OFFICIAL REPORT
AITHISG OIFIGEIL

Rural Economy and Connectivity Committee

Wednesday 25 September 2019

Session 5

The Scottish Parliament
Pàrlamaid na h-Alba

Wednesday 25 September 2019

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RURAL ECONOMY AND CONNECTIVITY COMMITTEE

26th Meeting 2019, Session 5

CONVENER

*Edward Mountain (Highlands and Islands) (Con)

DEPUTY CONVENER

*Maureen Watt (Aberdeen South and North Kincardine) (SNP)

COMMITTEE MEMBERS

*Peter Chapman (North East Scotland) (Con)
*John Finnie (Highlands and Islands) (Green)
*Jamie Greene (West Scotland) (Con)
*Emma Harper (South Scotland) (SNP)
*Richard Lyle (Uddingston and Bellshill) (SNP)
*Angus MacDonald (Falkirk East) (SNP)
*Mike Rumbles (North East Scotland) (LD)
*Colin Smyth (South Scotland) (Lab)
*Stewart Stevenson (Banffshire and Buchan Coast) (SNP)

*attended

THE FOLLOWING ALSO PARTICIPATED:

Angus Carmichael (Scottish Road Works Commissioner)
David Giles (Asphalt Industry Alliance)
Derek Halden (Chartered Institute of Logistics and Transport)
Cara Hilton (Civil Engineering Contractors Association)
Neil Johnstone (Chartered Institution of Highways and Transportation)

CLERK TO THE COMMITTEE

Steve Farrell

LOCATION

The Mary Fairfax Somerville Room (CR2)

Scottish Parliament

Rural Economy and Connectivity Committee

Wednesday 25 September 2019

[The Convener opened the meeting at 10:00]

Decision on Taking Business in Private

The Convener (Edward Mountain): Good morning, and welcome to the 26th meeting of the Rural Economy and Connectivity Committee in 2019. I ask everyone present to ensure that their mobile phones are on silent, please.

Agenda item 1 is a decision on taking business in private. The committee is asked to consider taking item 4 in private. Item 4 is a discussion on the committee's future work programme. Is that agreed?

Members *indicated agreement.*

Subordinate Legislation

Plant Health (Forestry) (Amendment) (Scotland) Order 2019 (SSI 2019/278)

10:00

The Convener: Item 2 is subordinate legislation. We have one negative instrument before us. No motions to annul or representations have been received in relation to the order.

There are no comments from members. Is the committee agreed that it does not wish to make any recommendation in relation to the order?

Members *indicated agreement.*

Pre-budget and Financial Scrutiny (Road Maintenance)

10:01

The Convener: Item 3 is pre-budget and financial scrutiny on road maintenance. Today we will take evidence from engineering and technical interests on the efficacy of the current approach to road maintenance in Scotland and the adequacy of current associated expenditure levels. This activity will support the committee's scrutiny of the Scottish Government's draft budget for 2020-21 later in the year.

I welcome our panel. David Giles is the director of the Asphalt Industry Alliance; Neil Johnstone is the vice-president of the Chartered Institution of Highways and Transportation; Derek Halden is a fellow of the Chartered Institute of Logistics and Transport; Angus Carmichael is the Scottish Road Works Commissioner; and Cara Hilton is policy and public affairs manager for the Civil Engineering Contractors Association.

We will now go into questions. For those members of the panel who have not been here before—this is not directed at you, Cara—please catch my eye if you want to come in and contribute, and I will endeavour to bring you in. The danger is that, if you do not catch my eye, I will have to nominate somebody, and the first person I will bring in is usually the first person who looks away. Please keep your eye on me when you are speaking, too, because I am trying to manage the opportunities for everyone to speak. If you set off on a long discussion, I do not want to have to interrupt you.

John Finnie (Highlands and Islands) (Green): Good morning, panel. Thank you for your written submissions, which are always very helpful. Many submissions have suggested that too little is being spent on road maintenance. What levels of funding do you think are necessary to bring local roads up to a reasonable standard? Perhaps you can also give us a definition of what a reasonable standard might be.

The Convener: Everyone is looking away—I told you that that was dangerous.

Cara Hilton (Civil Engineering Contractors Association): There is no doubt that the level of funding at the moment is not sufficient. It is not sufficient for keeping the roads to a decent standard, never mind improving them to the standard that a world-class economy needs and deserves.

A report that came out last year said that one third of Scotland's roads needed maintenance work, the cost of which would be about £1.6 billion. It is a huge problem that Scotland is facing, and there is no doubt that the cuts to local authority budgets have contributed to it. We need more investment to be made in the strategic roads network, too. This does not just concern road users; it is also about ensuring more viable public transport options and ensuring that active travel is also an option. It is about protecting jobs in our economy. We believe that the spend needs to be increased significantly.

The Convener: Do you wish to contribute on that, Derek? Are the road repairs all perfect?

Derek Halden (Chartered Institute of Logistics and Transport): The Chartered Institute of Logistics and Transport has been saying for a decade or more that there are three key problems relating to accountability, capacity and performance management. The Christie commission was tremendously helpful in trying to push stuff, but we see from Audit Scotland's 2018 report that next to nothing has happened since then.

There are huge organisational problems. Once we have clearer accountability and sharper performance standards and we are investing in the capabilities of joint working across Scotland, we will be better placed to ask whether we have got the budget right. At the moment, we emphasise incapability, which means that people are incentivised to pretend that they have bigger problems than they have, because they are more likely to get more money.

Christie was trying to turn those sorts of mechanisms upside down and say, "Let's invest in the capability to improve things instead of only giving money to crises." That is a better way to go. However the money is spent—we certainly think that more money should be spent in this area—a lot of our members on the haulage and bus industry side will point to the damage and costs to their vehicles that result from the current standards of road maintenance. The overarching point is that nobody really knows, because the current organisational system is not delivering us the accountability and performance standards that we need in order to make improvements.

Angus Carmichael (Scottish Road Works Commissioner): I absolutely agree with that. There is inconsistency across different organisations. As I noted in my submission, Clackmannanshire Council has 288km of roads, whereas the neighbouring authorities of Fife Council and Perth and Kinross Council have 2,500km each, and I do not consider them to be large enough, either. Clackmannanshire Council simply cannot afford to keep specialists in bridges, lighting and so on. We need to get the structure right before we can establish exactly where the budgets should be.

When it comes to the likes of materials, people might think that what we use is just black stuff that is thrown down on the road, but numerous different materials are used in Scotland at the moment. There needs to be greater consistency in what is used across the country, and we need to use fewer, better-quality materials.

I have been fortunate enough to visit Denmark and America this year. The roads in Denmark are almost without any potholes, whereas in America—a big, civilised country—they are horrendous, and much worse than in Scotland. The situation varies across the world. Politics comes into it, as does ring fencing. I know that the Convention of Scottish Local Authorities is not keen on ring fencing but, given that roads are a strategic asset, in future we will probably have to consider the possibility of ring fencing budgets for road maintenance.

John Finnie: Can I push you on the question of what a reasonable surface is?

Angus Carmichael: Different people would have different views on that. I suppose that it is a surface that people can safely drive over without the risk of puncturing a tyre or bursting their car's suspension, and for which there is a routine, regular inspection regime that maintains that reasonable running surface. That does not mean that there cannot be aesthetic scarring on the surface. People should not confuse that with a badly damaged road. A road might look poor because there is a track in it, but that does not mean that it is not a good running surface. The surface of the road must be smooth and safe.

John Finnie: Including for pedal cyclists?

Angus Carmichael: Indeed.

Stewart Stevenson (Banffshire and Buchan Coast) (SNP): I want to address what Mr Halden said. He said that the damage creates costs for commercial road vehicles. Can he give us a number?

Derek Halden: No.

Stewart Stevenson: Forgive me—is it qualitative feedback that you are getting, to which we cannot attach a number? If we had a number, we could go to the Government and say, "This is the number."

Derek Halden: I presume that it would be possible for people in the haulage industry or the bus and coach industry to look at maintenance costs on vehicles over the years and to attempt to correlate that with road standards, but to my knowledge that has not been done. You ask a very good question. Why has that not been done? I come back to my point about accountability. While we create systems that confuse lobbying with independent evidence, it would be extremely difficult to get the companies involved to present information in the ways that you would want, so that you could distinguish between routine servicing of vehicles and additional repairs. It would be a question of tactics.

It is always better to design a system that incentivises everybody to perform to their capabilities. In some councils, we have very effective systems that involve members of the public cutting back the vegetation on the footpaths and so on. Other councils would try to stop such practices—they might say, "Oh, it might not be safe, because we'd have people out there with shears cutting back stuff."

Creating frameworks to enable everybody, from a resident of a street to those working for a civil engineering contractor or a council, to perform better is exactly what the Christie commission was about. We are hugely supportive of that—the issue has been written about many times—but it is not happening. I keep coming back to the point that, if we design a system that works, let us invest in delivering that system, which will end up in—surprise, surprise—our getting what we are paying for. At the moment, we do not know what we are paying for.

David Giles (Asphalt Industry Alliance): I stress that I am here to give evidence of our experience in England and Wales, not in Scotland, so any data that I quote will be on that basis. I realise that we cannot directly extrapolate from this but, in the data that we obtain from the annual local authority survey on road maintenance that we carry out, we have seen a direct relationship between insurance claims and highway maintenance budgets: the figure for insurance claims, on which local authorities spend about £25 million, has gone up as the figure for the highway maintenance budgets has gone down. I stress that we cannot give a direct correlation between the two for Scotland, because our road conditions surveys are not for Scotland.

John Finnie: I think that the report from the late Mr Christie was more about collaborative working between public bodies than about engaging the public in maintaining their own infrastructure.

Mr Halden and Mr Carmichael mentioned the organisational approach that is being taken. What will be the long-term implications for Scotland of maintaining the existing organisational approach and the existing levels of funding?

Angus Carmichael: Road conditions will continue to deteriorate. It is simply not sustainable to maintain the existing administrative structure.

John Finnie: How would you address the way in which things are organised? Quite rightly, local authorities jealously guard their independence.

Angus Carmichael: They absolutely do. Clearly, local political accountability is very important. The issue is how we balance that against the need for larger organisations.

John Finnie: I understand that I have strayed into another member's questions, so I will not pursue the matter too much further.

The Convener: Given that we have started down this line of questioning, Cara Hilton might want to come in on that point.

Cara Hilton: The current system clearly needs to be fixed. It has created a two-tier system in which strategic roads are well maintained and local roads face the impacts of cuts. There is an opportunity to create greater synergies between Transport Scotland and local authorities in order to look at whether there are better ways of maintaining our road networks. As well as creating efficiencies, greater collaboration would create a more seamless experience for road users. As Angus Carmichael said, there is also the issue of local accountability, which needs to be factored in.

We have asked our members, who deliver some of the road maintenance contracts, about the issue. One option that they have proposed is that, instead of the road networks being split into two areas, we split them into three areas. National strategic roads would continue to be managed by Transport Scotland, a new category of local strategic roads—minor dual carriageways, single-carriage trunk roads and so on—could be managed by regional bodies, and local roads would continue to be managed by local councils.

There is scope for greater integration, but we would want greater safeguards to ensure that local businesses and contractors did not lose out on work if, for example, work was allocated regionally. Obviously, procurement would have to be considered.

10:15

Peter Chapman (North East Scotland) (Con): We have strayed into the subject that I want to investigate a wee bit more, which is the idea that local road maintenance could be better delivered through joint working between roads authorities. The argument seems to be that councils with many miles of roads are more efficient and more expert at maintaining them than councils with fewer miles. Mr Carmichael mentioned a wee bit in his submission, and I will quote it. He says:

> "It is unreasonable to expect a local authority the size of Clackmannanshire Council with 288km of road ... to carry the same level of technical and operational expertise as their immediate neighbours, Perth and Kinross Council with"

many more miles.

Angus, you have already said a wee bit about that. I wonder whether the rest of the panel have similar views. Would it be useful to explore something along the lines of joint working? How would we do it on a practical basis?

Neil Johnstone (Chartered Institution of Highways and Transportation): The question of expertise is very clear. If I look back to the start of my career, which was circa 35 years ago, I worked in a regional council and I did my stint in road maintenance there. Since that time, there has been a deterioration in the road network, and particularly the local road network, and that has happened in tandem with a diminution in the number of professional engineers working in the sector. The talent is still there, but it now resides in consultancies, Transport Scotland and various contractors.

We get a very good product at a trunk road level, but there are a number of reasons why the local road network is so important. It is the last mile or the first mile in everyone's journey. In strategic terms, nobody does a journey that is exclusively on a trunk road, unless they live in Mallaig perhaps, but that is another subject.

It is a question of how the talent is harnessed. The roads collaboration programme has shown some success, but my understanding from my membership is that it is not universal, and I am led to believe that, when councils come together, partnerships are never equal in all aspects. Believe it or not, there are different financial controls in local authorities that allow them to produce their performance indicators but which do not match up. There is certainly merit in a wider geographical input, but the governance that surrounds that needs to be investigated and reviewed. I gather that some governance review is going on under the remit of the national transport strategy, which gives me an appropriate opportunity to plug that we have a strategy.

I have always felt that maintenance, for many people, has been seen as something that comes out of the operations budget and something that people do after they have got their capital budget sorted out, and their programme of big projects. There is a danger that we concentrate on major, eye-watering projects at the expense of looking after what we already have. Anybody who owns a house will see the parallels there.

In the new strategy, there is a big emphasis on health and wellbeing and the impacts of climate change. Active travel is important, and we have evidence that, if we are trying to encourage walking and cycling, as Mr Halden mentioned, we have to do much better. There is a very negative perception of the current facilities. We are building lots of new cycleways, but we are not looking after

the ones we have, and bad experiences are a big turn-off.

I think that maintenance is becoming part of strategic thinking, which it has not been in the past.

The Convener: Before I bring in Jamie Greene, who has a supplementary question, I will bring in Angus Carmichael. Are you saying that Highland Council is the best because it has the biggest road network?

Angus Carmichael: It does indeed. In my submission, I touch on the Ayrshire roads alliance and budgets. Even within that alliance, which comprises East and South Ayrshire, different standards are applied based on the budgets that the councils have. To get true collaboration, we have to operate to single standards throughout whatever area we choose. The Ayrshire roads alliance is probably still too small.

Peter Chapman: I can understand how you come to the conclusion that, if you have more expertise, you are going to do a better job. The problem as I see it is that local authorities guard their budgets closely and they want to have control over how the money is spent in their area. If we go down the route of joint working, they are going to lose some control of budgets. How realistic is it to expect local authorities to do that joint working? There is a lot of work to be done behind the scenes before it becomes a practical proposition.

Angus Carmichael: It is extremely challenging to progress that on the basis of voluntary collaboration. There has to be an element of supportive legislation to drive a major change to the system.

Jamie Greene (West Scotland) (Con): I appreciate that we are moving around the question areas, so I will try to restrict my comments to the areas that have already been discussed. I am particularly interested in the organisational structure around road maintenance. Convener, am I encroaching on any other member's question?

The Convener: No, you are fine.

Jamie Greene: The reason for my interest is that we get a lot of casework on the issue, and it strikes me that it is not always obvious where to turn to seek assistance, even for us as politicians with experienced staff who work in the sector. Is there a problem with the current structure, given that some roads are maintained by one organisation and others by another, and that those organisations are funded differently? As we have heard, there is a lack of standardisation across local authorities, and we also have regions in Scotland for which the Government contracts out the work to third parties. What would you do differently, and how would you make the structure better?

Derek Halden: That question is really interesting, as we are getting into the area of public sector reform and accountability. My first point was about accountability, and that is what the issue is about. It is interesting to reflect that mySociety—the social enterprise about focusing on accountability—first started with TheyWorkForYou and holding politicians to account. The second project that mySociety did was FixMyStreet. If we are talking about the quality of our public streets being a representation of how good we are at government—Denmark versus the United States, for example—then it is an important symbolic issue. People do not know about all the tiers and how it all works, but what matters is that we have that common accountability.

Many of the councils in Scotland actively use FixMyStreet and they report back to say that they have responded to what the public have said about a pothole somewhere, so there is accountability there. However, behind that, we do not have any real improvement in the organisational structure. John Finnie mentioned the Christie report, in which there was a lot about cross-sector reform, but it was fundamentally about public sector reform. Public sector reform is similar to what we have seen in my industry—logistics—with haulage companies moving forward and suddenly being the drivers of value in the economy and organising lots of things. In the same way, in terms of who organises the logistics—for instance, it might be that the haulier is the best person to run a bottling plant, or it might be the manufacturer who says that they can expand—there are no hard and fast rules about which authorities must work together.

In Scotland, we have a strong resource of extremely experienced people. We have a bridge expert in one local authority and an asphalt expert in the next. The structure through which those experts, as the logistics suppliers, can deliver the service that they are able to do best and ensure that more of Scotland benefits from their skills is exactly what we are talking about with public sector reform. We at the Chartered Institute of Logistics and Transport would love to see our public sector bodies adopting logistics models and delivering the value gains that we have seen among our private sector members.

Neil Johnstone: I agree with a lot of Derek Halden's points, although, organisationally, the situation is challenging. Although the expertise exists, we need to be aware that the skills pool is diminishing and there is a growing need for those skills. We need an approach that looks at reorganisation and encourages skills into the

sector at the same time. For people with my background, who are mostly civil engineers, there is wide range of options in the energy, water and other such sectors and there are certain things that impassion our members to come into, for example, the transportation sector. However, people do not see as attractive propositions sectors that are not being invested in. Who wants to work in a place in which you get brickbats all the time for non-delivery? We need a push that embraces an organisational review along with encouragement of expertise.

Jamie Greene: I do not disagree with anything that the panel is saying. We know that there is a need for greater accountability, and other members have questions about resource and talent in Scotland. However, no one has yet answered the question on whether the current structure works and how they would change it. If we are going to make recommendations to the Government, we need some practical suggestions.

Cara Hilton: I will pick up on something that Neil Johnstone said before I turn to Jamie Greene's question. Neil was talking about skills issues, and there is a big issue in recruiting people to work on our roads. One problem is the way in which our road workers are treated. The road operating companies launched a campaign earlier this year to tackle abuse against road workers. People are clearly increasingly frustrated about the state of our roads and they are taking that out on workers. The recent survey found that 80 per cent of Scotland's trunk road workers have been put at risk by dangerous driving or have been subjected to verbal or physical abuse—for many of them, abuse is a daily occurrence. It is really hard to encourage people to go into that area of work when that is what they have to put up with, and it is no surprise that a similar survey by Unison found that morale among Scotland's road workers is at an all-time low. We need to tackle that.

I briefly covered Jamie Greene's question about structure in my earlier answer. We need to divide the road network into three categories. Local, strategic roads that are crucial to connectivity between communities and regions must be managed separately, either by Transport Scotland or by regional bodies. However, as Angus Carmichael has said, there would have to be safeguards to ensure accountability. It is sometimes difficult to work out who is responsible for which road and how to get them fixed. That is frustrating for you as politicians, but it is also frustrating for everyone who uses the roads every day.

Angus Carmichael: I think that we should maintain a two-tier structure and I disagree with Cara Hilton on the need for a three-tier structure. It would be more appropriate to transfer some of the local strategic roads to Transport Scotland. The level of funding that is required for the strategic network is much greater than for other parts; such roads are high speed and high quality and take people long distances, so it is appropriate for them to be dealt with at that level. If we were to take a three-tier approach, we would dilute the available resources and bring in more levels of administration. However, Transport Scotland should certainly be retained—in its current or a different format.

Richard Lyle (Uddingston and Bellshill) (SNP): Prior to 1996, we had regional councils. We still have Tayside Contracts and we still have Amey in North Lanarkshire. Are you suggesting that we should go back to some sort of regional arrangement? I do not mean that you are suggesting that the councils would go back to the regional arrangement—I was against that—but that groups of councils, such as Clackmannanshire, Stirling and Falkirk should join up in a single transport division.

Derek Halden: Whether we are talking about the regions or not, the key point is that trunk road maintenance was also carried out under agency agreements. The question of who we give agency to is critical. When the regions were abolished, we gave agency to the BEARs and the Ameys and so on, and consortia built up in different ways. That actually does not matter, because, as Neil Johnstone said, it is about the people. Where are the people who know this stuff and how can we mobilise them in the most effective way in order to deliver? Those are the points that need thought.

On Jamie Greene's question about how that is organised, I would say that there are really clear plans. Strategic groups have been set up to consider that and have come up with clear plans. However, the delivery column is pretty much empty—it just says, "have a look at this". Why, after 10 years, are we still not delivering? We know what we need to do and what we need. We could decide that, rather than Transport Scotland sucking up more, having an extra tier and looking after more strategic roads, it should devolve more things down to regional bodies that take on a bigger role.

I am not saying that any of us should be telling you exactly what should happen. You need to take with you, and build support from, an entire industry, and you need to ensure that everyone who works in the relevant areas is saying, "Yes—that will work for us." That is the process that needs to happen.

A budget review is a very good time to say that you are going to reserve a certain amount of money to ensure that those long-standing commitments are met. We would love to see that happen.

10:30

Angus Carmichael: Absolutely. In answer to Richard Lyle's question about the regions, I would go down the route of taking a more regional approach to allow for economies of scale. The former regions had the trunk roads as well, which allowed them to carry the necessary level of expertise within them. Any new regions—if you want to call them that—would have to be large enough, without trunk road involvement, to sustain the level of staffing required.

Richard Lyle: I am talking about a regional roads department, not regional councils.

Angus Carmichael: Yes—a regional roads department. As I alluded to earlier, the political input involved would be challenging, as it already is with the voluntary collaboration.

Neil Johnstone: I would echo what my two colleagues said, but I will couple that with highlighting the need for certainty of budget. It makes such a difference.

A number of years ago, as I told you, I was a graduate engineer. I remember then—and it still happens now—that, although we started the year with a maintenance budget of X, it got chiselled away every year without fail. That is local democracy—there were emergencies in education or social work, or a special event, and that is what happened. We always knew that the maintenance budget was fair game for another part of the local democratic process. Certainty of budget is a key point for us.

The Convener: That leads us neatly on to Richard Lyle's next question.

Richard Lyle: That is exactly what I am going to come on to. To take a more in-depth look, I would want to drill down into Scottish figures, but I have a United Kingdom figure as I could not find a Scottish one. On average, there are 30.9 million cars, and 37.5 million vehicles in total, on the roads in the UK. We all—or those of us with a car—pay road tax. People say, "Wait a minute—the roads are not getting fixed, but I pay road tax." The UK Government gets £6.5 billion in road tax; I wonder how much of that comes to Scotland.

Can you give me your view on that? People rightly say that they pay their road tax and you should be fixing the roads. Do you agree with me, or am I wrong to say that that money is not being spent on the roads, which is where it should be spent?

Neil Johnstone: My quick answer is that I am sorry, but I do not have the Scottish figure. In a way, although what you describe is important to the users, more broadly, as I am sure you know, the Treasury is basically a suction mechanism for taxation—

Richard Lyle: I know what the Treasury does.

Neil Johnstone: There is a review that disburses budget. I am quite proud of our industry, because we managed to get the UK Government to break that arrangement once—it was under Mr Prescott, and it was called hypothecation for congestion charging. That was very significant. It can be done. I do not think that the UK as a whole exploited that opportunity.

We are now facing something even more critical. The substantial revenues from vehicle excise duty are likely to be depleted as we see the emergence of more electric vehicles, and there are not yet any firm proposals about what will replace that.

Richard Lyle: That is a subject for another day, but you are right to say that.

Neil Johnstone: It is. That is why I am wary about trying to use the argument that you hinted at as a rationale for getting more money.

Richard Lyle: I know that other people want to come in, but I want to press you on this, Mr Johnstone. In your submission, you state:

> "the current model of funding and delivering roads maintenance does work but is clearly under strain."

A new approach could involve more joint working; you already spoke about local authorities' long-term budgets.

It has been suggested that there is a need for greater certainty of funding for local roads maintenance. Where are we going to get that from? Will it be from the Scottish Government, local government or the UK Government? What benefits would that bring, and how could it be delivered? That question is for all the panel, but mainly for Mr Johnstone.

Neil Johnstone: I would say that there is a general plea for more central Government expenditure. However, in the local sector, protection of the budgets that are allocated through the block system is required. In our submission, we are hinting that we are in a place where, in order to unlock the problem, we have to consider pay-as-you-go methodologies.

We are talking purely about road maintenance here, but there are other policy areas in which charging for travel into congested areas will have merit. I do not think that congestion charging will disappear, even with the use of electric vehicles that it is hoped will solve the emissions problem. Growth in the overall number of vehicles is forecast for the point at which we will have more electric vehicles. I suggest that the number of tin boxes that we try to push through our city centres will not be curbed unless we have charging

mechanisms to deal with that. The solution is that pay-as-you-go systems need to be on the agenda.

Richard Lyle: So would you do away with road tax?

The Convener: Richard, I would like to bring in some of the other panellists who have been patiently waiting to answer your earlier questions.

Angus Carmichael: Where should we start on the question of funding? Like Neil Johnstone, I do not know what the current figures are. Road tax is not a tax as such but, as Neil suggested, it is distributed like any other.

I am not in a position to give a view on where funding should come from, but pay-as-you-go systems might be an option for charging for entering low-emission zones or for congestion charging. Glasgow has buses that are running at 4mph, which is clearly unsustainable. Although we want to encourage greater use of public transport, and especially the bus system, we will not be able to do so unless we introduce charging of some sort, along with other mechanisms. However, the question of overall funding is largely a political one.

David Giles: The response that I will give is based on data from England and Wales, which is taken from the annual local authority road maintenance—ALARM—survey that is carried out by the AIA. First, I make a plea. If Scotland were to have the ALARM survey, I believe that you would have the data that you are searching for. We would be delighted to carry that out. It would be an independent survey in which we would ask local authorities to submit their data to us, based on a very large questionnaire that would allow us to obtain all the data that we put in our submission.

I will move on to hypothecation. The AIA has recommended a hypothecation equivalent to 1p on fuel duty in order to close the gap in funding of maintenance budgets. At the moment, in England and Wales we are seeing a significant shortfall of some £640 million in annual budgets against target road conditions. Again, sadly, I cannot give you figures for Scotland—I wish that I could. However, I am sure that the committee will be able to extrapolate the information from looking at the relevant number of miles of highway, both strategic and local. Essentially, that level of hypothecation means that we would move from having a reactive maintenance scheme to having a proactive, planned one.

Similarly, we have told central Government that we need a 10-year plan for maintaining our highways. With short-term planning, we will get to a situation where we will be unable to extract efficiencies; we need to have proper funding instead. I accept that some submissions have recommended changes around authorities. In the UK, we have seen the emergence of a new category called managed road networks—MRNs—into which some local authority roads have been put. Highways England manages those, but the actual work on them is done by the local authorities.

What we have been seeing is ring fencing of money. The reason for that is that local authorities' overall budgets are tremendously stretched, so there has to be ring fencing to ensure that money is properly directed. My question is whether it would be necessary to have ring fencing if we had proper funding. In response to the submissions that were mentioned earlier, I would say that having the correct amount of money, on the basis of solid data, would probably be far more effective than slicing up the cake in a different way.

Mike Rumbles (North East Scotland) (LD): We have all been focusing on the correct amount of money, but I want to ask a fundamental question. We are carrying out pre-budget scrutiny of the Scottish Government's budget to local authorities for road maintenance, so I will concentrate on that. Very simply, is the money that is allocated by the Scottish Government to local authorities for road maintenance being spent on road maintenance?

Neil Johnstone: I do not have the information for the latest year to hand, but I would be surprised if the practices to which I referred have changed. I am led to believe by members of my institution who are also members of the Society of Chief Officers of Transportation in Scotland that there is still chiselling with the needs assessment, when politicians decide the local allocations. I believe that that situation prevails.

Mike Rumbles: Never mind all the things that we could do to lever in more money or whatever, which we have been discussing so far. The fundamental question is this: is the money that is allocated by the Scottish Government being spent by local authorities on road maintenance?

Neil Johnstone: No. I believe that what I said has been the situation for a long time, and I do not think that it has changed.

Derek Halden: I echo what Neil Johnstone has said. When I was a graduate, I thought, "Who are the legends in the profession?" I see that the committee received a submission from Phil Shimmin, the former director of roads at Highland Council, who is an absolute legend in the business. When ring fencing was proposed, he faced all the difficulties about what should be done and how to steal some of the budget from politicians who want to spend a bit more on housing or something else in the council. Such difficulties have been issues for a long time.

There are able people in local authorities, and we should listen to what they say. They say, "Give us the clear data and the clear performance standards. Clarify the accountability." We should give them the tools that they need. The diminution of data, performance and accountability has led to money leaking away from what it is targeted at.

That is particularly the case with bridges. Across the UK and Europe, there has been an increase in the number of bridge collapses—it is not just high-profile cases, such as the Polcevera bridge collapse in Italy. We need to look very carefully at bridge replacement programmes and ensure that we spend enough in such areas.

The Convener: I will bring in Stewart Stevenson briefly, before we move on to Emma Harper's questions about workforce.

Stewart Stevenson: I think that I need a brief answer, too.

Clearly, the Scottish Government calculates some of the money that it gives to councils for roads on the basis of need. However, I understand that there is no direction or requirement as to how councils spend the money; the decision on how they spend it in relation to their roads is entirely for them.

Cara Hilton: There is an issue about how councils spend the money, and we would like money for road maintenance to be ring fenced. This is not a political point, but the fact is that the money has been cut. COSLA figures show that the money has been cut by about 20 per cent over the past period. That is the crux of the issue.

Neil Johnstone: It is certainly the case that the amount of money is reducing, but the money does not get down the pipeline in the way in which central Government intended.

Emma Harper (South Scotland) (SNP): It has been interesting to hear what has been said so far.

To clarify, road tax was abolished in 1937; we now have vehicle excise duty. Everybody thinks that we still pay road tax, but we do not—it is a car tax.

I am interested in what the witnesses have said about the workforce and the skills pool diminishing. It is important for us to have lighting engineers, drainage engineers and so on. Does Scotland have enough of a skilled workforce? If we have a diminishing skilled workforce, what do we need to do to fund replacements, so that we have the expertise that we need to build and maintain our roads?

10:45

Cara Hilton: My organisation is concerned about that. We feel that the Scottish Government is investing well in foundation apprenticeships, graduate apprenticeships and different routes into the industry, but there are clearly challenges in making the industry attractive to young people—and, increasingly, in making it more attractive to a more diverse range of young people. At the moment, the talent pool is quite limited. There has been a lot of encouragement to get more women and people from different backgrounds into the industry. I do not think that those measures have been as successful as they could have been, although that is not necessarily for the lack of trying.

The issue of recruiting and retaining skilled staff is a big concern for our members, and retention is as big an issue as recruitment. I have previously highlighted the issue of abuse of road workers—the staff who work to maintain our roads—and that really needs to be tackled. We all have a responsibility to act to ensure that it is tackled.

The Convener: Neil, you commented on that earlier.

Neil Johnstone: Yes. My institution and the other institutions are all very proactive in encouraging people into the industry. We are fortunate in Scotland to have a suite of active higher education bodies that offer courses in all the things that we do.

The budget aspect is important for getting people into this topic or specialism. Like CECA, our institution is growing in membership. We number more than 14,000 in the UK, with more than 1,200 members in Scotland, which is big for this sector. We have a diversity policy, under which more females are coming into the trade, and we are encouraging apprentices. We are doing all that we can. Our plea is that protected budgets will do a lot to signal to aspiring maintenance engineers that there is a future in the sector.

Emma Harper: I would like to clarify the issue around abuse. I am reading the Scotland TranServ policy statement regarding assault and abuse. It seems that the incidence of abuse is rising on social media, too. Does more need to be done to address that? We really need to protect the workers on the roads.

Cara Hilton: Much of that is about public awareness. Amey, TranServ and BEAR Scotland have been running a public awareness campaign on the issue. Hopefully our highlighting the issue in the committee today will increase awareness. People are genuinely frustrated, but there is never an excuse to take that out on workers who are working harder than ever before, and on limited budgets.

Maureen Watt (Aberdeen South and North Kincardine) (SNP): Good morning, panel. Cara Hilton talked about low morale, which may be due

to the abuse that folk are getting on the roads. Is there also a problem with the poor conditions that folk are working in? In the construction industry, it is almost getting back to the situation of folk queueing outside the shipyards to get work, sometimes on a daily basis. The terms and conditions according to which people are working for contractors are not as good as they could be.

Cara Hilton: Most of our members are signed up to the construction industry scheme that protects terms and conditions and pay. Most members who are delivering Scotland's road maintenance projects are paying and respecting their workforce.

There is an issue further down the supply chain, where jobs are contracted out. The Scottish Government is considering that through its fair work framework, and we have been working with it on that. The key lies in ending the race-to-the-bottom approach in procurement. That is one of our slight concerns when it comes to giving more work to Transport Scotland to deliver the roads, as we need to ensure fairness in procurement, so that local contractors are able to access jobs. It should not be the case that big companies that are not necessarily based in Scotland are allocated work and then subcontract that work. If more companies are directly employed in public contracts locally, that will make a difference to people's terms and conditions on the job.

Angus Carmichael: Like Neil Johnstone, I have a couple of years under my belt—probably approaching 50 now. Terms and conditions have hugely improved in the construction and road sectors, certainly since I started work, when there was no such thing as personal protective equipment—PPE—road signs for people out surveying or whatever else. There are great differences now—things have improved by leaps and bounds.

To go back to the previous question, authorities also used to run large training programmes. To a great extent, those programmes no longer exist. Roy Brannen, who is the head of Transport Scotland, was in the Fife training programme, which, in its day, was tremendous. That also has to be factored in.

David Giles: Initiatives from bodies such as the Mineral Products Association, the Institute of Highway Engineers and the Institute of Asphalt Technology involve people who work—excuse the pun—at the coalface. There are all sorts of welfare initiatives and initiatives to ensure that people are safe in their working environment. At Eurobitume, which is in the AIA, we offer training programmes for people who work with hot bitumen. At that level, an inordinate amount is done to ensure that people have good and safe working environments, because we recognise that the reputation of the industry is extremely important to attraction.

The Convener: I have a more general question about the workforce and the planning of road repairs. I find it deeply frustrating that we have lost the people who used to check the roads to ensure that they were in good condition. As a result, we have no idea whether the ditches are working. Consequently, roads have water sitting on them, which causes potholes, and gravel builds up underneath bridges. I declare an interest: the bridge to my house is closed for that reason. It is now collapsing.

If road inspections started with road maintenance and people checked the roads to ensure that they are not deteriorating, would that not save a huge amount of money in consequential road repairs? Most people seem to be nodding.

Neil Johnstone: Yes. Inspectors exist, but on a much-reduced scale compared with when I was a young engineer. We had a purposeful team.

I would liken it to preventative medicine—dental check-ups, for example. My daughter is a dentist. I used to drive her to university in Glasgow some mornings, and we would discuss the similarities between dental asset management and what we did on the roads, such as inspections, making excavations and putting proper fillings in. If the damage was really extensive, perhaps we would do a bridge repair. [*Laughter.*]

I am with the convener on that point. I will say no more.

The Convener: I might take my teeth to your daughter rather than to you to be filled.

Derek Halden: I will link my answer to the previous question, because it is related. As an institute, we run benchmarking programmes so that, for example, Stagecoach can compare the fuel that it uses with the fuel that First uses. Away from the front line of commercial competition, logistics are about constant improvement, optimising systems and working out why one company does better than the others. The data is fundamental, and companies sharing their data is involved.

I go back to my first point. I find it bizarre that, in this day and age, when scanner vehicles go across the road network, the information does not go straight online. Defects can be identified on OpenStreetMap. It would take hundreds, not even thousands, of pounds to do that. Those are simple information technology projects with open software.

Our biggest problem is the idea that it is all so secretive. People might be concerned, and there could be public alarm over bridge inspections.

People might not fully understand whether a bridge is strong enough. Let us look at each of those matters, but let us start with the presumption that we share everything. If we assume that we share everything, we can use the audit mechanisms to compare and contrast how different councils and areas are performing, and that will allow us to build the best performance business models.

On the question of the convener's bridge, let us share the data and look at who has the capability to fix it. We might find that we get much better-value delivery than there currently is, because we have enabled a range of capabilities that we did not know existed.

John Finnie: We heard recently from ScotRail and Network Rail about a significant landslide on the west Highland line, at a site that I have visited. It was identified by a line inspector—a human being—who walked out there and knew where the frailties were. Do the road and rail sectors collaborate? There may be common engineering issues.

David Giles: I will pick up on the evidence that has been given. In England and Wales, we identified the issue of the lack of physical inspection panels. Automated systems cannot reliably and efficiently measure texture depth or the regularity of the road. The systems are developing, and we are involved in collaborative research programmes with Highways England and the Transport Research Laboratory to develop and improve them.

There is no secrecy around the England and Wales data; the issue is more about the interpretation of the data, because the systems do not yet have the same reliability that a panel of inspectors has. Anomalies on the roads can be picked up but, to know about things such as whether skid resistance is sufficient, automatic systems do not work as efficiently as a panel of people who go out and walk the road.

Panel inspections are very time consuming, so there is a tendency to go where the risk is highest. Other issues are the number of people and their training. We are carrying out research on how to minimise the number of people who are on panels and collate data from automated systems against that of the people panels—in other words, the robots against the people. The sheer fact is that there are not enough inspectors, so they have far too many miles of road. Because of extreme weather and increasing traffic, the quality of roads has deteriorated to the point at which a lot more inspectors are required to achieve what is needed. I am sorry that I cannot give you a number.

The Convener: John Finnie asked about collaborative working. Will Angus Carmichael come in on that?

Angus Carmichael: Network Rail is a route authority and a utility with regard to road works, and it is part of the roads authorities and utilities committee Scotland. There is fairly close collaboration at that level.

Maureen Watt: When we took evidence on the Transport (Scotland) Bill, concerns were raised about the lack of inspection of road work sites and the impact that poor reinstatement and road work sites being a barrier to movement have on people with mobility problems. Are those problems simply a result of poor practice by site contractors, or are they a result of cost cutting?

Cara Hilton: It is a concern to hear about those problems. In Scotland, we face a race to the bottom in the awarding of contracts, as I said earlier. Many of our members find it very difficult to compete, which is why there needs to be reform of procurement in Scotland. We are working with the Scottish Government on that issue to offer frameworks that would enable civil contractors that are based here to compete on quality, not cost. At the moment, there is too much of a drive towards addressing cost at the expense of quality, and we see the price of that in incidents such as those to which Maureen Watt has referred. We are working on the issue, because it is clearly not acceptable.

Derek Halden: Those are basic issues around procurement. The logistics model works everywhere that it is applied around cost and quality, which are part of the complex choices. If disabled people are struggling with footpath maintenance or with footpaths not being restored properly, that is a disgrace. If there was something like an eBay or an Amazon rating in a logistics-type system, there would be such a black mark, and the company would not get to trade again. Such things are not being recorded or dealt with in the top-down procurement mechanisms that say, "We award X on quality and X on cost." Those mechanisms are just not refined enough. A modern logistics system is highly optimised around all such things and, if a rating is damaged by such poor practice, the company would not work again. That approach sharpens things up very quickly.

11:00

Maureen Watt: Are you saying that things have to be written into contracts and that it is not just a question of best practice? You talked about fair work. In these days of equality of access for everybody, surely those things should be done as a matter of course without having to be specified in a contract, for goodness' sake.

Derek Halden: Yes, but, at present, profits are maximised by evasion rather than by compliance. There are contractors who come along and think, "I can get away with not doing this so well and can just walk away from the site, because no one's going to pick it up and audit it." There are big profit maximisation goals from evasion. If we design the system so that profit maximisation comes from people being more likely to get business because they have restored footpaths really well, we will not experience the problem in the same way. It is about how we buy things.

What I am saying is that, if the Ayrshire roads alliance is delivering fantastic road maintenance, we should give it more of Scotland and let it grow. This is about buying from whoever has the capability and can do the best job. If people are doing bridge inspections well in the Highlands or the Borders because they have loads of bridges, we should give them more work and they can train the staff and build the skills. That is the model. We love to see budgets being used to drive good, modern procurement practice.

The Convener: I have to bring in Angus Carmichael, who is going to tell us that things are being enforced.

Angus Carmichael: There is a distinction to be drawn between inspections of major capital works and inspections of routine utility and road authority works. What we have discussed are probably the smaller works that are out there. Road authorities and utilities companies are equally culpable when it comes to the small sites, and further supervision is certainly required there.

If we take as an example the telecoms sector and the rolling out of new broadband services, we see that we have contractors working on the basis of the lowest possible cost per metre. Is that the way forward? It is probably not if we want to drive in quality as well. That is why we need more inspections on the utility side and the road works side. Major capital works tend to be pretty well supervised.

Maureen Watt: Okay. The subject of my next question has been skirted around in other conversations. Many of your written submissions highlight the importance of road authorities adopting a whole-life-cycle approach to road maintenance, possibly using the road asset management plan—or RAMP—model. What are the barriers to that approach being adopted routinely? How can the barriers be overcome?

Neil Johnstone: RAMPs have been around for a long time. We go back over 10 years with the ones in the trunk road authority, and many local authorities have had them for a while. SCOTS is very proactive in the area. The authorities have plans, but they are at various levels of maturity, and the authorities need more experience and sharing.

I am sorry—I do not personally have RAMP experience. Such plans are undoubtedly the way forward, but the local authorities are at different places. Again, this is a place where collaboration and expertise could be brought in to good effect.

Derek Halden: Ewan Wallace at Aberdeenshire Council produced a very good paper on how all of that could be rolled out, but, again, the column at the end says that we cannot implement it because we have just had cuts and all that sort of stuff. We need to consider investing money in the delivery of good improvement plans. As Neil Johnstone said, the plans are all out there, and the recommendations have been there for a decade. Let us go and do some of this stuff and, if we can put more money into it, let us do that.

The Convener: Does David Giles want to comment on life-cycle approaches to road maintenance?

David Giles: Yes. We absolutely advocate the use of a whole-life model, because we are working on a reactive maintenance cycle that completely ignores the value of the assets. I will give you a figure that is based on England and Wales—I am sorry that it is not based on Scotland. We have valued the asset of local roads—I believe that the figure comes from the Government's valuation—at £340 billion. Despite that, we spend less than half of 1 per cent maintaining it. In a whole-life model, you would take a financial view on how much you would need to maintain that asset. I suggest that, if we dared to take the same approach with our hospitals or our schools, we would be in a much worse position than we are in at the moment.

Jamie Greene: Do any of the witnesses have any experience of the Department for Transport's work back in 2012-13 as part of its highways maintenance efficiency programme? I was intrigued by some of the guidance that was issued to the 153 traffic authorities in England on matters such as asset management, life cycle planning tools, sharing data, standard contracts, standard specifications and so on. Has that resulted in a tangible improvement in how roads are managed in England, or was it just a nice idea that did not go anywhere? I am intrigued to find out whether any members of the panel have experience of that programme.

David Giles: I do not want to alienate myself from my friends at the DFT, because we collaborate closely with them, but I can give you a one-word answer to your question: no. We have seen a decline in the condition of the local authority roads. We can provide hard evidence of the fact that, until last year, the amount of money spent of maintenance was going down. The

standard of the highways against target has gone down, and we know from anecdotal evidence that the number of complaints that members of Parliament receive from the public is going up. I am sure that the situation is the same with MSPs. The issue is going up the public agenda.

The number of potholes is increasing, but we do not want to focus on that, because that is the symptom, not the disease. The disease is insufficient funding. I am sorry, but the answer to your question is that there is no evidence that the initiatives that you mentioned have resulted in a better standard of roads for users.

Jamie Greene: I find this a fascinating subject. Is the reason for the situation that you describe the fact that, while it is possible to have good standards for information sharing and the sharing of best practice, ultimately, local authorities need to fund the improvements that are required, or is it simply the case that local authorities were not adhering to the guidance?

David Giles: It would be ridiculous to say that the initiatives were a waste of time, because the efficiencies in question need to be made. The public want the money to be spent as efficiently as possible, but no connection between those initiatives and the quality of the road has been seen.

Last year, an extra £420 million was put into the local authority roads. Because that happened at very short notice, it could not be spent on time. However, where money was spent, there was improvement in the condition of the roads, as shown by our structural road condition indices and the Government's road condition index. There is solid evidence on the correlation between how much is spent and the condition of the roads, but we cannot provide solid evidence that the initiatives to which Mr Greene referred contributed to an improvement in the condition of the roads, because the data does not show any improvement through that period. We have done our survey for 25 years, so we have a fairly credible basis on which to draw that conclusion. However, I do not want to rubbish the efforts that the DFT has put into trying to draw efficiencies. I am sure that those efforts are extremely important.

Angus Carmichael: The DFT initiatives were intended to drive consistency. The greater Manchester road authority takes in 10 separate road authority areas, but I have picked up that how those areas operate is wholly inconsistent, despite the fact that they are supposed to be under the same umbrella organisation. That shows that, even where there is collaborative working, it is not working.

Stewart Stevenson: I want to probe some remaining aspects—we have covered some of them—with regard to how we treat different categories of roads. I will give you an illustration. If I leave my house and drive in the direction of Elgin, I start by driving on 200m of my private road, which I share with my neighbour. I then move on to 2.5m of my road that I have to provide as a passing place on the single-track road, which I have to maintain. After that, I drive on an unclassified road, followed by a C road, a B road and an A road. After 15 miles I reach an A trunk road. There is huge diversity in the system, as we know.

I have been wondering about something that comes up in relation to bridges in particular. When we design roads, do we design them to a stated lifespan? When we design a bridge, we expect it to last for 50 or 100 years, and it is designed to that specification. Do we do that with roads? If so, does it apply to all roads or to only the big important ones?

Neil Johnstone: There are very clear design criteria for that, which have existed for some time. They condition the total depth of the road pavement—all the layers that we do not see are very important. Those tools exist. A very small road in a residential estate with up to a certain number of houses may be pre-designed, because it will be used only by a certain amount of traffic.

This is an opportunity for me to make the point that it is the number of heavy goods vehicles that really determine the strength of a road surface. There is a power to 1,000 difference in the amount of damage that is done to a road by large vehicles. That is why it is very important to manage that traffic, especially on bridges in rural areas.

Stewart Stevenson: I seem to recall being told that the amount of damage was the cube of the axle weight.

Neil Johnstone: Yes, it is indeed.

Stewart Stevenson: The bottom line, in general terms, is that heavy vehicles do much, much more damage. Given that roads have a design life, can you predict what the proper maintenance should be to keep it at a standard that is close to the one that you designed it to? Does the information that we have tell you that? I am interested in maintenance on different roads. Does it help you to understand that?

Neil Johnstone: I have not personally carried out such work for some time, but there used to be an expectation that there would be a regime for that. We would inspect the roads regularly, and every five years we would expect to do significant surface treatment. We would monitor very carefully for any damage underneath the layers. The critical damage happens below the surface. Once the road surface breaks—you may have heard this before—there is water ingress. The

water freezes, and the freeze-thaw process causes a lot of damage below. There are then big impacts.

That general regime can be carried out, but, in truth, on a road with heavier traffic, it is the amount of traffic that is important, and perhaps the conditions in which the heavy traffic travels the route.

Stewart Stevenson: Is the speed of traffic also important? For example, heavy goods vehicles are allowed to travel faster on a dual carriageway and on the A9, which is a single carriageway. Does that create a need for additional maintenance?

Neil Johnstone: Angus Carmichael might correct me on this, but I do not think that speed really plays a big part. If you were to attend any bus stop, you would see that a very slow-moving bus causes severe rutting at the side of the road. I am not sure that there is a direct link.

The Convener: Before we move on, I ask Neil Johnstone to clarify something. Most people see the spraying of tar and the chips going on top—we see that all over the place, including on rural roads. Are you saying that that activity has decreased across all of Scotland? I see less of it now.

Neil Johnstone: I think that there is less of it. However, as a proportion of how the annual budgets are spent, there has been a tendency over the past decade or two for more of that work to take place, because you can cover more roads and possibly pacify more members of the public by spreading your resource more thinly. Effectively, it is done to prevent water from getting in, but it is not a long-term solution.

The real challenge that experts in road maintenance face is that they are juggling to find a balance between the need for meaningful structural maintenance—what David Giles calls managed maintenance—and the need for reactive maintenance.

Angus Carmichael: I agree with Neil Johnstone. Speed is probably not an influence on the structure of the road. I am quite an advocate of greatly increasing the amount of surface dressing that we do—it seals and retextures the road and looks after the integrity of that asset for longer. People have shied away from doing that for several reasons. People do not like their car getting hit by stone chips, for example. It is how we manage the process of using the surface dressing as a cheap, preventative maintenance measure that matters. Councils have shied away from that because of the flak that they get from the public. However, it has to be reintroduced.

11:15

Emma Harper: You mentioned that heavy goods vehicles do more damage to the roads than other vehicles. Do you collaborate with the road hauliers in considering predictions of more lorries on the roads? An example might be a predicted increase in lorries coming through the port of Cairnryan and along the A75 and A77. If an increase in lorries is predicted, does that mean that you have to plan to examine the roads more frequently?

David Giles: Roads are designed to a number of million standard axles, based on heavy goods vehicles. Unless there is already a defect on the road, cars will not really cause significant damage or wear. When a heavy goods vehicle brakes, the amount of energy that is transferred to predominantly the front axles—having previously been spread evenly across all the axles—means that the loading is significant. Braking, starting off or moving stop-start very slowly is when HGVs do most damage. The issue in designing a highway is that we can design to a set number of standard axles, which will determine the type of materials that we use and the depth and structural strength of the road, but traffic volume has increased significantly over predictions—the growth has been exponential in some years. Therefore, designers have the problem of designing to accommodate for the significant increases in traffic.

A further problem is that we expect our roads to last 60 or 70 years before we resurface them, because of challenges to budgets. Not many materials last as long as asphalt does. However, in addition to the extreme weather that we have had, the designers of 10, 20 or more years ago could not have predicted such an increase in traffic. Today, we can design roads that we hope will last longer, but the miles of those roads that can be built is directly proportionate to the budgets, which are simply not sufficient.

Stewart Stevenson: I will try to draw this to a quick conclusion. I am hearing lots of rules of thumb and scientifically derived approaches, but if we kind of know how long a road is supposed to last, why can we not arithmetically turn the handle and say, “If you want to maintain the road to the standard that you built it, this is what it will cost in today’s money”? I am leaving inflation to one side, because that is another issue. Can we do that, or are we just so far away from that number that we have lost sight of what it is?

Angus Carmichael: That is part of the road asset management plan process. As Neil Johnstone said, that approach started to get developed about 10 years ago, led by the southern hemisphere—New Zealand was very much involved in that. As the road asset

management plans mature, what you are suggesting should become part of that, and they will predict where money is spent and when.

Neil Johnstone: Yes. Fundamentally, that is at the heart of the RAMP approach. That is where two terms come into play. One term is the backlog, which is based on the roads condition survey, which identifies roads as red, amber or green, where green means acceptable. The backlog is normally taken to be the number of roads in the red and amber categories that need to be sorted in one year. That is the backlog that we need to catch up on in order to get to a certain place, which is called the steady state.

The steady state is used to define the annual budget to maintain the status quo. I will quote one example, which we referenced in footnote 5 of our submission. That footnote is a link to a public report dated August 2018 from Highland Council. It quotes a backlog of £177.75 million and a steady state requirement of £21.7 million, so such information exists.

The RAM plans generate what we believe the backlog to be, but the backlog has always existed, as far as I know, and will probably continue to exist. In effect, the road maintenance engineers are always trying to recover that by a judicious blend of surface-dressing treatments and strategically located total rebuilds where the road is renewed, typically after 60 years. However, because of extra-heavy unanticipated vehicle traffic, that can happen earlier.

Stewart Stevenson: Finally, I get the impression that—this is what I am hearing—there are shared standards. I am seeing nodding heads, so that is correct. However, is there the same level of standardisation and sharing when it comes to implementing and doing the work, or could we be doing better? That is in relation to all roads authorities, from Transport Scotland to the smallest provider.

Derek Halden: Your question is a really good one—are there rules of thumb so that we can see whether we are spending too little or too much? How do we get management control over that? On the sharing of practice, every time that I hear from colleagues across councils, they all say that we are spending too little. They make Neil Johnstone's point—that is, they say that we are currently below a level at which efficiency gains are possible. If that is the message that is coming across clearly from this panel, that is fine.

To answer your question, there is so much unobserved data. Is a road built on peat, for example? Is the situation inherently more flexible, even though we have the road debt that Neil Johnstone has talked about?

There are so many unobserved variables that we will always be left with a data system in which we are asking whether we have spent enough to make the condition of the roads better. It is about getting data on the overall condition of the roads and having open databases. If we have that, as managers sitting here in the Scottish Parliament, we can say that we have spent enough to make it better. That is the point that I keep coming back to: that data is not currently there.

The Convener: I will move on to Colin Smyth—if, between us, Stuart McMillan, Emma Harper and I have left you with any questions to ask, for which I apologise publicly in advance.

Colin Smyth (South Scotland) (Lab): I thank the convener, Stuart McMillan and Emma Harper for asking all my questions on standardisation and the use of surface dressing. I am running out of questions to ask you.

To follow up on those points, some of the written submissions imply that surface dressing is becoming more widespread, often at the expense of more costly resurfacing and structural repairs. However, you seem to be suggesting that that is not the case and that surface dressing is, in fact, being used less. Is that really what the panel is saying?

Angus Carmichael: Its use has come down, but it is now on the turn and it is going back up. However, it has not reached the level that it was at many years ago.

Colin Smyth: Is that at the expense of doing the fundamental structural repairs that need to be done, because you get more miles for your buck and cover more roads?

Angus Carmichael: I think that, sometimes, too much money is being spent on fairly local roads and that money could be better spent covering a substantially greater length of local road with a cheaper treatment.

Colin Smyth: That is interesting. Stuart McMillan has already asked about standardisation. There seems to be a general view that we need greater standardisation of techniques. What do we need to do to deliver that, short of having a structural change in the organisation? How do we get more standardisation of techniques across the whole of Scotland?

Angus Carmichael: Materials is one area where you can greatly standardise. Numerous bituminous materials are being used across Scotland, and it would be advantageous to bring that number down, so that a palatable half a dozen or so materials are routinely used. That would bring greater consistency and cost-effectiveness.

Colin Smyth: A central diktat could be issued on what must be used.

Angus Carmichael: Yes.

Colin Smyth: I have a final point on materials. Given the current focus on the environment, should we be looking at using materials such as waste plastic? A company in my area called MacRebur adds to asphalt waste plastic that is destined for landfill or incineration. Such a method tackles both the use of waste plastic and the use of a material with a longer life. Should we focus more on using those materials?

The Convener: I will bring David Giles in on that, because that is his domain.

David Giles: I will speak with my AIA hat on, but with a strong bias towards the Eurobitume side of our organisation. The materials that are used on the roads in the UK, and especially in Scotland, are from a set of specifications that are laid down in rulebooks. When road engineers design a road or make decisions about its maintenance, they therefore have in front of them a set of choices. They can choose surface dressing or they can resurface the road with a range of different materials. Obviously, they look to use the most efficient and cost-effective solution in each case.

We advocate the proper testing of materials before they are used on the road. The question that has been asked is whether the use of the waste plastic material that Colin Smyth mentioned is just a way of having a linear waste disposal process. Our view is that any material that goes on the road must be properly tried and tested, and I believe that that has not been done so far for recycled plastic products.

In the European forum, we talk a lot about the recyclability of asphalt. I do not know whether the committee is aware that 80 per cent of the asphalt used in Europe is recycled. The European Union's waste directive says reuse, recycle and so on down that tiering, but we do not yet know whether putting waste plastic into asphalt will have an impact on the recyclability of asphalt. The beauty of asphalt is that 10 per cent of it can go back into wearing courses and 50 per cent can go into base courses after it is taken up off of the road during the planing exercise when a road wears out. A significant amount of asphalt is therefore recycled. In fact, Highways England is looking to increase the use of recycled asphalt to 20 per cent in road surfaces and a higher amount in the base courses—I apologise, but I cannot remember whether the figure is 60 or 70 per cent, even though I sit on the committee that is doing that work.

The reality is that if we put new materials on to the road, we will have to consider the environmental impacts as well as the performance of those materials. As far as I aware, there is no evidence that shows that the recycled plastic—I am being very careful not to use the name of the company concerned—enhances the performance of the road in terms of its whole-life value. We have seen a risk that the use of that type of material might affect the recyclability of asphalt. We have heard a lot about micro-plastics in the environment and not encouraging the use of plastics. The question that I put to the committee is whether using that kind of material is a solution to a problem that should be dealt with in another way. That is, if we give a home to waste plastic on the road, will it encourage people just to put it on to the roads rather than properly reusing it or finding alternatives to the use of plastic? I have my opinion on that question and I will allow the committee to come to its own conclusion on it.

Colin Smyth: Presumably, you have to balance that with the environmental impact of the production of asphalt in the first place. It is not just about asphalt being recycled, because its production clearly has an environmental impact.

11:30

David Giles: We are publishing a new life-cycle index for bitumen. The asphalt pavement embodied carbon tool—asPECT—which is hosted by the Transport Research Laboratory, allows us to calculate the carbon cost and environmental impact of asphalt and the choices that we make.

We can recycle 80 per cent of asphalt, and it is used in a lot of places, including minor roads and pathways. If we affect its recyclability, we would significantly affect its life-cycle index value. As an industry, we are at the forefront of making sure that we are aware of our environmental impact. Using initiatives such as warm mixtures, we are working on ways of reducing the energy that goes into making the products. We are doing a lot in that space. I do not think that plastic additives will add to that benefit.

John Finnie: Neil Johnstone made a point about the backlog at Highland Council. You might anticipate that, as a Highlands and Islands representative, I would jump in with support for Highland Council. However, I have a question for the panel about another system of collaboration. We should have collaboration but, in a city region deal, we have a collaboration between the UK Government, the Scottish Government and Highland Council, which want to spend £70 million on a flyover by a bridge to take people off the road at busy times a couple of times a day—£70 million for driving a road across a field that we should be growing tatties in, not covering with asphalt. Those moneys would be better deployed on maintenance. I think that it was Derek Halden who said earlier that we would not extend our house without maintaining the existing infrastructure.

The Convener: I always try to widen the discussions out from constituency issues to more national situations. Who would like to speak on the generality of John Finnie's question?

Derek Halden: We keep coming back to the issue. As an institute, we would like to see something more like the Germans' fully circular economy. They are way ahead of us; the approach is, "If we take a tonne of carbon out, let's put a tonne of carbon back." What is our programme in Scotland to get to that point?

If we are going to build a flyover or use plastic or whatever—this is exactly the point that David Giles made—we must look at the whole-life cost. We need the best system possible so that we can say that although something might work with asphalt, it might only score X under our overall circular economy framework, in terms of how we would tax it and frame the charges in the relevant marketplace.

That is also the sort of space that we are talking about with pay-as-you-go motoring. Effectively, we have that anyway, because lots of people who drive already have pay-as-you-go insurance tariffs. We can also bolt our social insurance on to that, so that there is a social insurance component to all our insurance policies, not just those for young drivers, who are now virtually all on those tariffs. That is a collaboration between Government and the market that will help us collectively build that circular economy. I think that that is what your question is about. We might find that the costs of that flyover are rather higher than some of the other things that we could do, simply because we are building into it a circular economy consideration.

Are the city region deals more about political negotiation and horse trading? At the moment, they probably are. It is about the balance of power—who can influence spend, and does the money come from Westminster, Holyrood or the local council? Looking at it from a professional perspective, I say that that is fine—it is the politicians' playing field, and they are gaming it.

The Convener: That might take us away from road maintenance and the budget scrutiny that we are doing. Derek Halden and John Finnie have had a chance to make their points.

David Giles: I congratulate Transport Scotland on initiating the pavement forum, in which the industry gets together, every quarter, with Transport Scotland. I take part in that forum, as do my colleagues from the Mineral Products Association, and there are representatives from all the major contractors. We discuss issues such as efficiencies, the use of plastic in roads and the viability of new materials.

Boy, do I wish that we had something as efficient in England. We have something like it, which is operated by Highways England, but the approach is much more innovative in Scotland. My evidence for that is specification TS2010, which we would love to have in England. It is a type of surfacing that uses polymer-modified binders and is much more durable than anything that I know of that is currently used routinely in England. We have the materials in England, but in Scotland you use them.

The Convener: A good-news story there.

Jamie Greene: I commend Mr Giles for his excellency advocacy of his own industry there, rather than advocating the alternatives proposed by members. [*Laughter*.]

David Giles: Is there an alternative?

Jamie Greene: You have done a very good job of that and I am sure that your organisation will be very proud of your performance.

I will move on to some other areas; if the answers are quite brief, we can get through more. I want to cover some topics that we have not touched on today and to hear the witnesses' thoughts, given the expertise on the panel.

My first question is on procurement. Let us look at the direction of travel in public procurement and how Governments finance and fund the build of large infrastructure projects, such as schools and hospitals. If we have a school that costs £100 million, we often find that the contract is to build and maintain the school for a certain period, and whoever is bidding for that knows that they are in it for the long term. However, on a road build contract, there is probably a one-off fee to build the road to a certain standard and specification, but after the ribbon is cut on the project, the maintenance of the road and the legal and financial responsibility for the road are transferred to another agency. Is there an opportunity to redesign how we procure large road infrastructure projects?

Neil Johnstone: Yes, there is, and that has been happening. At trunk road level, we have four operating companies, plus the Forth bridges. In addition, we have five operators—they are listed in one of the appendices—including Autolink on the A74(M) and M6; Aberdeen Roads; the Scottish Roads Partnership on the M8, M73 and M74; and PPP Connect on the M77. Those involve the contracts that you are talking about, where the risk is passed on to the contractor, which delivers the maintenance, with the work inspected by the trunk road authority. Those are examples of what you are suggesting, although I suspect that they are all at a fairly early stage, and learning will accrue from that.

Jamie Greene: I am happy to park that there.

The Convener: Cara Hilton wanted to come in.

Cara Hilton: Neil Johnstone mentioned the Aberdeen Roads project, which includes road maintenance over a fixed period of 10 years. However, the contractor has said that the road will be virtually maintenance free, due to the way that it has been designed. That is one for the committee to keep an eye on in the long term.

Jamie Greene: That is very positive.

We know that many local authorities fill in potholes due to the lack of up-front capital. If we consider the number of times a piece of road has to be temporarily resurfaced or filled in over a long period, we know that it would be better to do some recarpeting or resurfacing work up front. To go back to financial models, is there another way of looking at that? Could the Government play a bigger or better role in considering how it finances the funding of roads? For example, the Government could say to local authorities that if they amortise the cost of resurfacing over five or 10 years, the Government would make that capital available through loan funding. Would that be a more inviting opportunity to resurface a road because local authorities would know that they could spread the cost over X amount of time? Would that not be better than the continuous annual pothole-filling cycle and finding that, at the end of 10 years, we have a road peppered with holes?

The Convener: Who would like to give a short answer to that short question?

Angus Carmichael: It goes even further back, and to pothole patching. Do we do temporary repairs 10 times or do we do first-time permanent repairs? I am an advocate of the first-time permanent repair. There needs to be a greater focus on that to ensure that we do not have continuous repeat visits to the same sites.

Derek Halden: I can give a short answer but, with respect, I note that it is a hugely important question about the entirety of future money. The whole way in which we look at capital and revenue is part of what is wrong with society. The question deserves an entire discussion in itself. Jamie Greene touched on it earlier: why are we borrowing from our children by setting contracts for hospitals that run for 20 years?

The Convener: You need to get back to roads fairly quickly.

Derek Halden: All that I am saying is that questions about revenue versus capital and how we view them differently are at the crux of how we should be prioritising revenue. Do we capitalise in some way? We have effectively been capitalising by rebuilding roads. The question is about that huge issue, and it is not for now.

I am sorry—although that was a shortish answer, it was too long, I am sure.

David Giles: Last week, Steve Berry, who is a senior civil servant at the Department for Transport, announced at the strictly highways conference for the local council roads innovation group in England that he was going to allow potholes to be capitalised. In other words, that was his solution. He said that there is a £120 million pot in England for that, and that local authorities could bid for money.

The AIA and I think that bidding for anything costs money and time and that we should have proper money there—that has been our argument all the way through.

We are part of an all-party parliamentary group at the Westminster Parliament, and the other issue that we have explored, on which we have provided submissions, is totex, or total expenditure. The jury seems to be out on that. We have heard some very good evidence about the use of receipts from house building on council land to fund highway maintenance and the link between the two: if there are better maintained roads, people are more attracted to that area and so on.

However, when we asked about totex in the annual local authority road maintenance survey, the jury really was out. Neil Johnstone might want to say something about that, but our survey showed that local authorities in England felt that totex and capitalising potholes were not the solutions. You know what I am going to say: the solution is proper funding.

The Convener: Neil Johnstone might want to say something, but I want to bring in Jamie Greene for one final question.

Jamie Greene: I will go back to my allocated question and wrap everything into one. We know that pedestrians and cyclists—and, often, motorcyclists—are more affected by poor surface quality. Is there an argument for mandatory upgrades to footpaths and the introduction of cycle paths as part of upgrades to roads? On reinstatement, when utilities are resurfacing roads, should there be more joined-up discussion with local authorities about their resurfacing plans, so that they happen at the same time?

Neil Johnstone: Absolutely. The active travel initiative desperately needs to have that kind of commitment and clear signal. Perhaps even more so than for the motor vehicle journey that Mr Stevenson described, if you are cycling or walking it is important that there is continuity. The journey might straddle a number of boundaries, and that is why one suggestion is for a strong commitment to

some strategic national cycleway and footway networks.

I also throw in the fact that totex is being discussed a lot in the south. Last year, my predecessor as president of the institution, Matthew Lugg, in response to concern about the local highway network in England, initiated a review, which he has led. Some interesting points are emerging from that that will inform the debate in due course. I will not go over them, other than to say that funding certainty is there, along with other reforms. The concept of totex has emerged, which is the idea that you get better value for your money by blurring the differentiation between operation and capital costs. A lot of maintenance investment has been held back, because it is seen as something that you do after you have established your capital budget.

Angus Carmichael: In Scotland in particular, there is already a lot of joined-up working between roads authorities and utility companies. There are such structures in England, but the picture is more disparate down there. Those bodies are closely monitored by my office; they deal with things at a roads authority level, an area level and a Scotland-wide level, and they work pretty well together in many respects. There is still work to be done, but a more joined-up approach is being taken.

11:45

Cara Hilton: I would welcome a more joined-up approach to utility works, although we are getting there.

With regard to investment in cycling infrastructure, the solution involves not just funding for road maintenance, but getting more vehicles off the roads. We will do that not just by increasing funding for cycle networks, but by ensuring that there are better park-and-ride facilities to take cars off the road. We need to invest in the infrastructure and make public transport a more viable option, because right now it is not. That comes down to more investment, but it will pay off for our economy and our environment.

Mike Rumbles: It is interesting that we all agree that not enough money is spent on road maintenance. Everybody on the panel has agreed on that, but no one has been able to tell me whether the Scottish Government funding that has been allocated to local authorities for road maintenance is in fact spent on that. We have had some hints from the panel that they suspect that it is not, but there are no facts before us that tell us whether that is the case. I am sure that COSLA will be listening to this evidence session, and maybe I will get a chance to ask its representatives about that next week.

I have a specific question on technological changes. Do you foresee any technological changes that are due to come on stream in the next few years that could reduce the cost of road maintenance by a significant amount?

The Convener: I ask the witnesses to keep their answers brief. We will start with Angus Carmichael; David Giles will probably have a solution as well.

Angus Carmichael: People on the utility side are always looking at innovation. In the gas sector in particular, they are looking at putting micro-tools down core holes rather than digging up the whole road. They are looking at realigning the existing assets. They are always focusing on more effective, less disruptive and cost-effective ways of working. There is work on-going.

David Giles: I should mention the all-party parliamentary group on highways report, “Working for better roads—Warm Mix Asphalt: reducing carbon emissions and improving efficiencies”. Warm-mix asphalt has a lower carbon cost and allows roads to be opened more quickly. I should also mention the collaborative research that is looking at more durable mixtures. A huge amount of work is being done at the University of Nottingham, by individual companies that produce materials and by the Mineral Products Association and Eurobitume, which are working on research projects to develop new materials. A lot of products come to market, but those tend to be refinements of existing materials rather than magical solutions. There are constant improvements. I point the committee to the report on warm-mix asphalt first, because that is a very important move.

The Convener: Neil Johnstone can come in briefly, and Richard Lyle will ask a supplementary. I will then ask Derek Halden and Cara Hilton whether they see anything on the horizon.

Neil Johnstone: I have three brief points. First, I mentioned in my submission the use of drones for inspections. I suspect that that will not result in a significant saving, but with climate change there is the potential for landslides and movement. The capability for remote monitoring also exists, which can help.

My last point is a bit more futuristic. Intelligent transport systems have the ability to provide information directly to the dashboard of a vehicle. One can see the potential for doing away with a lot of directional and advisory signage, and perhaps even regulatory signage, once we get to that point.

The Convener: I will take questions from Richard Lyle and Emma Harper jointly.

Richard Lyle: I remind everybody that macadam is a type of road construction that was

pioneered by the Scottish engineer John Loudon McAdam in 1820—nearly 200 years ago. Tarmacadam is a road surfacing material made by combining macadam surfaces, tar and sand, which was patented by the Welsh inventor Edgar Purnell Hooley in 1902. Asphalt is much harder wearing than bitmac or tarmac. Many roads are made up of tarmacadam, bitumen, tarmac and asphalt. I have also seen a concrete road. I see that David Giles is shocked—I thought that that would dismay him.

Roads can be of great depth. Following on from the questions that Mike Rumbles and Jamie Greene asked, is there a way to reduce costs by using more plastic materials? I apologise to David Giles for mentioning those. I have even seen an amazing video on YouTube about crushed glass being used as bottoming for a road. What is the future for the use of such materials on roads?

The Convener: I am going to roll that up with Emma Harper's question. I am surprised, though, that Richard Lyle did not mention the matting of roads using old tyres. However, Emma Harper will undoubtedly bring in some additional points.

Richard Lyle: I love the smell of tar in the morning. [*Laughter.*]

The Convener: There speaks a councillor.

Emma Harper: I do not love the smell of it.

To go back to what Colin Smyth was talking about, the company in Lockerbie that he mentioned has had independent testing done that shows that the plastic does not release toxic fumes into the air. Given that 100 per cent of the plastic that it uses is plastic that would normally go to landfill, would it not be worth collaborating with that company and continuing to monitor what it is doing?

The Convener: Gosh—that went wider than I thought it would. Derek, would you like to come in on that?

Derek Halden: Why did you say that that went wider than you thought it would?

Neil Johnstone's point about ITS is critical. In the world of packaging, smart dust technology is used to monitor and locate packages. An awful lot could happen in roads and transport. Vehicle manufacturers will soon have autonomous vehicles running on the roads, for example. We need to be ready for all of that, otherwise they will say, "Actually, just give us your roads—privatise the lot." That would be a real shame because, as I said, roads are the heart of society. It must be the role of Government to maintain close control over the roads. How we tie money up is an extremely important issue that deserves more thought.

We need the space for a discussion that includes issues such as how we use technology and how we look at materials—we need to have a fully circular, zero carbon economy. If we cannot reuse a material, we should have a decent landfill tax on it—in fact, to take up Emma Harper's point, stuff should not go to landfill at all. We ought to abolish landfills, as many countries have already done.

The Convener: Again, you have widened things out. Cara, would you like to wrap up this part of the discussion?

Cara Hilton: Yes. Obviously, we hope that technological advances will lead to cost savings in the future, and we agree with Colin Smyth and Emma Harper that we should look at exploring the use of recycled materials in our roads. However, the fundamental issue for us right now is that our road network is failing faster than it can be repaired. As colleagues pointed out earlier, preventative maintenance can cost 20 times less per square metre than reactive work. We need to get away from the quick fixes that mean higher costs and we need to sort out the funding issue, which is at the heart of the problem with our road network.

The Convener: I ask each of the witnesses in turn to answer Angus MacDonald's question, which is the final one.

Angus MacDonald (Falkirk East) (SNP): The panel will be aware that the Scottish Government declared a climate emergency earlier this year. What is the road maintenance community doing to reduce emissions associated with its work? Do those actions have any financial implications? In addition, perhaps Derek Halden could expand on what he said earlier about the circular economy.

David Giles: Warm-mix asphalt reduces the amount of carbon that is required to make and lay asphalt. The recycling of asphalt, which is already at 80 per cent, is extremely important to respecting the circular economy. I do not think that we publicise that enough; the public do not realise that asphalt is one of the most recycled materials. Anything that we put into asphalt must add to the circular economy rather than taking away from it. I am not against plastic waste being used in roads, but it has not yet been properly tried and tested. Before we accept its use, we should do with it what we do with all road materials. That means that we should first do small trials, then long-term trials over three to five years. If it is found that the use of plastic waste in that way contributes to the circular economy, we should use it and collaborate on that. However, we are not yet at that stage.

Polymers and recycled tyres are already used in asphalt roads in Scotland and England. That is not unique—it is laid down in specifications. However,

the plastic rubbish that has been proposed for use in roads is not yet in the highway specifications for the materials that can be used on the roads, so please do not interpret my evidence as being negative towards the company that was mentioned earlier. Development in that area is at a very early stage.

Neil Johnstone: My response is that the answer lies very much in the planning and management of the road network. We need to see it as part of a transport network. A lot of people's trips are not just on the road, crucial though that is. People travel by bus and rail. For that reason, I think that our sector should encourage more and better maintenance of active travel facilities. We should make a clear plea for people to be able to make national strategic journeys by bicycle or foot on guaranteed-safe surfaces.

Derek Halden: If we want a circular economy, we should follow the money—that is always a good place to start. The key point is that, currently, it is much easier to obtain capital, yet the principles of reusing are built into maintenance. Why are we not reusing first or talking about how we capitalise it? It is a question of how we treat money and how we manage it to build a sustainable future. We should redesign our markets. The Edinburgh-based Environment Exchange has become a world leader in market design, and that is the sort of space that we want to be in.

Angus Carmichael: We need a combination of recycling, promoting public transport and cycling and walking.

Going back to recycling, the former oil fuel bunker at Rosyth was broken up and used in the road into Rosyth port and in the new Queensferry crossing. There are many initiatives on stabilised materials and reinstatements. The utilities are already using those, as is some of the private sector on major jobs. The use of such materials is not always favoured, because problems are associated with it, but companies are very aware of the need for it.

I am completely behind promoting the use of bus travel, having had a bus pass for about seven years. It is the greatest thing in my wallet. It is clear from the situation in Glasgow that people must look at how public transport operates and how it can be speeded up, while making provision for cycling and walking.

Cara Hilton: We need to explore all options to make a circular economy a reality. However, overall, proper investment in our road assets is essential for making active travel a viable option for more people. At the moment, it is not a fully viable option, so we need the investment and the infrastructure to make that happen.

The Convener: I thank all members of the panel for their evidence. I apologise to Angus MacDonald for running out of time for further discussion. However, the witnesses have given us a lot of food for thought, and I thank them for staying on subject and respecting the nods that I gave them at the appropriate moments.

We now move into private session.

11:58

Meeting continued in private until 12:49.

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