than our saying to the Environment Agency, "This is the height of the storm surge." We contact the agency only when we get close to the alert levels, at which point the agency can start to gear up its resources.

What is missing is historical data relating to coastal floods and the state of the sea defences. If we had such data, we could connect them to the forecasts.

The Convener: I understand that the data are missing, but paragraph 3 says:

"it is understood that investment in this initiative would allow development of the modelling capability required."

If the data are not there, you can throw in any amount of money but how can you create

circumstances that allow the modelling? Either you have the data or you do not. Investment will not change that.

Steve Noyes: Having the data is really important for verifying the performance of models. Without observational data—

The Convener: I understand that, but either the data are there or they are not.

Steve Noyes: Yes.

The Convener: Are the data there?

Steve Noyes: No. Some data exist in some places, but there are not enough data around the coastline.

The Convener: What use is investment if we do not have the data with which to do modelling?

Steve Noyes: I am saying that investment is needed to put the data in place, so that we can improve the models.

The Convener: But such data would start only from now. Is that what you are talking about?

Steve Noyes: Yes.

The Convener: So we cannot fix the lack of historical data—we can do nothing about that. We can only begin the record now in the way that you think is appropriate.

Steve Noyes: Some data must exist in places. We could gather that together to have a common set of data that we can use.

The Convener: That is a slightly different issue—you suspect that data exist but that they have not been brought together meaningfully.

Steve Noyes: That is my suspicion.

The Convener: But we do not know that for sure.

Steve Noyes: No. That issue is probably for SEPA.

The Convener: That is useful.

Professor Mitchell: Two separate issues might be involved. One is that data have been collected but not put in a form and quality controlled in a useful way. The second issue might be—I do not know—that data are needed from more areas than are covered at present.

The Convener: Thank you—that explains the comment in your submission.

We will move on to forecasting.

Peter Peacock: Paragraph 5 of your submission rehearses arguments about weather radars and mentions your commercial arrangement with Scottish Power to improve some of your data. You say that although radar cover for the UK as a whole is sufficient, gaps in coverage exist in parts of Scotland. You highlight a gap in Moray, but the implication is that other gaps exist. What are the Scottish gaps?

I do not know exactly how radar works, but I presume that our mountainous terrain makes it difficult for radar to work everywhere in Scotland. What is the answer to that?

Do you plan major investments to improve coverage and eliminate the gaps? How is such investment financed? Having an idea of that would help us.

Steve Noyes: Weather radar coverage over the UK meets two requirements. One is for weather forecasting and a supplementary requirement is to aid flood forecasting. For flood forecasting, it is ideal to have weather radar that detects rainfall at a high resolution—typically 1km or 2km—because that corresponds to the size of the weather systems that create the most intense rainfall. That is also the scale on which we look at local topography that leads to flash floods and at river catchment areas. For flooding, capturing good observations and rainfall data from high-resolution radar data is important.

As you said, our submission says that the network is adequate for weather forecasting, because the resolution for that is about 5km. However, problems exist at the higher resolution, primarily in some parts of Scotland. The areas of Scotland that do not have that high-resolution coverage are Moray, as you said; the Highlands; the northern isles; and the south-westernmost parts.

Improving radar coverage would particularly benefit flood forecasting, especially in relation to the potential increase in summer events of high-intensity rainfall, which we have discussed. That is linked to Scotland's topography, which is mountainous and includes steep side slopes and river valleys, in which heavy rain can have a dramatic effect, as it did in Boscastle a couple of years ago, for example. That describes what rainfall radar helps us to do.

There are no plans to invest in further radar in Scotland beyond the two radars that you mentioned in the central Lowlands, which are supported by Scottish Power.

The radar network in the UK is funded partly by the public weather service customer group, which provides the funding to meet the weather forecasting requirement. The flooding requirement in England and Wales is supplemented by funding from the Environment Agency. Currently, there is no specific funding to supplement anything beyond what the public weather service customer group funds for Scotland.

The Convener: What percentage of the Scottish weather area is covered by radar?

Steve Noyes: Almost the whole of Scotland is covered by radar for weather forecasting—the exception is the Shetland Isles. Just over 50 per cent of Scotland is covered by rainfall radar that would be ideally suited to high-intensity rainfall events.

Bill Wilson: Can you give us a comparison between the coverage in Scotland and the coverage in England and Wales? That question follows on directly from yours, convener. I accept that the witnesses might have to give us that information later in writing.

Steve Noyes: On the basis of the information that I have in front of me, I would say that, with regard to radar that is suitable for rainfall forecasting with a 2km resolution, almost the whole of England and Wales—90 to 95 per cent—is covered, whereas just over 50 per cent of Scotland is covered.

The Convener: That is quite a big difference.

John Scott: Forgive me, convener, but I have another question that is specifically on this subject, which is of interest to Peter Peacock. You said that both Moray and Dumfries, which are high-risk flooding areas, would be excluded. Are they not covered?

Steve Noyes: They are covered with regard to the coarse resolution, but they are not covered as adequately as they could be with regard to the high-resolution radar that would be ideal for high-intensity rainfall events.

The Convener: We can return to Peter Peacock. The question got slightly hijacked.

Peter Peacock: I presume that part of the issue of coverage for rainfall events is geographic—the mountains in Scotland are that much higher and we have less flat land and so on. However, that also means that the investment needed to resolve the problem is higher. What needs to happen? If we wanted to improve our accuracy of forecasting of localised weather events and intense rainfall, what would have to happen? Would the Government have to commission such work? Do you provide such work and the Government puts up the cash? Is local government involved? How do we achieve the increase in coverage that might give communities better protection?

The Convener: And how much would it cost?

Steve Noyes: The most logical place to start would be to have discussions with SEPA on behalf of the Scottish Government. SEPA is working with the Met Office to identify the areas that are most at risk of flooding. Given that SEPA has the expertise in that regard, it can target the resources to the areas that most need the rainfall radar coverage. It has already indicated in discussions with the Met Office where it would prioritise investment if we could identify the funding. Additional investment in Scotland to provide flood forecasting advice around which SEPA and the Met Office can deliver services is something for the Scottish Government to think about.

On funding, it costs something of the order of a few million pounds to install a radar, then there are the operational costs. Peter Peacock referred to mountains. The weather environment on top of mountains in the conditions that we are experiencing today is quite severe, so extra costs could be associated with installing radar in such places. It would cost several million pounds to install a radar on each site. Between £1.5 million and £5 million is the order of magnitude that we are talking about. The running costs are significantly less than that. We are talking about a major capital investment.

Peter Peacock: If you wanted to provide coverage for the gaps in places where you know there is a high risk of flooding, how many sites would be required in Scotland?

Steve Noyes: To get you to a consistent level across Scotland, a good starting point would be to add at least three more radar. We would need to do more work with SEPA to understand the effects of radar coverage being blocked by mountainous terrain. That relates to what sites we can access to install radar. If it proved impossible in the Highlands to get an ideal site, there might have to be more than one radar.

12:00

David Stewart: In paragraph 4 of your submission, you say that you can run a model at 1.5km resolution and that that was effective during the floods in England last summer. Is it possible to deploy that resource in Scotland?

Steve Noyes: Yes. We do that already for the whole of the United Kingdom but for different regions, depending on where we expect the heavy rain to be.

That is slightly different from the weather radar. In paragraph 4, we are talking about our numerical models that model the atmosphere over the UK. We plan to move to a 1.5km model for whole of the UK with a new supercomputer in the next decade, but at the moment we are able, when required, to run at 1.5km for certain parts of the UK, including Scotland.

David Stewart: I read that one of the constraints is the availability of the supercomputer to enable the model to be operational. Can you explain to the committee the practical constraint with regard to the supercomputer capacity?

Steve Noyes: The constraint is primarily financial. If we had the money, we would be able to run models for the whole of the UK at much higher resolution than 1.5km. There is a scientific constraint, but the primary constraint that prevents us from doing what we could do is financial. That is often the case with such scientific issues.

There is funding that will provide a supercomputer to allow us to run at 1.5km from 2010 onwards. We have made a case to central Government in Whitehall for substantially more investment, both in the context of climate change and for flood forecasting, to enable us to model at an even higher resolution. The case has been submitted through the Department for Environment, Food and Rural Affairs, but we do not know yet whether we will be successful.

The primary constraint on our ability to provide early flood warnings, better detail on climate change and more local detail on where floods will be is financial.

David Stewart: Am I right that the roll-out for Scotland will start from 2010, but that you have still to clarify some funding packages before you know the exact situation?

Steve Noyes: Yes.

David Stewart: So there is a 10-year period for Scotland—can you be any more specific than that?

Steve Noyes: A 10-year period?

David Stewart: Did you not say that it would be rolled out in the next 10 years?

Steve Noyes: It will come out in 2010. The life of each supercomputer is typically about five years. There is also a technology driver, in the sense that the manufacturers of supercomputers introduce new technology on a cycle of about four to five years. As such, there is a science cycle, a technology cycle and a funding cycle.

The funding that we have secured will provide the next supercomputer for 2009 to 2014. We are bidding to supplement that with significant additional funding, which, during the same period, will increase the supercomputing so that we can make a step change in capability.

Mike Rumbles: Like others, I will focus on the radar coverage for the warning and reporting of high-precipitation events and your statement, which was a surprise to me, that, while England and Wales are totally covered, only 50 per cent of Scottish land mass is covered. In response to some of my colleagues' questions, there was an assumption that that was to do with mountainous terrain. However, there is mountainous terrain in Snowdonia as well as in the Highlands. What do you consider are the reasons for the disparity in coverage?

Steve Noyes: It is largely historical. The funding has been made available for quite a long time from the relevant authorities in England and Wales with responsibility for predicting river flooding in particular. The situation predates the formation of the Environment Agency and goes back more than 10 years. Funding has been made available from the authorities that have statutory responsibility for providing flood warnings. They have supplemented the investment that the Met Office has received for weather forecasting, and that has added to the density of the network for England and Wales. That has not been the case for Scotland.

Mike Rumbles: So the disparity predates devolution. You are saying that, before devolution, the coverage was rolled out for England and Wales but not for Scotland.

Steve Noyes: Yes.

Professor Mitchell: It is worth noting that about 95 per cent of Wales is covered by just two radars. The topography and arrangement of Scotland means that it is a much more expensive proposition.

The Convener: I have a specific question about your ability to forecast very localised events. It relates to conditions that occurred in Tayside on 22 December—it was a dry and well below freezing night and there were continuing freezing temperatures in the morning, but there was rainfall at the below freezing temperatures, which meant that between 9 o'clock and 9.15, everything turned to ice because the rain was freezing on impact. That was a very brief period of time within which a fairly severe event occurred—I have never seen such an event before, and most people to whom I have spoken have seen it only once before. Such an event is localised not so much geographically, but in terms of time and of the specific conditions that had to prevail to bring it about. Is such an event predictable, or is it not something that you could predict? It was not predicted—we had no warning of it. We had warning of today's high winds, but we did not have any warning of that event.

Steve Noyes: It is quite difficult to predict automatically from models. The numerical models of the atmosphere can provide information to the forecasters, which would give an experienced forecaster signals that would say that there is a risk of what we call freezing rain events occurring. Freezing rain happens every winter but, as you say, it is very localised and short lived. Across the UK, there are several such events every winter.

We are probably at the point at which we are reaching a step change in capability. As we have more sophisticated models, better science and investment in supercomputers, we are beginning

to reach the stage at which, before long, it ought to be reasonable for us to be able to predict those things more accurately than we can at the moment. At the moment, freezing rain events are typically forecast by humans who have the experience and can identify the signals. It is also quite difficult to give much warning of those events, because they tend to happen at relatively short notice.

John Scott: To go back to the original subject of flooding, what would your suggestions be? We have you here today to create a sort of Rolls-Royce model of flood warning—what would you suggest to us, as Scottish parliamentarians, as the model of choice? What should we do to give ourselves the best warning of floods? Thereafter, we have to cope with the actuality of the event, but in terms of warnings, what do you suggest?

Steve Noyes: There is an opportunity for Scotland to take a leading role within the UK to show what could be done. The advantage we have in Scotland is that there are fewer historical responsibilities and not so much infrastructure, so there is a real opportunity for Scotland to move ahead of the rest of the UK. One of the things that can be done in Scotland is investment in weather radar, as we mentioned, but perhaps an even more important thing—and something that could deliver benefits quite quickly—would be to consider setting up a joint forecasting centre for floods, in which organisations such as SEPA and the Met Office could be encouraged to work together on how we can target investment, provide consistent communication to the public and emergency responders in Scotland, and provide early warning of those events. If we were asked to do so, SEPA and the Met Office could set something up fairly quickly—probably within six to 12 months—that would significantly move forward Scotland's capability.

John Scott: Do you have any estimate or indication of the costs of creating such a structure?

Steve Noyes: I do not think that the costs would be as significant as those that we were talking about with regard to the weather radar, insofar as capital cost is concerned. We are probably looking at a joint team of somewhere between 10 and 20 people, maximum. Long-term investment might be more significant—in understanding the science; in developing combined meteorological and hydrological models that can provide much earlier warning; in building on the investment that we talked about that is being put into weather forecasting; and in taking that to the next step to integrate that capability with hydrological models, so that we can forecast what will happen on the ground.

Jamie Hepburn: Your relationship with SEPA is one of the things that you deal with early on in your written submission. Paragraph 2 highlights the fact that Scotland, as part of the UK, is slightly different from most other countries in Europe because it does not have a single meteorological and hydrological agency. On the one hand, it has the Met Office and, on the other hand, it has SEPA. You have spoken a wee bit about that relationship, but could you give us a bit more detail on how it operates effectively and how data are exchanged between the two organisations? Just tell us in more depth how the relationship works.

Steve Noyes: The relationship with SEPA is certainly healthy; we have a lot of constructive dialogue. The work that both agencies do on behalf of the public of Scotland, the emergency services and Government authorities is probably constrained primarily by what they are asked to do more than anything else. There is a lot of capability in both organisations and Scotland could benefit more from the capability that they have.

As we mentioned in our submission, other parts of Europe have moved to different set-ups. In some places, a single agency is responsible for weather and hydrology whereas, in other places, joint centres have been established. To take France for example, in Toulouse, alongside the Météo France offices, there is a joint centre that produces forecasts for the rivers and pluvial flooding. However, it is Météo France's responsibility to issue the flood warnings as part of its overall warning response capability.

In France, there is a meteorological agency with a joint centre next door and the meteorological agency issues the warning. In other countries, there is a single agency. The structure itself is not particularly important; what is important is that there is clarity about what is asked, the requirement to provide warnings to the emergency services and the public, and who is responsible for ensuring that that service is delivered.

Jamie Hepburn: You said that the Met Office and, I think, SEPA are constrained by what they are asked to do. Can you expand on that?

Steve Noyes: I will take storm surge warnings as an example. In England and Wales, the Environment Agency has responsibility for coastal defence and for providing warnings of storm surge events; that function does not exist in Scotland, as far as I am aware. There is a difference between what SEPA does and what the Environment Agency does. What we can do is limited by funding, so if an organisation or a group of organisations is given responsibility for providing more sophisticated flood predictions and warnings, that must go hand in hand with the provision of funding. We could do more, but additional funding would be required. That is my point.

Peter Peacock: I will look at the matter from a legislative or statutory point of view, leaving aside

for the moment the complications of cross-border legislation. Paragraph 2 of your submission says:

"the Met Office has no direct responsibility for river or coastal flood forecasting."

Paragraph 3 says that, currently in Scotland,

"no agency provides warnings of localised flash flooding (also known as pluvial flooding)".

Should the Met Office be under a statutory duty to provide those services—albeit in conjunction with SEPA—or some other duty to co-operate on those matters to give the clarity of responsibility that you imply may be somewhat lacking at present?

Steve Noyes: There should be a duty on somebody to provide those services. That could be the Met Office or it could be the Met Office and SEPA working in some joint organisation, but such a duty would be beneficial. The same problem exists in England and Wales at the moment and the same issue has been identified in discussions with the Pitt review and in our evidence to the Environment, Food and Rural Affairs Committee at Westminster.

The gap exists not only in England or the United Kingdom; the same issue is being identified in other parts of the world. Pluvial flooding has historically been regarded almost as an act of God and it has been difficult to identify how one might predict it and warn about it. High-resolution mapping of terrain gives us more detail on buildings and infrastructure on the ground and we have better science in organisations such as the Met Office and SEPA. That means that pluvial flooding can be forecast and warned about. Finally, it is becoming a problem that can be wrestled and dealt with, and a useful service can be delivered.

12:15

Peter Peacock: I want to pin that down. In legislative terms, and looking to future planning and strategy, is absolute clarity required on boundaries and responsibilities and the need to work together and co-operate? If not, surely we may end up again in the situation that you describe in paragraph 21, in which

"fragmented responsibilities for warnings hinder understanding and therefore response."

Is there a need for statutory change to make those matters absolutely clear?

Steve Noyes: That would be very helpful.

The Convener: I seek clarification on whether the statutory changes in respect of the Met Office require to be made at Westminster. The Met Office is, after all, owned by the Ministry of Defence.

Steve Noyes: Not necessarily, but we will need to clarify that for the committee. If a measure is required specifically for Scotland, and the Met Office and SEPA are required to work together to deliver it, approvals from Whitehall may be needed. However, I am not sure of the exact position. The issue would be worth clarifying.

The Convener: It would be useful if you could do that. If we decide to look at some of those issues in our final recommendations, it would be helpful for us to be absolutely clear on that.

Des McNulty: My question is on the emergency planning exercise. In going through some of the processes—with which I assume you are involved; please tell me if you are not—have you identified where the problems arise in the interface between the various organisations and the clarity of their roles? Do we need a real flood event in Scotland before we can find out where the problems will arise and overlaps will occur, or is it possible to find that out by way of the emergency planning exercise?

Steve Noyes: That is a useful suggestion in terms of exploring the issues and helping the committee to clarify its eventual recommendations. We participate in exercises. A couple of years ago, we established the role of the public weather service adviser. Pat Boyle, who is sitting behind me in the gallery, is one of the advisers for Scotland. She and her colleagues work closely with the emergency responder community in Scotland and participate in exercises. We also deliver training to that community. It is important that they know what we do and what our messages mean, including in terms of probability and risk. In that way, they can make informed decisions and ask us the right questions about what is going to happen. As the member rightly said, the community is a good one to turn to in terms of bounding the issues and establishing and clarifying needs.

John Scott: I return to Peter Peacock's point on whether there should be a statutory duty on the Met Office to provide help to SEPA. In terms of working with SEPA, is it possible for SEPA to buy in the Met Office's services? I have read that your being at committee is also something of a sales pitch—I do not mean that horridly.

Steve Noyes: It depends on what you are asking each organisation to do, given that each of us has a different capability. Certainly, you would want the two organisations to work closely together, but other organisations can add considerable value, too.

The Met Office is well geared up for such work. We have the infrastructure in place to provide warnings to the public through our website and to provide warnings directly to the emergency services. We also provide warnings through the work of public weather service advisers such as

Pat Boyle. As we explore the issues—including, as Mr McNulty suggested, with the emergency responder community—we may find that the Met Office is best placed to provide the warning, given that we have the infrastructure in place. It is much more cost effective to use the existing infrastructure than to create another infrastructure.

Funding could be given to SEPA to purchase a warning and forecasting service from us. That would be possible; it would be one way to do it.

Peter Peacock: That raises another point, which I would like to pursue. In a sense, you are saying that, because you are partly commercial, you have to adjust your activity to whoever is buying the service. Do you have priority clients? Which is the better route to follow to become such a client—commercial or legal?

Steve Noyes: Government would be the route. There is a separation between our commercial business and our Government business. The Met Office exists to provide services to the citizens and Government of the UK. We happen to have a commercial business bolted on to that, which helps us to offset the overall cost. We are talking about the Met Office acting as a part of Government, delivering services on behalf of Government to the citizens of the UK—and Scotland in particular, in this context.

The Convener: I wish to raise the issue of what happened in England last summer, which you covered in paragraphs 20 and 21 of your submission. That experience indicated a degree of confusion about who was responsible for what when it came to warnings, the services that became required and the differences between different kinds of forecasting. Your submission states:

"although severe weather and flooding are linked they do not necessarily occur at the same time (for example the Met Office web site showed no weather warnings at a time when parts of the UK were experiencing severe flooding)."

You are right to assume that people will look at the weather forecast expecting to see indications of flooding and so on. That degree of confusion applies in England, where—if I am right about what you have said—you think there is better co-ordination than there is in Scotland. Have I picked that up wrongly?

Steve Noyes: The communication problems in Scotland are pretty much identical to those in England and Wales.

The Convener: So it is likely that the level of confusion that existed in England in July could be replicated in Scotland.

Steve Noyes: I suggest so, yes.

The Convener: And that would be resolved by having the sort of joint centre that we have discussed.

Steve Noyes: Yes.

The Convener: And that would make a huge difference to how people perceive matters. That is useful.

If there are no clear-up questions from committee members, it remains for me to thank you, gentlemen, for coming to speak to us. I think that you might be able to get back to us on one or two outstanding issues around costings and statutory responsibilities. If anything occurs to you arising from this question-and-answer session that you feel could do with further clarification, please put it in writing, as we will still accept information in that form. Thank you very much.

We remain on this agenda item, if I can hold the committee's attention. I wish to refer briefly to the paper from the clerks in respect of a programme of further oral evidence for our inquiry. We have provisionally allocated witnesses from 6 February onwards. Do members have any comments to make on the proposed schedule of witnesses? If there is a desire to increase the number of witnesses substantially, that will result either in very long meetings or in our having more meetings. I ask members to keep that in mind. Are there any comments?

Peter Peacock: There are two—possibly three—things that I think we should consider. I am not sure whether this has already been covered, but I cannot see it in our paper. It strikes me, particularly in light of the evidence that we have just heard, that it might be worth hearing from the trunk roads authority and other road authorities, given the surface area that is taken up by tarmac and their responsibility for gully cleaning and so on. Secondly, in addition to planners, there is the house building industry. There is clear pressure from builders to build in certain areas. It might be worth getting house builders' take on the issues. Thirdly, it might be worth hearing from Sir Michael Pitt about what he discovered about organisational issues in England that could help us here. That is a slightly less obvious possibility, but it might be worth thinking about.

The Convener: A direct approach to Sir Michael Pitt might be useful. We could write to him in the first instance.

Paragraph 13 of our paper suggests that Homes for Scotland should be included in the round-table evidence session on 6 February, which covers Peter Peacock's second point.

However, I do not think that we have included the roads authority—unless we assume that the Civil Engineering Contractors Association (Scotland) is a relevant organisation.

Peter Peacock: That is different from whatever the trunk roads authority is now called—

The Convener: You mean Transport Scotland.

Peter Peacock: Yes, and its agencies that deliver services on the roads. Issues such as the cleaning of gullies and culverts are critical.

The Convener: That is a fair point. We will take that on board and explore how best we can get that evidence. It might be easiest to include such an organisation in the round-table evidence session, but I do not know whether it will be best to hear from Transport Scotland or one of the agencies. We will explore that.

Do members have any other questions or comments? For our meeting in Elgin, I think that we agree that I will agree the final invitees from Elgin residents and businesses.

At this point, given our agreement to agenda item 1, we move into private session.

12:26

Meeting continued in private until 12:38.

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