

# **EDINBURGH TRAM (LINE ONE) BILL COMMITTEE**

Monday 3 October 2005

Session 2

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## **EDINBURGH TRAM (LINE ONE) BILL COMMITTEE 16<sup>th</sup> Meeting 2005, Session 2**

### **CONVENER**

\*Jackie Baillie (Dumbarton) (Lab)

### **DEPUTY CONVENER**

\*Phil Gallie (South of Scotland) (Con)

### **COMMITTEE MEMBERS**

\*Helen Eadie (Dunfermline East) (Lab)

\*Rob Gibson (Highlands and Islands) (SNP)

\*attended

### **THE FOLLOWING ALSO ATTENDED:**

Andy Aitken  
Alison Bourne  
Lord Marnoch  
Mark Clarke  
Ian Dennison  
Alan Jones  
Anne McCamley  
Graham Scrimgeour  
Malcolm Thomson QC

### **THE FOLLOWING GAVE EVIDENCE:**

Tim Blower (Mott MacDonald)  
Dr Michael Leven  
Mrs Odell Milne  
Steve Mitchell (Environmental Resources Management)  
Richard Vanhagen  
Kristina Woolnough

### **CLERK TO THE COMMITTEE**

Jane Sutherland

### **LOCATION**

Committee Room 1



## Scottish Parliament

### Edinburgh Tram (Line One) Bill Committee

*Monday 3 October 2005*

[THE CONVENER *opened the meeting at 10:07*]

**The Convener (Jackie Baillie):** Good morning. I welcome everyone to the 16<sup>th</sup> meeting in 2005 of the Edinburgh Tram (Line One) Bill Committee. Before we commence, I note that I have become increasingly concerned about further articles that have appeared in the local press from official and unofficial sources. I am sure that people will appreciate that it is extraordinarily difficult not just for the committee to operate in that context, but for objectors to come to committee meetings when they do not know quite what route is under discussion. Therefore, it is my view that we should write in the strongest possible terms to the City of Edinburgh Council about the leaks.

**Phil Gallie (South of Scotland) (Con):** I agree.

**Rob Gibson (Highlands and Islands) (SNP):** I back up totally what the convener has said. If there are any more such articles in the press, the whole process will be undermined. The strongest possible action should be taken to stop that now.

**Helen Eadie (Dunfermline East) (Lab):** I agree with those remarks.

## Edinburgh Tram (Line One) Bill: Consideration Stage

10:08

**The Convener:** We begin by considering witness lists and summaries for group 51. The annex to paper ED1/S2/05/16/1 provides members with the witness lists and summaries for the group. Members will recall that at the committee meeting on 13 September it was agreed that the objectors solely to the proposed amendments for line 1 may give oral evidence on 22 November. Those groups should have submitted their witness lists and summaries by 26 September. Members will note that Transco has withdrawn its objection and that, therefore, the only objection solely to the proposed amendments for line 1 is from Kenmore Capital Edinburgh Ltd.

I thank the promoter and the objector for their written evidence. I know that it will make the committee's, the objector's and the promoter's work during oral evidence-taking meetings much more focused and, hopefully, less time consuming. Do members agree the witness lists and summaries contained in the paper?

**Members indicated agreement.**

**The Convener:** The next step is for the witnesses to provide their witness statements by 24 October, and rebuttal witness statements by 11 November.

We now move on to oral evidence from groups 33 to 36, and 43 and 45. I invite the promoter, the objectors and the witnesses to the table.

The consideration stage—the stage that we are now at—is for the committee to consider the detail of the bill. Our job is to consider the arguments of the promoter and the objectors, and ultimately to decide between any competing claims. All parties attending today will be aware of the procedures for taking evidence so I do not propose to reiterate them. Members will recall that at our meeting on 27 September, the committee agreed that it did not wish to take further evidence on the issue of planning. The committee therefore agreed not to call Aileen Grant to give oral evidence, as her evidence related solely to planning. Having considered the witnesses before us today, I seek members' views on whether, in the light of that decision, we should take any evidence from Peter Allan, an objector witness for groups 34 and 45, on his rebuttal of Aileen Grant's statement. It is my view that, as his rebuttal witness statement solely addresses Ms Grant's witness statement on planning, we should not take any further evidence as we have sufficient evidence already to reach a decision.

Peter Allan has already rebutted Karen Raymond's witness statement on route selection for group 34, and was to address the planning parts of that rebuttal statement. However, given that we have agreed that we have sufficient evidence on planning, I seek members' agreement not to call Peter Allan to give oral evidence today. Are members agreed?

**Members** *indicated agreement.*

**The Convener:** Finally, in relation to Mr Mitchell's oral evidence later today, I have agreed to take the questioners for group 35 first and the questioner for group 43 second, followed by group 34 and, where applicable, group 45. Group 33 has chosen not to cross-examine Mr Mitchell on noise and vibration, or indeed Mr McIntosh on property values.

We now move to consideration of evidence in respect of groups 33, 34, 35, 36, 43 and 45. We begin today with oral evidence from the objectors' witnesses on the issue of route selection. This is a continuation from 27 September of oral evidence on the issue.

Before we commence oral evidence taking, I invite Michael Leven, Odell Milne, Tina Woolnough and Richard Vanhagen to take the oath or make a solemn affirmation.

MICHAEL LEVEN, ODELL MILNE AND KRISTINA WOOLNOUGH made a solemn affirmation.

RICHARD VANHAGEN took the oath.

**The Convener:** The first witness is Michael Leven, who will address the issue of choice of route for group 43. Ms McCamley?

**Anne McCamley:** Good morning. I am not quite sure how to proceed. Do I simply address Mr Leven directly?

10:15

**The Convener:** You do. You put questions to Mr Leven—we are very keen on questions rather than statements.

**Anne McCamley:** Right. So I am not to look at you.

**The Convener:** No, he is much more attractive than me.

**Anne McCamley:** Dr Leven, could you give us your personal details please?

**Dr Michael Leven:** My name is Michael Robertson Leven. I am an ecologist and environmental planner. My professional qualifications are a BSc in ecology and—although I know that you do not want to hear about planning—a degree in planning; both qualifications

are from the University of Edinburgh. I did my doctorate on birds at the University of Hong Kong.

**Anne McCamley:** It might be useful at this point if you advised the committee of your relationship to the lady who is sitting on your right.

**Dr Leven:** Ms Milne is my sister and I am here because she asked me to get involved because of my professional area of expertise.

**Anne McCamley:** Thank you.

You are here to give evidence to the committee on the environmental impact of the chosen route. Your evidence is contained in a statement that you have already given to the committee.

**Dr Leven:** That is correct.

**Anne McCamley:** Your evidence is also contained in the subsequent rebuttal statement of the Wester Coates Terrace action group. Is that correct?

**Dr Leven:** It is.

**Anne McCamley:** Are there any parts of your evidence or the rebuttal statement that you want to emphasise or clarify, particularly in light of the evidence given by the promoter's witnesses at the previous meetings? I think that you have had the advantage of seeing that evidence.

**Dr Leven:** I have.

I made four main points in my evidence that relate to the inadequacy of ecological surveys, the methodological inadequacy of the ecological assessment, the failure to provide sufficient detail of mitigation measures and the failure to demonstrate that mitigation would be enforceable. I understand that my fourth point has now been resolved and that it is proposed that the mitigation will be legally enforceable through the bill.

**Anne McCamley:** That is correct, but it leaves us with the methodological inadequacy and the inadequacy of the ecological surveys, which are what you want to talk about this morning.

**Dr Leven:** That is the main concern.

**Anne McCamley:** Will you clarify those points for the committee?

**Dr Leven:** My main concern about the methodology is that the route selection process was one in which there was a series of route options, in relation to which various factors—one of which was environmental impact—were considered to arrive at a preferred route. In my particular area of expertise—ecology—that was done by examining the detailed areas of concern and considering the ecological impact of different routes. Some routes were given a higher score than other routes and the Roseburn corridor received the highest score. That was then given

an arbitrary weighting—I will come back to that point—and those aspects were then considered against non-ecological and non-environmental aspects in order to make an overall decision on route selection.

I am concerned that the full ecological impact could not be determined, partly because the surveys were inadequate and because, having been weighted, the ecological impact was compared directly against non-ecological factors. That is not an appropriate way to proceed.

**Anne McCamley:** Your main concern is about the way in which the ecological impact was weighted.

**Dr Leven:** The weighting compounds the problems. The first problem was that the route selection process did not compare apples with apples; it compared apples with oranges. That was compounded by the fact that the Scottish transport appraisal guidance, which is very clear about how to go through an assessment process, says nothing about weighting or about ecology being more or less important than cost. The guidance is not designed to make that sort of assessment.

In this route selection process, ecology was weighted at 1.25 and engineering feasibility was weighted at 1.5—there were two other weightings, but I cannot remember them off the top of my head. The principle of such things being weighted is not objective, as no rationale was given for the weightings. Everyone will appreciate that if something is weighted, one can produce any result one wants to produce.

**Anne McCamley:** Do you want to tell the committee anything about the ecological survey?

**Dr Leven:** The promoter has dealt in part with the concern about the survey. It was always known that the impact on the Roseburn corridor would be the most important in any evaluation of alternatives for that part of the route. Because it was known that the ecological impact there would be greater, it was not thought necessary to carry out a detailed ecological survey. That is legitimate as far as it goes. However, the problem is what happens when the data are fed into the evaluation process and then into another more weighted process. If you do not know exactly what you have got to start with, how can you put a number next to it that allows you to determine its importance?

**Anne McCamley:** I believe that I have asked Dr Leven about all the issues that he wishes to clarify.

**Dr Leven:** Actually, on a minor point, there is still a problem with mitigation. I understand that the promoter has stated that it is happy for the mitigation to be an enforceable requirement.

However, because the detailed design has not yet been finalised, the mitigation proposals remain aspirational and merely statements of intent. Even if the committee chose to make the present documents enforceable, that would be impossible in practice because they are aspirational. As a result, we will have to return to the enforceability issue later in the process.

**Anne McCamley:** That is clear to me. I have no further questions for Dr Leven.

**Malcolm Thomson QC:** Dr Leven, have you read Mr Les Buckman's rebuttal to Alison Bourne's witness statement for group 34?

**Dr Leven:** I have, but I do not have it before me.

**Malcolm Thomson:** Did you read his comment in paragraph 2.9, where he says that he carried out a test to find out what would happen if the weightings were taken out of the comparison exercise and found that doing so did not change the result?

**Dr Leven:** Yes.

**Malcolm Thomson:** Does that not affect your view?

**Dr Leven:** No, but it affects my concern about the lack of transparency in the presentation of information. The weightings were included as a statement of fact in the environmental statement, but there was no explanation of why they were used. Obviously, you could change them substantially and arrive at a different result.

**Malcolm Thomson:** Do you accept that environmental impact is only one of several criteria to be taken into account in making a route selection?

**Dr Leven:** Of course.

**Malcolm Thomson:** Have you seen the June 2005 edition of the landscape and habitat management plan?

**Dr Leven:** The latest document that I have seen is revision B of the landscape and habitat management plan for the Roseburn corridor, dated 31 May.

**Malcolm Thomson:** Are you aware that Scottish Natural Heritage has withdrawn its objection?

**Dr Leven:** Yes.

**Malcolm Thomson:** I have no further questions for this witness.

**The Convener:** Do committee members have any questions?

**Helen Eadie:** Will you comment on Karen Raymond's comment in her rebuttal statement that the landscape and habitat management plan has

been fully accepted? The committee received assurances about the plan.

**Dr Leven:** If I understand it correctly, Karen Raymond stated that SNH considered the landscape and habitat management plan to be acceptable. That point is perfectly legitimate, because in principle it is acceptable. The problem is that it is aspirational. The promoter has not yet clarified the amount of land that it will require to construct the tramline, which means that it might need much more land than the plan states. I do not disagree with Ms Raymond if the plan is meant to be a pretty picture of something that we should all aspire to, but I do not think that it is enforceable.

**Phil Gallie:** There is a chance that much more land might be needed for a tramline than has been identified.

**Dr Leven:** That is a problem. We cannot be sure how much land will actually be required for the construction process.

**Phil Gallie:** However, it must be contained within lines that have already been fixed. Are you suggesting that they might have to go outside those lines?

**Dr Leven:** No, I am not suggesting that. As you know, there is the walkway and cycleway and then there is an area of wild land. Everybody knows that some of that will go. The question is: how much of it will go? That is the problem.

**Phil Gallie:** Thank you.

**The Convener:** Do committee members have any further questions? Ms McCamley, do you have any follow-up questions for Dr Leven?

**Anne McCamley:** I do not.

**The Convener:** There being no further questions for Dr Leven, I thank him very much for giving evidence today and for coming all the way from Hong Kong. My committee members wanted to go out to meet you, but there you go; you have had to come to us, which has not made me very popular.

**Dr Leven:** Next time.

**The Convener:** The next witness for group 43 is Mrs Odell Milne, who will also address the choice of route.

**Anne McCamley:** I did not realise that we would get to Mrs Milne quite so quickly. Mrs Milne, would you give the committee your personal details and the capacity in which you are appearing before it today?

**Mrs Odell Milne:** My name is Odell Milne and I am representing Wester Coates Terrace action group in my capacity as a resident of 13 years' standing.

**Anne McCamley:** I understand that you are here to give evidence to the committee on the choice of the route for line 1 and that you have already given a written statement to the committee on that matter.

Is your evidence in that statement and in the Wester Coates Terrace action group rebuttal?

**Mrs Milne:** Yes.

**Anne McCamley:** Have you attended the hearings at which the promoter's witnesses gave evidence on the choice of route?

**Mrs Milne:** Yes.

**Anne McCamley:** Do you wish to emphasise or clarify for the committee any points that were made during those hearings?

**Mrs Milne:** Yes, I would like to clarify one or two points. First, I would like to remind the committee that most of the promoter's witnesses did not, in fact, rebut my witness statement about route selection. Therefore, we must assume that they agree with its conclusion that there was no thorough consideration of any alternative to the Roseburn corridor between the hotel at Craighleith and Roseburn; and that the choice of the Roseburn corridor does not fulfil the promoter's tram system aspirational objectives or the local transport strategy. The proposed line was justified on grounds of run time and cost, neither of which has been substantiated.

Ms Raymond agrees that the Roseburn corridor was known to be the worst route for the environment but that the choice of route was made on economic and technical grounds. Mr Bain agreed at paragraph 4.2 of his witness statement that all the other routes were feasible in engineering terms and that the Roseburn corridor was not the only possible route in technical terms.

Of those witnesses who did provide rebuttals to my witness statement, oral evidence has revealed the following. Mr Cross agreed that his evidence related to the consideration of routes between Craighleith and Granton, and he could provide no evidence of thorough consideration of any other route between Roseburn and the hotel at Craighleith. Therefore, his evidence did not rebut my witness statement.

Mr Harper agreed that no capital costings had been done specifically for the stretch of the route from Craighleith to Roseburn. He stated that although the promoter's evidence on comparative costs gave two inconsistent figures for costs for the Roseburn corridor, that comparison related only to the capital costs for the stretch of the route to the north of the hotel at Craighleith. No costings were done for the stretch of the Roseburn corridor. Indeed, no other comparative costings were done for any other route option at that stretch.



Moreover, Mr Harper said that he could not say for certain that the Roseburn corridor between the hotel and Roseburn would be cheaper than the Belford Road option; therefore the economic justification for the Roseburn corridor cannot be substantiated.

Mr Buckman agreed that he had provided no patronage figures, no run times or comparative route distances for the Belford Road option. He agreed that the only alternative to the use of the Roseburn corridor between the hotel at Craighleith and Roseburn that was "looked at"—I use the phrase that was used in the evidence—was dropped at the route sifting stage before being given thorough consideration because it was considered unviable. However, that route was not, in fact, unviable; Mr Bain said that it was feasible in engineering terms and that there was insufficient evidence to make a decision on economic grounds. Moreover, it was preferable in economic terms to the Roseburn corridor.

Mr Buckman said in response to a question from Mrs Eadie that where people want to go—hospitals, schools, colleges and so on—is known in the patronage forecasting process. Therefore, why does the proposed route along the Roseburn corridor not go to any of those places?

10:30

Mr Buckman is a witness for the promoter, and he admitted in paragraph 2.23 of his witness statement that, at the time of link sifting,

"the level of information available on all the links identified was far from the level of information that we now have for the Proposed Route and was the reason why a broad-level assessment was undertaken."

He stated that the process

"confirmed that the route proposed ... was promising and did not preclude alternative route options being appraised in detail subsequently".

However, the dropping of the Belford Road option and other options in respect of the Roseburn corridor between the hotel at Craighleith and Roseburn did, in fact, preclude subsequent detailed consideration, and there was no such consideration.

Mr Turnbull, who gave evidence on traffic management, was the only promoter's witness who could point to any consideration of the stretch of route from Craighleith to Roseburn after the route sifting stage. When I questioned him, he agreed that a modern traffic management system could make all other routes to Haymarket from Craighleith—including those along Belford Road and Queensferry Street—work if the will was there.

**Anne McCamley:** Do you have any comments to make on the importance of finding a route to serve Haymarket?

**Mrs Milne:** Yes. The promoter's memorandum states:

"The principal objective of the Bill is to authorise the construction and operation of a tram line in Edinburgh. The line will"—

I wonder whether the promoter should have said "would, if the Scottish Parliament passes the bill,"—

"form a loop from St Andrew Square, along Leith Walk to Leith, west to Granton, south to Haymarket and back to St Andrew Square along Princes Street."

Haymarket station is not mentioned in the promoter's memorandum. Therefore, the importance of serving Haymarket station as opposed to the Haymarket area does not seem to have been essential to the promoter until recently, or it would no doubt have mentioned that importance in its memorandum. At least one other route that the objectors have suggested—along Crewe Road South, Orchard Brae, Queensferry Road, Queensferry Terrace, Belford Road, Douglas Gardens and Palmerston Place—would directly serve Haymarket. The route would reach Haymarket at the corner of Palmerston Place and West Maitland Street, and we have been told that a stop for Haymarket on that route would be around 250m from Haymarket station. The only reason that Mr Buckman, a witness for the promoter, could give—after prompting from Mr Thomson—for its being important that people should reach Haymarket station and that the stop should not be a short walk away was that many people who use the station have luggage. With respect, I do not consider that to be a justification at all. People who are encumbered by luggage will already have negotiated stairs and long platforms at Haymarket station, and a short walk to a tram stop need not prove a disincentive to using the tram. Indeed, trolleys and a proper pedestrian crossing could easily be provided to help them. Moreover, many people who use Haymarket station are commuters who use the extremely busy commuter trains from Edinburgh and do not have luggage. They can be seen every morning—I know because I walk there—swarming out of the station just before 9 o'clock, several abreast. They go past the clock at Haymarket and set off into town along West Maitland Street. Those commuters will clearly not be put off using the tram because of the short walk.

**Anne McCamley:** What do you think the long-term impact will be?

**Mrs Milne:** I would like the committee to consider the long-term impacts because the impact on Wester Coates Terrace of choosing the

proposed route over an alternative that has not been considered will be significant and real. If trams become operational along that route, the long-term impacts will include: noise impact that will be sufficient to cause sleep disturbance—we will give evidence about that later today; a vibration impact that may be sufficient to damage our homes, about which we will give evidence later; and a loss of privacy and interference with the peaceful enjoyment of our homes and gardens, about which we have given evidence and will give more. There will be a visual impact as a result of the loss of 63 trees along Wester Coates Terrace alone, 38 of which will be lost permanently and 25 of which will be felled and replanted—they will take 15 years to reach the same maturity. Ms Raymond has admitted that that impact will be significant, particularly for residents further up the street. There will also be a loss of amenity with the loss of the public park or wildlife corridor that we all use—our children use it for playing, cycling and walking safely to school and the nursery school uses it for nature study. Many of us use it for walking dogs and for exercising. The damage to the wildlife corridor has not been given proper weight in considering a route.

**The Convener:** Can we stick clearly to route selection? I know what you are saying, but there will be other opportunities to raise those points later on, as I am sure you are aware.

**Anne McCamley:** Do you think that the impacts would be less on other routes?

**Mrs Milne:** Yes. I do not think—and Ms Raymond admitted—that the impacts would be similar if an on-road route were selected. That is for various reasons, which I must narrate, apropos of my comments about the impact on Wester Coates.

Wester Coates would not be affected in the same way by an on-road route. In particular, operational tram noise would be virtually unnoticed in an on-road environment. The visual impact would be in an environment that already contained road signs, lampposts, buses, cars and lorries, where the tram and its infrastructure would be less noticeable. All the on-road stretches would have no nature-related environmental impact. No impact would be felt on privacy, because the houses already front the road, and traffic, including double-decker buses, passes the houses already. The traffic and the tram would pass in front of, not behind, the residences.

In all those ways, an on-road alternative would have less environmental impact on the locality and the residences. In one area, the impact would be the same. Ms Raymond says in her statement that using a route along any west end street would have a negative environmental impact on the west end conservation area and says that there will be

an “absence of impact”—I presume that she means for the conservation area—on the Roseburn corridor. However, when questioned by me, she agreed that a negative impact would occur on the Wester Coates conservation area. From that point of view, the Roseburn route is the same and not better.

**Anne McCamley:** Has the promoter recognised fully the significant impact that will occur on the Roseburn corridor and on Wester Coates Terrace?

**Mrs Milne:** The promoter might not have appreciated the impact at the link sifting stage, but it has certainly been brought to the promoter's attention. At the first public meeting in the Assembly Rooms, we advised the promoter about the impact on the Roseburn walkway and our homes. We discussed that with Mr Howell and other representatives of the promoter. The promoter has had every opportunity to consider thoroughly an alternative route to the Roseburn corridor for the stretch between Craigleith and Roseburn, but it has failed to do so.

**Anne McCamley:** What would you like the committee to do?

**Mrs Milne:** I accept that, sometimes, the needs of the public must outweigh those of individuals, but public needs have not been weighed against those of the individuals who are residents of Wester Coates Terrace. No evidence has been given of adequate consideration of an alternative route that avoids the impacts on Wester Coates Terrace. To conclude that the public need outweighs that of individuals, it is necessary to show proper consideration of an alternative. Moreover, the scheme need not result in a negative environmental impact on anyone. We are not saying that the line should be taken away from us and put somewhere else where the effect on residents would be just as bad. The effect of an on-road alternative on residents would not be as bad. It would serve the public's needs without having the negative impacts that residents along the Roseburn corridor would experience.

We would like the committee to consider an amendment to the bill to route the tram along the roads and not along the Roseburn corridor. Such a route would satisfy the requirements of the promoter's memorandum. Possible routes could be along Crewe Road South, past the Gallery of Modern Art, over Belford bridge and along Palmerston Place to Haymarket, or along Crewe Road South and by a road down to Murrayfield Road, to Corstorphine Road and to Haymarket. Alternatively, Dean bridge could be used. The promoter is best placed to determine which of those routes or other routes that avoid the Roseburn corridor would be most suitable.

The promoter's response to a question from Mr Gallie was that if the Roseburn corridor was ruled out, the tram could be routed along another route to reach Haymarket. We have shown that the economic justification for using the stretch of Roseburn corridor between Craigleith and Roseburn cannot be substantiated and will show that speed or run-time justification cannot be substantiated, either. We have shown that the environmental impact will be negative. We have shown that the Roseburn corridor does not effectively meet the tram system aspirational objectives or the local transport strategy. Another route might meet those objectives and that strategy more effectively and we would like the committee to suggest that the promoter should lodge an amendment that chooses another route that is along the roads.

**Malcolm Thomson:** My first question was going to be what alternative to the Roseburn corridor you propose for a tram that runs from Granton to Haymarket station. You have plumped for two variants: one would use Belford bridge and one would use Dean bridge. Is that correct?

**Mrs Milne:** A route along Murrayfield Road and Corstorphine Road would also go to Haymarket. The promoter, rather than me, is best able to find a route that has the appropriate patronage and suits its purposes.

**Malcolm Thomson:** Am I right in thinking that one of the problems with any route is how it crosses the Water of Leith?

**Mrs Milne:** Yes.

**Malcolm Thomson:** Am I also right in thinking that the river can be crossed either at Roseburn, as the promoter proposes, at Belford bridge or at Dean bridge?

**Mrs Milne:** Yes.

**Malcolm Thomson:** No one has proposed that the water be crossed at Dean Path.

**Mrs Milne:** Do you mean Dean park in Stockbridge?

**Malcolm Thomson:** No, I mean Dean Path in the Dean village.

**Mrs Milne:** I am sorry, but I do not know that route.

**Malcolm Thomson:** You mentioned Murrayfield Road as another option. Where would that route cross the Water of Leith?

**Mrs Milne:** At Roseburn. The route could go down Murrayfield Road and along Corstorphine Road.

**Malcolm Thomson:** Do you propose that the tram should use the existing road bridge at Roseburn to cross the Water of Leith?

**Mrs Milne:** Yes.

**Malcolm Thomson:** I do not think that that option is proposed by any of the objector groups that we are considering at the moment.

**Mrs Milne:** The proposal was in our original objection.

**Malcolm Thomson:** However, it is not part of your witness statement, so you are not proposing it formally.

**Mrs Milne:** No. As I said, the promoter is best placed to choose an appropriate route.

**Malcolm Thomson:** If the Belford bridge option were adopted, would such a route affect a substantial number of residential areas?

**Mrs Milne:** Yes.

**Malcolm Thomson:** From Crewe Road South, would the route need to come up Orchard Brae?

**Mrs Milne:** Yes.

**Malcolm Thomson:** However, the access to a number of flats is via Orchard Brae Avenue.

**Mrs Milne:** That might be the case.

**Malcolm Thomson:** Might those flats be affected if two tramlines ran up Orchard Brae?

**Mrs Milne:** In none of its evidence has the promoter suggested that there would be a problem with accessing properties in Orchard Brae. Furthermore, such a problem would not affect the route that I am talking about, which is the stretch between Roseburn and the hotel at Craigleith.

**Malcolm Thomson:** Would it not? I thought that the route that you proposed and which you mentioned in your evidence-in-chief involved Crewe Road South and Belford bridge.

**Mrs Milne:** I have suggested those mechanisms for getting to the hotel at Craigleith, but I have not gone into detailed consideration of the route between Granton and the hotel at Craigleith. I have concentrated only on the stretch between Roseburn and the hotel at Craigleith. Therefore, I am unable to answer questions about the stretch between Granton and the hotel at Craigleith.

**Malcolm Thomson:** Have you applied your mind to the issue of how to get from the hotel at Craigleith to Haymarket station?

**Mrs Milne:** The route would need to go via Belford Road, Murrayfield Road or Dean bridge, as we have just talked about.

**Malcolm Thomson:** Would that involve using the Roseburn corridor as far as the hotel and then coming along Queensferry Road?

**Mrs Milne:** No, my preference would be for the route to serve the Western general hospital. However, the other witnesses who have given evidence on that stretch would be better able to answer questions about that route.

**Malcolm Thomson:** Do I take it that you are not particularly concerned about how the route gets to either Belford bridge or Dean bridge?

**Mrs Milne:** I am concerned that the route serves the promoter's aspirational objectives, which means that it should serve the Western general and colleges and schools along that road. However, I personally have done no investigation into the detailed stretch of that route.

**Malcolm Thomson:** Generally speaking, do you accept that there are technical difficulties with putting a tram across Belford bridge?

**Mrs Milne:** I accept that. However, the promoter's witnesses indicated that, if the will exists, such difficulties can be overcome.

**Malcolm Thomson:** Have you thought what such measures might involve? For example, regrading might have an effect on access to domestic properties and on the Dean Gallery, which is a listed building.

**Mrs Milne:** I expect that it might be possible to engineer the route around the Dean Gallery, which is a listed building with large car parks, but I do not know as I am not an engineer.

**Malcolm Thomson:** So you would defer to the engineers.

**Mrs Milne:** I would defer to the engineers with regard to the ability to get round Dean bridge. I do not say that such a route would necessarily have an impact on access, as I suspect that steps could be taken to deal with access issues.

**Malcolm Thomson:** Would you defer to the engineers in relation to both Belford bridge and Dean bridge?

**Mrs Milne:** I would have thought that the engineers would be able to deal with Belford bridge. I would also have thought that car parking spaces, which are the only issue that has been mentioned, could be dealt with adequately in some other way.

**Malcolm Thomson:** If the Dean bridge option was adopted, the tram would need to be routed along Drumsheugh Gardens and Chester Street before it turned into Palmerston Place.

10:45

**Mrs Milne:** That is one possibility.

**Malcolm Thomson:** What other possibilities are there?

**Mrs Milne:** You could go along Queensferry Street and turn right towards Haymarket.

**Malcolm Thomson:** You mean along Melville Street?

**Mrs Milne:** Or along Shandwick Place and West Maitland Street.

**Malcolm Thomson:** That would involve a U-turn for the tram somewhere.

**Mrs Milne:** Yes.

**Malcolm Thomson:** Would you accept that the west end community council might have something to say about a proposal to run a tram along Drumsheugh Gardens, Chester Street and Palmerston Place?

**Mrs Milne:** It is the same level of conservation area as Wester Coates; therefore I think that it would say the same as us.

**Malcolm Thomson:** Do you accept that a tram stop on Palmerston Place would serve Haymarket station less well than the stop at Haymarket station that is proposed by the promoter?

**Mrs Milne:** It is not as close, but there are lots of places where the promoter is asking people to walk a considerable distance to a tram stop. It could still adequately serve Haymarket station, and it would better serve the west end of Edinburgh, including Palmerston Place and the shops in Haymarket.

**Malcolm Thomson:** But it would serve Haymarket station less well.

**Mrs Milne:** Differently.

**Malcolm Thomson:** In that it is further away and less convenient.

**Mrs Milne:** It is further away and less convenient for Haymarket station, but it is much more convenient if you want to go to St Mary's cathedral, Palmerston Place church or the shops in Haymarket.

**Malcolm Thomson:** I take it that St Mary's cathedral is a listed building.

**Mrs Milne:** I expect that it is.

**Malcolm Thomson:** Do you have a view on the suitability of Craigleith Road as a route option?

**Mrs Milne:** I have no information about Craigleith Road.

**Malcolm Thomson:** Do you accept that while either of the routes over Belford bridge or Dean

bridge that you have talked about is physically shorter than the route proposed by the promoter, the run times are likely to be longer?

**Mrs Milne:** Could you repeat the question?

**Malcolm Thomson:** In your cross-examination some days ago, you were anxious to make the point to various witnesses that the two routes that you have discussed—along Crewe Road South, Orchard Brae and then either Dean bridge or Belford bridge—are physically shorter than the promoter's route.

**Mrs Milne:** As I understand it, yes.

**Malcolm Thomson:** Do you accept that the run times on either of those alternative routes would be longer than that proposed by the promoter.

**Mrs Milne:** I do not accept that because, as your witnesses have revealed, no run times whatever have been calculated for the stretch between the Holiday Inn near Craighleith and Haymarket.

**Malcolm Thomson:** Do you think that it is likely that a tram run on-road would have a longer run time than one on a segregated, no-traffic route, such as the Roseburn corridor route?

**Mrs Milne:** It is possible, but run time is not the only important consideration. You yourself have said that many considerations are important in selecting a route.

**Malcolm Thomson:** I notice from your statement that you have been resident in your present home for 13 years.

**Mrs Milne:** Yes.

**Malcolm Thomson:** When you bought your house, were you aware of the proximity of the former railway line corridor?

**Mrs Milne:** We chose it because of the existence of the walkway, the cycleway and the wildlife area.

**Malcolm Thomson:** Did you object to the local plan that protected the Roseburn corridor for a light, rapid transit system?

**Mrs Milne:** No, I did not.

**The Convener:** Do committee members have questions?

**Helen Eadie:** I have two questions for Mrs Milne. Could you comment on intermodality, or integration of different forms of transport, with regard to Haymarket station? I do not know whether you are aware of the National Audit Office report that is mentioned by Barry Cross in his rebuttal of your statement.

**Mrs Milne:** Are you referring to the National Audit Office report's suggestion that trams should

go to places that people want to go to, such as schools and colleges?

**Helen Eadie:** No. I am talking about the need, at national policy level, to ensure that all forms of transport meet at key places—such as Haymarket station—so that bus routes, tram routes and railway routes are integrated. Would you comment on that?

**Mrs Milne:** Whichever part of Haymarket people reach, the services would be integrated, because people can get buses at the end of Haymarket that is closest to Princes Street in just the same way as they can get them at Haymarket station. Haymarket as a whole would benefit from not having trams going through it, because buses would not be held up by trams.

**Helen Eadie:** The point that I am driving at is that in other places—such as Zurich—the buses, trains and trams integrate at one point. That benefits commuters. Can you comment on that issue?

**Mrs Milne:** Most of the commuters could walk the very short distance to get a tram. If you are asking whether it is better to have it right on the spot, it is possible that having the tram stop right at Haymarket is a better location.

**Helen Eadie:** Aileen Grant raises another point, which relates to Mr Thomson's points about the fact that those matters have been covered in a number of City of Edinburgh Council plans. Aileen Grant states in her rebuttal statement that

"The Roseburn Corridor is identified in the adopted North West Edinburgh Local Plan (NWELP) as 'safeguarded for possible future highways or light rail purposes'."

**The Convener:** We have excluded further discussion on planning because, as you point out, we have quite a bit of evidence on it.

**Helen Eadie:** I will make a more general point. A variety of plans have safeguarded the corridor. In the course of all those plans going through, have you objected to the fact that the corridor should be protected?

**Mrs Milne:** First, the stretch between Craighleith hotel and Roseburn is not set aside for a tram in the local plan.

**Helen Eadie:** Is it a transport corridor?

**Mrs Milne:** It is a transport corridor, and in my view it is fulfilling its purpose as a transport corridor. It is a walkway and cycleway; the promoter sets those up as being important parts of transport provision.

**Helen Eadie:** The corridor is identified for light rail purposes in all the plans.

**Mrs Milne:** That does not mean that whether it should be used for light rail purposes is not a proper consideration.

**Phil Gallie:** A lot of effort seems to have been put into assessing the Belford Road and Dean bridge routes. Can you indicate what the traffic levels are on those stretches?

**Mrs Milne:** Belford Road is probably less busy but I am not a traffic management expert, so I cannot really comment. I presume that the promoter could divert traffic to give the tram priority at those locations.

**Phil Gallie:** Mr Thomson made the point to you that although the proposed route is shorter, tram run times could well be longer, given the impact of bends and traffic. Is that a fair consideration?

**Mrs Milne:** It might be, but it should not necessarily outweigh all the other detrimental impacts that use of the Roseburn corridor will have. It might be decided that a small loss of time for people coming from Granton into Edinburgh is less important than the environmental impacts on the Roseburn corridor for both the wildlife and the residents along the corridor.

**Phil Gallie:** If your proposal were to become an amendment and it was put to the public to see whether there were objections, have you any feel for the level of objection that could come from people in the areas that would be affected?

**Mrs Milne:** I will put it this way. If the promoter had wanted to put a tram in front of my house, I can say in all honesty—I am on oath—that I would not have objected. I am objecting because the promoter is putting the line behind my house and destroying the walkway and cycleway. I cannot comment on what other people would do.

**The Convener:** As committee members have no further questions, does Ms McCamley have any follow-up questions for Ms Milne?

**Anne McCamley:** I have no follow-up questions. Ms Milne took care of herself.

**The Convener:** I am sure that she is more than capable of doing that. I thank Ms Milne for giving evidence. If she and Dr Leven wish to leave, they can feel free to do so.

The next witness would have been Mr Raynal, but I have been advised that he is unable to attend this morning. He would have covered the cost aspects of the choice of route. Of course, we have his rebuttal witness statement. Mr Thomson, I wonder whether you want an opportunity to comment on that.

**Malcolm Thomson:** Thank you, madam. I want only to say that, as far as the promoter is concerned, the cost matter is dealt with in the statements of Neil Harper and Karen Raymond.

Neil Harper says that the cost of the mitigation measures have been taken into consideration and Karen Raymond addresses the adequacy of the mitigation measures. I rely on their evidence to rebut Mr Raynal's evidence.

**The Convener:** Thank you, Mr Thomson.

We move on to the next witness, who will be—

**Anne McCamley:** We hope that Mr Raynal will be able to appear later in the day.

**The Convener:** I am afraid that we have moved on from that item. No indication of that was made to the clerks before we started and we have a full agenda, so I intend to press on. Had we been advised at the start of the day, we might have been able to accommodate the request, but we were not. I am conscious that we have a variety of objectors coming to see us at various times. We are clear that we cannot adjust our timetable to meet other people's commitments. This is a parliamentary committee and we expect people to be made available to us when that is useful to our agenda. My decision is final and I intend to press on.

Phil Gallie wants to comment on Mr Thomson's remarks.

**Phil Gallie:** I simply make an observation to the public and the committee in respect of the rebuttal by the promoter, which suggests that the costings are based on defined mitigation measures. That is in line with Mr Harper's submission, but earlier we heard a statement that suggested that mitigation can hardly be defined until the final design is approved. That is my observation. I would leave the mitigation question open at this point.

**The Convener:** The committee will reflect on that point in due course. Now that you have made your comments public, we move on the next witness, Kristina Woolnough, who will address the issue of the alternative route for groups 33, 34 and 45. First, she will address the issue of the alternative route for group 33.

**Kristina Woolnough:** May I ask a question? The promoter's rebuttals to the groups are similar, but one is numbered and the others are not. The points of reference in our questions use the rebuttal to group 33, which is numbered. Is it possible to use that as the points of reference in questions on group 34 as well?

**The Convener:** I am happy for that to happen. It is most unusual for witnesses to ask the convener such a question, but given that you regularly swap seats, Ms Woolnough, I will overlook the matter.

**Kristina Woolnough:** Thank you.

**Alison Bourne:** I start with Mr Oldfield's rebuttal regarding the footway and cycleway. Section 3.3 of his rebuttal of your statement contends that the

route selection sifting process is adequate. Do you have any comment to make on that with regard to the alternative alignments that have been put forward by objectors?

**Kristina Woolnough:** Our view is that, as we heard from Mrs Milne, the weighting process disadvantaged the Roseburn corridor. It also gave an unduly negative impact to the on-road alignments, for a host of reasons. We are not comfortable with the way in which the weightings were done. We are also upset that accessibility and integration were not included as part of the STAG criteria. We think that they should have been key components and that, had they been used, on-road alignments would have come out more favourably. It should also be noted that our proposed Crewe Road South to Orchard Brae link came out higher than any of the Roseburn corridor links, so we are keen for that to be revisited.

11:00

**Alison Bourne:** Section 3.9 of the same rebuttal states that the existing structures along the Roseburn corridor are considered all right for trams. Do you have any comment on that?

**Kristina Woolnough:** As emerged from the cross-examination that I undertook last week with the witnesses for the promoter, it is clear that the bridges and tunnels—of which there are at least nine and we think probably 11—have not been structurally assessed. Therefore, their suitability cannot be assessed until a much more detailed stage. Again, we come to the issue of technical difficulty and whether, technically, the tramline can be implemented. When we asked about that last week, the situation was not clear—all we have is a professional's opinion. I have all due respect for professionals, but we are just ordinary people and our difficulty is that the professionals were given the remit of getting people quickly from the waterfront and Granton to Haymarket and the city centre and, on that basis, issues such as accessibility, integration and serving hospitals were not given due concern.

**Alison Bourne:** Sections 3.14 to 3.18 of Mr Oldfield's rebuttal refer to the use of the Roseburn corridor by cyclists and give some details about the promoter's survey. Do you have any comment on those figures?

**Kristina Woolnough:** Mott MacDonald undertook the survey that is described. Unfortunately, it was done only during the morning peak on a weekday. When we undertook our survey—which, I presume, was what prompted the promoter to do its survey—we did so on a weekday and on a Saturday. Other groups along the proposed alignment carried out surveys on a Sunday and another weekday. The surveys

confirmed that there is a recreational function on weekdays and at the weekend. The fact that the promoter used the morning peak and then averaged out the figure is not acceptable. Our figures demonstrate consistent usage throughout the day by walkers and cyclists.

The promoter assumes that the use of the cycle path is simply a method of getting from A to B, but our surveys, which we have lodged as part of our evidence, clearly show that the amenity, the wildlife, the vegetation and the traffic-free environment are crucial to the people who use the corridor. People use it because it has no traffic on it, not because it gets them from A to B. We are concerned that Mott MacDonald's survey was done during the school holidays, so there were no schoolchildren walking up and down the corridor, as there normally are. To be frank, the survey that the promoter undertook was, at best, cursory, but it is an indication that the promoter realised that it had made a serious omission in not assessing the human amenity and usage and the wildlife benefit of the corridor for local people as well as people from all over Edinburgh and from Fife and beyond.

**Alison Bourne:** In section 3.16, the promoter's witness asserts:

"the cycle path is used predominantly as a commuter route"

and argues that the tram scheme

"will not have an adverse effect on cycling provision."

Do you have any thoughts on that?

**Kristina Woolnough:** Our survey demonstrated the exact opposite of that—it showed that people value it for being a traffic-free, pleasant green corridor and that a large number of cyclists are amenity users. The assumption that the route is just used by commuting cyclists who do not care about the amenity is extremely wrong, according to the evidence that we gleaned from our survey. The promoter's survey was just a head count; we carried out a survey of the values that users placed on the corridor.

**Alison Bourne:** In section 3.17, the promoter's witness suggests that the cycleway and walkway

"at 3m wide is greater than the Council minimum standard."

What is your comment on that?

**Kristina Woolnough:** Another document that we lodged with the committee is a council document called the "Cycle Friendly Design Guide", which describes non-segregated urban routes as having a desirable minimum width of 4m, for shared cycle and pedestrian walkways. It describes an absolute minimum of 2.5m. For segregated routes, the document requires 2m for cyclists and 2m for pedestrians. We think that, because the promoter is the City of Edinburgh

Council, it should live up to its highest standards, not its lowest standards.

The rebuttal also notes that the widths are for unbounded routes and that, where there are constrictions, there is no wriggle room—as I believe that it is called—for cyclists overtaking, dogs dodging around, or what have you. Extra metrage needs to be added for that. In several sections of the Roseburn corridor, there will be that constriction or tunnel effect.

In its rebuttal, the promoter also talks about how many people will be going past at any one time. Anybody who has used that cycle path will know that it is not a question of one pedestrian here and one cyclist there: people walk and cycle in groups. The experience of using the cycle path does not match up with the kind of calculation that is used in the promoter's rebuttal.

**Alison Bourne:** In the same section, the promoter suggests that tram lighting will create a much safer environment. Do you have any comment on that?

**Kristina Woolnough:** First, there is no evidence to support that. Secondly, there is lighting on the walkway, although the council fairly consistently fails to maintain it. Thirdly, there is a view that lighting makes people feel more vulnerable. For example, a lone woman who is walking her dog in the dusk or twilight feels that she has places to shelter if she feels threatened. If there are lights lighting her movement all the way along, she can feel more insecure. I suggest, therefore, that the promoter's view is a subjective view and, as I said, there is no evidence to support it.

**Alison Bourne:** In section 3.9, the promoter states that pedestrians and cyclists will still have full access to the route. What are your thoughts on that?

**Kristina Woolnough:** The promoter has, throughout, played down the human amenity value—the linear park aspect—of the cycleway and walkway and how they connect different communities in a traffic-free setting. Access to something and the amenity usage of it are not the same. We feel very upset about the disparaging way in which the corridor is continually described as disused and derelict. We feel that the promoter has deliberately and consciously played down the impact that the tramline will have on human and wildlife users of the corridor. Access is a box to be ticked; the amenity box is less easily ticked, and we would like that to be properly considered. We are not aware that any audit has been undertaken of the open green space in our area. Our community is not being offered any compensatory green space. We have raised all those issues again and again, but none of them has been addressed.

**Alison Bourne:** In section 3.20 of its rebuttal statement, the promoter states:

“Where necessary, properly signed, safe cross track provision will be provided.”

Do you have a view on that?

**Kristina Woolnough:** Again, we are not at all sure what that means. We are not sure whether there will be barriers between the tram track and the cycleway and walkway. For two and a half years, we have asked whether there will be barriers, and we have been told that the matter will be referred to Her Majesty's railway inspectorate. There must be a commonsense judgment on the issue. If the promoter is assuming fast speeds—which is the justification for using the Roseburn corridor—there must be an assumption of a barrier that will properly segregate people from the tram track. We have asked for a speed restriction, as we want the open aspect of the whole corridor to be retained.

The promoter's assurance on “safe cross track provision” suggests that there will be substantial barriers between the tram track and the cycleway and walkway, which is not the impression that is given in the documentation, including the landscape and habitat management plan. We wonder how on earth the speeds that justify the use of the Roseburn corridor can be planned for without knowledge of, or an assumption about, whether there will be a substantial barrier.

**Alison Bourne:** In section 3.21 of the rebuttal, the promoter describes policy T7. Am I allowed to ask questions about that, convener?

**The Convener:** It concerns planning; therefore, I would rather that you did not.

**Alison Bourne:** In section 3.23 of the rebuttal, the promoter implies that it is acceptable to have trams running fast next to people. I ask Kristina Woolnough what her thoughts are on that.

**Kristina Woolnough:** Again, a commonsense judgment would say that that cannot be so. We are told repeatedly that trams operate on line of sight and that it is necessary to have an off-road alignment for speed of journey and to prevent congestion. We would contend that unpredictable human congestion by way of pedestrians and cyclists, wildlife congestion by way of badgers and four-footed congestion by way of dogs will impact on journey time. The promoter must know whether it has made an assumption that there will be total segregation. We do not think that it will be possible to have the proposed speeds in the constrained area of the Roseburn corridor, where visibility is not particularly good, as the tunnels and bridges cannot be seen through. We want to get a straight answer on that.



**Alison Bourne:** I have a few questions about vegetation. In paragraph 3.14 of Mr Oldfield's rebuttal, he suggests that the Roseburn corridor is the most direct route for serving key areas of patronage. Do you have any comments on that?

**Kristina Woolnough:** It is clear that it is not the most direct route for that purpose. One need only look at a map and compare the alternative alignments that some of the groups have proposed to see that there are much more direct on-street alignments, which would be shorter than the Roseburn corridor route and would serve key areas of patronage such as the Western general hospital, schools, businesses in the Haymarket area and so on.

**Alison Bourne:** In paragraph 3.16 of the same rebuttal statement, Mr Oldfield suggests that the promoter's route will

"preserve and enhance the urban wildlife qualities of the corridor".

What is your view on that?

**Kristina Woolnough:** I do not know whether it is a deliberate tactic to disparage the Roseburn corridor and to suggest that it will be improved as a result of trams travelling along it at speeds of 43.5mph, but a commonsense view would say that that could not possibly improve the corridor's urban wildlife qualities. Although the function of the wildlife corridor may be retained, its role as a foraging ground and human amenity and its ability to provide access for wildlife will be interfered with. How could putting traffic in the wildlife corridor possibly improve an environment that is currently traffic free, of which there are very few in a busy city such as Edinburgh?

**Alison Bourne:** Am I right in saying that the findings of the friends of the Roseburn urban wildlife corridor association survey confirmed the points that you have just made?

**Kristina Woolnough:** That is absolutely right. We took the trouble to survey people, the vast majority of whom were regular users, and ask them for their views. The results of our survey, which we have lodged with the Parliament, reveal that 96 per cent of respondents felt that trees, wildlife and tranquillity were important aspects of the cycle path and walkway and that 98.5 per cent of them rated safety, absence of traffic and accessibility as important. Our survey demonstrated that the corridor has a very wide user profile, which includes the elderly, the infirm, children, people who use it as an amenity for walking their dog and people who use it for getting to work. It is truly a human corridor. Only someone who has experienced the corridor regularly would appreciate the loss that we are facing.

**Malcolm Thomson:** I understand that you are appearing as a witness for group 33. Does that mean that you support Alison Bourne's proposed alignment along Craighleith Road?

**Kristina Woolnough:** My understanding is that I am appearing as a witness for group 33 to speak about the rebuttals, the inadequacy of the assessment of alternative routes and the wildlife and human amenity aspects of the footpath and cycleway. Last week, Alison Bourne spoke about her Craighleith option and about service of the Western general. I am here to speak about the rebuttals that group 33 received as they relate to wildlife and the Roseburn corridor.

**Malcolm Thomson:** Do you have a view about the adequacy of the Craighleith Road option?

**Kristina Woolnough:** That was answered last week. Mrs Bourne made the point that the objectors, who are not experts, were fairly late in the day faced with the difficulty of having to devise alternative alignments. I assure the committee that on many occasions we attempted, through community liaison groups, to discuss alternative alignments, to address the issues and to thrash out various points. As I said at last week's meeting, according to the CLGs' remit it was

"no longer appropriate to discuss with the Community

- alternatives to the route shown in each Bill".

As a result, we were, if you like, handcuffed into not discussing or examining in detail alternative alignments with the benefit of expert advice at community liaison group meetings.

11:15

**Malcolm Thomson:** I am trying to understand your evidence in paragraph 11 in the section of your witness statement, which is entitled:

"LOSS OF AMENITY—FOOTPATH/CYCLEWAY",

in which you say that you

"contend that any time delays incurred by serving the Western General Hospital can easily be saved by taking this more direct, more user-friendly route to the city centre."

Which route are you referring to?

**Kristina Woolnough:** As I am sure you realise, we submitted—as did your witnesses—similar rebuttals and statements to cover different aspects. The point that you have highlighted is a mistake—it was lifted from the statement that I made for other groups.

**Malcolm Thomson:** So which route to the city centre do you regard as being "more direct" and "more user friendly"?

**Kristina Woolnough:** It would be more appropriate to ask that question when we come to

group 34 because I will speak specifically about alternative alignments. With this group, I am due to talk about the inadequacy of the assessment of alternative routes to Roseburn corridor, with reference to the promoter's rebuttals on the wildlife issue.

**Malcolm Thomson:** Similarly, in paragraph 4, you mention expert advice that you took that favoured "the most direct" route. What is that route?

**Kristina Woolnough:** Again, that comment is a mistake. It was taken from the evidence for group 34. I apologise for that.

**Malcolm Thomson:** Does that mean that you do not have a preferred option at the moment?

**Kristina Woolnough:** I am here specifically to discuss the promoter's rebuttals to aspects of my witness statement. I apologise for those two mistakes. In the confusion of the vast amount of paperwork, it is not easy to check everything. My understanding is that I am here to talk about the inadequacy of the assessment of alternative routes as rebutted by Andrew Oldfield, and about the promoter's rebuttals to our witness statement on wildlife in the Roseburn corridor.

**Malcolm Thomson:** I refer you to paragraph 13 of your witness statement for group 33, in which you say:

"Our proposal is supported by the Central Edinburgh Local Plan and by the Structure Plan. It meets STAG criteria more successfully than the Promoter's alignment and, most importantly, it meets the travelling needs of the public without compromising an urban wildlife corridor".

Is that another error?

**Kristina Woolnough:** Yes. It is possible that the statement contains other errors, which I am willing to concede if you wish to go through them all.

**Malcolm Thomson:** I did not wish to be unduly critical. I simply wanted to ensure that I was not missing any points that I ought to be picking up at this stage.

**Kristina Woolnough:** I apologise. However, I should point out that, on a number of occasions, the promoter's witnesses addressed group 33's alternative alignment along with group 34 and other groups when the issue was not relevant. We have all struggled with large amounts of paperwork. I hope that we will be gentle with each other on that matter.

**Malcolm Thomson:** Did the promoter ever suggest that it might be beneficial to carry out a joint survey of use of the Roseburn corridor?

**Kristina Woolnough:** That is not correct. We undertook a survey last December because, after our persistent questions at community liaison group meetings as to whether one had been

carried out, it became clear that the promoter had not done so. When the promoter found out that a survey was being carried out in May, its representatives asked whether they could join us; we said that they could. However, because of a misunderstanding we did not meet the two key contacts with whom we had dealt; one was on holiday and the other was not at the relevant meeting. We understood that the promoter felt that its role would be verification rather than involvement. No manpower was offered.

**Malcolm Thomson:** I will, if I may, ask a personal question. How old are your children?

**Kristina Woolnough:** You may ask if you can explain why it is relevant.

**Malcolm Thomson:** It is relevant because I would like to ask you whether you would let children under the age of, say, 10 or 12 play unsupervised on the Roseburn corridor.

**Kristina Woolnough:** My children are seven, nine and 11. They do not play unsupervised on the Roseburn corridor but I regularly take them there on cycle rides. When one is a beginner cyclist, one is obviously very wobbly. We do not have anywhere else to go that is safe. Because the corridor is close to us, we do not have first to drive so that the children can cycle, and we can access the city by bike from there.

We also walk along the corridor every morning with a number of other children as part of our safer route to school. The corridor is not a playground; we have never claimed that it is.

**Malcolm Thomson:** Do I take it that you would not allow your nine and 11-year-old children to play there unsupervised?

**Kristina Woolnough:** I am not sure how relevant my parenting skills are to the Edinburgh Tram (Line One) Bill.

**Malcolm Thomson:** I am interested in your attitude to the safety of any children playing there unsupervised.

**Kristina Woolnough:** Children do play there unsupervised.

**Malcolm Thomson:** Do you think that that is a good thing or not?

**Kristina Woolnough:** That is a parenting judgment; it is not a matter for me.

**Malcolm Thomson:** I am wondering whether risks may be lying in wait for children in the undergrowth at the sides, and whether there may be places where children could come to harm if left to play unsupervised. I was not wishing in any way to comment on your parenting skills.

**Kristina Woolnough:** Okay. I understand your question and I will answer you straight. I have on a number of occasions allowed my children to walk and cycle there unsupervised on local journeys to visit friends; and no, I do not think that there is any danger in the undergrowth.

**Malcolm Thomson:** Would you accept that others might take a different view?

**Kristina Woolnough:** Any perceived safety issues do not lie in the Roseburn corridor from Maiden Craig all the way up to Roseburn. I am not aware of any incidents to do with the safety of children there or in any other parts of the corridor.

**Phil Gallie:** You referred to the survey and you expressed disappointment that it was held during a period when children are on holiday. If the Roseburn corridor is, in fact, a leisure area, are there not likely to be more children around during holidays than during school terms—other than at peak periods?

**Kristina Woolnough:** It is possible that some children would be there during the holidays, although they would obviously not be using it as a route to walk to school, which is the main issue that I was thinking about. However, the survey was from 7 in the morning until 9.30, and that probably would not be when children would be there during the school holidays.

**Phil Gallie:** That is interesting and answers my question.

Is it fair to say that I do not feel that the promoter has played down the significance of the wildlife corridor at Roseburn? Indeed, it would be folly for the promoter to do so, given that it is doing all that it can to protect another wildlife corridor further along the route at Starbank. Why do you feel that they are talking down the value of Roseburn? Ms Raymond said that Roseburn was a far more important wildlife corridor and leisure area than Starbank.

**Kristina Woolnough:** You have described the dichotomy exactly. We cannot understand why the Roseburn corridor—an area that gets more use than the cycleway and walkway at Starbank—is acceptable for the tram when the Trinity end is not.

It may be that we are being sensitive, but a lot of disparaging language has been used. When we go to community liaison meetings, no measure is ever taken of the value that we put on the corridor. The committee has heard on a number of occasions during its evidence taking how emotional we get about it. That is because we care so much about it.

If someone is talking endlessly about dog excrement, which a number of rebuttals do, we wonder why they are not talking about the number of people who enjoy the birdsong. The equivalent

weighting is not given in the descriptive language that is used, and it is subjective—although our subjective is obviously different from the promoter's subjective.

**The Convener:** Ms Woolnough, can you give me some idea of the evidence on which you base your assertion that women prefer to walk in the dark along the Roseburn corridor, rather than in a well-lit area? I am slightly nervous of your comment in that regard.

**Kristina Woolnough:** The evidence was not about walking in the dark; it was about walking in extremely well-lit areas, particularly where there is no visibility down the corridor. My evidence is based on a local park, Ravelston park, where there was no lighting, although floodlighting has been put in. Women dog walkers became very anxious that they would be more visible as they walked through the park into the woods than they had hitherto been. In fact, the floodlighting was location specific, so it did not have the effect of lighting up the whole woods. It is about the feeling that there is nowhere to hide. I have used the Roseburn corridor at night myself, and I feel that I could jump into the undergrowth and hide myself if I needed to. I would be concerned about being between solid structures with lighting on me and nobody around; I would feel very uncomfortable in that case.

**The Convener:** Interesting.

There are no more questions from committee members. Ms Bourne, do you have any follow-up questions for Ms Woolnough?

**Alison Bourne:** I have just one quick question. I am not sure that I can remember the answer to this question, so I hope that you can. Do you remember how long ago the first CLG took place?

**Kristina Woolnough:** I believe that it took place as a result of the council requiring it of TIE, and I think that it must have been in 2003. It was certainly before the bill was introduced to Parliament, but it may have been in early 2004. I do not have a note of it, and I do not think that the remit has a date on it.

**Alison Bourne:** Would it be fair to say that the CLGs were going for—

**Kristina Woolnough:** It says on the remit that initial meetings would be held by mid-March 2004.

**Alison Bourne:** Thank you.

**The Convener:** Thank you, Ms Woolnough. We now move you on to addressing the issue of the alternative alignment on behalf of group 34. Mr Scrimgeour will be questioning.

**Graham Scrimgeour:** Could you describe the alternative route that applies to group 34 and the

benefits that it would have over the proposed alignment?

**Kristina Woolnough:** The route comes along Crewe Road South at the front of the Western general hospital, goes up Orchard Brae, into Queensferry Road, travels up towards the city centre over the Dean Bridge, into Drumsheugh Gardens and round into Palmerston Place, up to the Haymarket area at the top of Palmerston Place before turning left into Shandwick Place and the west end. One key advantage, from our point of view, is that that route would serve the Western general hospital at the front entrance which, as we heard last week, is supported by Lothian NHS Board. The other key advantage is that it is shorter and more direct and that it serves the Haymarket area at a distance from Haymarket station that is considerably less than the distance from Waverley station to the St Andrew Square stop. It also avoids the Roseburn corridor.

**Graham Scrimgeour:** In the rebuttal that Mr Oldfield made to your statement, he referred to that route including a large dog-leg. Do you agree with that assessment?

**Kristina Woolnough:** I believe that that is one of the occasions on which Mr Oldfield's rebuttal incorporated information that he had lodged for group 33 about the Craighleith Road alignment. That is an instance of when there has been confusion and duplication on all sides. The dog-leg is not relevant to our alignment. It is the promoter's Roseburn corridor dog-leg that is the very big dog-leg.

**Graham Scrimgeour:** Later in your witness statement you refer to constraints on the Roseburn corridor. I understand that you mean constraints to access, but the rebuttal statement refers to constraints in respect of construction and asserts that there are none. Were you referring to access or to technical construction difficulties?

11:30

**Kristina Woolnough:** I was probably referring to both, but access is important. The corridor is a narrow space and the indicative drawings do not explain how the tramline will fit. We are talking about access in terms of amenity compared with our alternative alignment, which has visible on-road accessibility. That must be an improvement on an alignment that cannot be seen and which cannot be easily accessed. I am also concerned that the promoter has described 24 access points as opposed to the current 18. Again, looking at the landscape and habitat management plan, I have not been able to find six new access points, so I am a bit confused about that.

**Graham Scrimgeour:** My understanding of the lighting issue is that, if you are in a brightly lit area

that is adjacent to an unlit area, when you look from the lit area to the unlit area, you cannot see anything; it is a completely dark space. Would you agree with that?

**Kristina Woolnough:** Yes.

**Graham Scrimgeour:** Was that your explanation with regard to the park in question.

**Kristina Woolnough:** Yes.

**Graham Scrimgeour:** I have no further questions at this point.

**Malcolm Thomson:** Do I take it that the references that we were looking at a few minutes ago in paragraphs 4 and 11 of the group 33 statement relate to the route alignment that you are now talking about in relation to group 34?

**Kristina Woolnough:** Are you using the group 33 document or the group 34 witness statement?

**Malcolm Thomson:** I am using the group 33 document. I just wondered whether paragraphs 4 and 11—

**Kristina Woolnough:** Do they contain the same points as the group 34 submission? Yes. I would say that those points are relevant.

**The Convener:** We are considering the group 34 witness statement rather than the group 33 document.

**Malcolm Thomson:** It was more the substance of the document that I was concerned with.

Ms Woolnough, are you suggesting that the route that you have described in evidence most recently is a more direct and user-friendly route to the city centre than that which is proposed by the promoter?

**Kristina Woolnough:** Yes.

**Malcolm Thomson:** Do you accept that it might be a longer route—although it would be physically shorter—because of the difficulties that we have discussed this morning, such as the amount of on-road running, the interference with on-road traffic and the sharpness of some of the bends?

**Kristina Woolnough:** I am not an expert and we hoped that the promoter would have come up with those kind of figures as part of its rebuttal.

It is also true to say that the council, which is the promoter, has a strategy of discouraging motorists from coming into the city centre. Having used Queensferry Road as it comes over the Dean Bridge, I can say that traffic in that area has reduced. I think that the existence of the tram would only add to that reduction.

**Malcolm Thomson:** Do you accept that the flows of traffic along Drumsheugh Gardens, Chester Street and Palmerston Place are greater

as a result of the central Edinburgh traffic management scheme that is being implemented at the moment?

**Kristina Woolnough:** I cannot say whether that is the case; I am not an expert and did not study the situation before and after. However, it seems to me that that is part of the city centre in which the council wants to discourage the use of cars. Given that the area comprises residential property and office accommodation, I would have thought that a tramline there would be beneficial.

**Malcolm Thomson:** When you talk about your proposed route being “more user-friendly”, are you thinking of it being user friendly for people on the tram or for people who live in the houses that the tram will pass?

**Kristina Woolnough:** I am talking about the purpose of a tramline, which is to get people on the trams and to serve key destinations. It should also be visible and accessible.

**Malcolm Thomson:** So you are thinking of visibility and accessibility rather than journey time.

**Kristina Woolnough:** I am also thinking of journey time but, again, the assessments have not been done, so we are only speculating in that regard.

Mrs Bourne and I were upset to find ourselves—as amateurs—in the position of having to come up with alternative alignments, not least because of the thought of the impact on other people. We have no wish to dump the alignment on other people; we are simply trying to protect the Roseburn corridor, which is used by people from all over the city, and to get the Western general hospital properly served. I do not feel comfortable imposing a tram alignment on other people, but the fact is that with on-road alignment with residences next to it there might be benefit from the tram, which your witnesses suggested in relation to Starbank Road. Where there is already traffic, tram traffic has less impact; there might be less noise impact and the tram might be beneficial.

**Malcolm Thomson:** You have heard and read the promoter’s evidence that certain options were sifted out at a fairly early stage because they were technically difficult or expensive. Do you accept that that happened?

**Kristina Woolnough:** I do not accept the remit that the experts were given; that is the difficulty. Mr Buckman described the objective in his evidence to us. We do not think that that should have been the objective; the objective should have been to meet public transport needs and reduce existing car use, not to reduce potential future car use, which the promoter’s alignment seeks to do. Those of us who live near Queensferry Road would love to see less traffic coming into the city.

The brief that the experts were given constrained them. We challenge the brief, not the experts in the way that you imply.

Because the sifting process was link based, the Crewe Road South option up Orchard Brae scored higher in the link-sifting process than did the Roseburn corridor options. The journey time using the Roseburn corridor must have been more important than the values that accrued to the Crewe Road South and Orchard Brae link.

**Malcolm Thomson:** On the dog-leg point, if one looks at the map one can see the difficulty of getting from the top of Orchard Brae to the end of Palmerston Place at West Maitland Street, which, as the crow flies, would be one side of an approximate rectangle. Your proposed route would go round the other three sides, as it would turn left at the top of Orchard Brae and go along part of the Queensferry Road. It would then turn right on to the Dean bridge and right again into Drumsheugh Gardens. In short, your proposed route would go round roughly three sides of something approximating to a rectangle.

**Kristina Woolnough:** But it is a small rectangle. The road configuration along Queensferry Road over the Dean bridge is not a turn, but a curve. I am not an expert, but I think that there is plenty of space. Your witnesses have agreed that the alignment is technically feasible. I accept their judgment, which is good enough for me.

**Malcolm Thomson:** It is technically feasible, but at a cost. You do not have regard to the cost. Is that the position?

**Kristina Woolnough:** We have a little rectangle in comparison with your very large half circle. We do not have an assessment of the cost, so I cannot comment on it.

**Malcolm Thomson:** Do you consider that Haymarket station would be better served by a tram stop on Palmerston Place or by the promoter’s proposed tram stop?

**Kristina Woolnough:** We did not specify where there would be tram stops. It is quite possible that a tram stop would be sited round the corner from Palmerston Place. I do not know; I am not an expert. We did not stipulate any stop locations along any of the route.

I do not accept the point about distance from Haymarket. The Haymarket stop—we do not know exactly where it will be—on the promoter’s alignment does not exactly serve Haymarket station either. We know that Haymarket station is to be reconfigured because it has no disability access. A lot of things are up in the air. I do not think that it is possible to say absolutely that the promoter’s alignment would better serve Haymarket station. As I said last week, our

alignment would better serve bus services. It would also reduce congestion at Haymarket Terrace. Again, I believe that one of the promoter's witnesses agreed that that would be the case.

**Malcolm Thomson:** As a basic proposition, do you accept that proximity to Haymarket station is desirable? In other words, the nearer the stop is to Haymarket station, the better.

**Kristina Woolnough:** I accept the general principle that public transport should be integrated. As I have said, I am not an expert on the subject, so I cannot say how that is done in specific locations. However, if the promoter's method of serving Waverley station is acceptable, why is it not an acceptable method of serving Haymarket? Many objectors find it hard to cope with the fact that the promoter uses one argument in one place and another one somewhere else just to suit its case. I think that objectors have never done that.

**Malcolm Thomson:** One of the arguments that you used earlier was that your proposed stop at Palmerston Place—or on West Maitland Street, east of Palmerston Place—would be nearer to Haymarket station than the proposed St Andrew Square stop is to Waverley station.

**Kristina Woolnough:** Correct.

**Malcolm Thomson:** If there is that distance between the proposed stop at St Andrew Square and Waverley station, is that not all the more reason why a stop at Haymarket should be as near as possible to Haymarket station?

**Kristina Woolnough:** You could argue it the other way around by asking why the stop that comes down on to Princes Street could not be nearer to Waverley station.

**Malcolm Thomson:** Does that mean that you are not going to answer my question?

**Kristina Woolnough:** Could you repeat your question?

**Malcolm Thomson:** If the existing proposed alignment cannot be closer to Waverley station than the proposed St Andrew Square stop is, is that not all the more reason to make the Haymarket stop as near as possible to Haymarket station? We need to bear in mind the fact that a number of trains pass through both stations.

**Kristina Woolnough:** "As near as possible" is a subjective phrase. Depending on the reconfiguration of Haymarket station, there is also a market to be served in the Haymarket area. If a stop were to be made on West Maitland Street, the Edinburgh International Conference Centre and all the businesses to the south or south east could be better served.

The promoter is fond of saying that choices have to be made. If our alignment serves the Western

general and saves the Roseburn corridor but is still pretty blooming close to Haymarket, surely it is a good choice and one that could be made.

**Malcolm Thomson:** But do you accept that the National Audit Office positively encourages easy interchange between heavy rail and tram?

**Kristina Woolnough:** Again, there is no evidence about the stop location that the promoter has chosen. I have to profess to ignorance about that. As I said last week, we could not find the stop location when we were in the library because it is part of the amendment. I would have a job, therefore, in saying that the promoter's stop is better than ours. It happens to be on the same side of the road as the station is, but that does not necessarily make it a better stop in terms of integrating trams and buses.

The National Audit Office has said that key traffic generators such as the Western general hospital and university buildings should be served. A balance has to be found and we think that the promoter has found the wrong one.

**Malcolm Thomson:** I presume you accept that the group 34 proposed route, which you have described, involves on-street running and potential conflict with traffic? Given that the route passes through a number of residential areas, do you also accept that access to some of those residential areas may be impaired?

**Kristina Woolnough:** Could you be more specific? The route along Queensferry Road is plenty wide enough. Orchard Brae is also pretty wide. I believe that the access to flats there is either by a separate road alignment or off Queensferry Road.

**Malcolm Thomson:** I ask you to imagine a tram coming up Orchard Brae towards Queensferry Road and to imagine the car drivers who want to access the flats in Orchard Brae Avenue.

**Kristina Woolnough:** The new flats?

**Malcolm Thomson:** Yes. A car driver trying to do that manoeuvre would have to turn right.

**Kristina Woolnough:** Yes, if the car was coming up Orchard Brae.

**Malcolm Thomson:** There is no problem for car drivers who are coming down Orchard Brae, but those who are coming up the road would have to turn right. The driver would have to wait until the road was clear for them to do so; they would have to wait for the oncoming traffic to pass.

**Kristina Woolnough:** They have to do that anyway.

**Malcolm Thomson:** Yes, but if the car had a tram behind it, the tram would be held up.

11:45

**Kristina Woolnough:** Yes, but that would happen with the on-street running on the rest of the alignment. Almost all the alignment is on-street. I am sure that, for the rest of the alignment, traffic problems of that sort have been investigated and decisions have been made on them. I do not see why it should suddenly be a problem here.

**Malcolm Thomson:** Is not one of the great advantages of the Roseburn corridor the fact that it would enable trams to move swiftly without conflicting with road traffic?

**Kristina Woolnough:** But they would conflict with pedestrians, wildlife, dogs, cyclists and so on. We are not clear whether there would be a substantial barrier. We are told that that will be decided. Far worse, unpredictable congestion or flow interruption could be caused on the Roseburn corridor than would be caused on-street.

**Malcolm Thomson:** Is it fair to suggest that the West End community council might not be particularly pleased to have the tram following your proposed route?

**Kristina Woolnough:** I am delighted that you asked me that question. I had hoped that you would. The West End community council is heavily involved in community liaison groups already, because the current alignment affects the West End community council area. I imagine that there is nothing new for the community council to deal with.

**Malcolm Thomson:** But it has not objected to the current alignment, has it?

**Kristina Woolnough:** I do not know. All I know is that it participates in the community liaison groups.

**Rob Gibson:** Given that we are talking about route selection and access to key traffic generators, how many people might be generated to travel daily by tram from the Western general hospital?

**Kristina Woolnough:** Again, I am not an expert, but we know that the footfall in that area is very high. I know that we are not allowed to talk about patronage, but we are not sure whether the patronage figure for that area was calculated on residential units alone or whether it incorporated other factors. Patronage was calculated at the route-sifting stage and we think that it was calculated on residential units alone. If that is the case, the calculation may not have factored in aspects such as the police station and the hospital.

I do not know the answer to your question, but I believe that the figure for people going to and from the hospital amounts to 7,000 footfalls and that the

figure for adjacent areas is also 7,000 footfalls. There is a new residential development across from the hospital, where the Telford College campus was. I do not believe that figures for that development have been factored in, even if the original calculation was for residential patronage.

**Rob Gibson:** Do you know what the footfall or patronage might be from Haymarket station?

**Kristina Woolnough:** I do not.

**Rob Gibson:** Would you suggest that Haymarket station, which is the third busiest station in Scotland, might have a larger effect on traffic generation than the Western general hospital would have?

**Kristina Woolnough:** If people get off or on at Haymarket station, it is obvious that they have not come with their cars. Therefore, I do not think that there would be any difference in traffic generation—if, by that, you mean car use—between the two locations. Integrating public transport is obviously a desirable aim, but we think that our proposed alignment would achieve that. Mrs Milne described how people flood out of Haymarket station and disperse, then flood back in again at night. They cross the busy Haymarket junction with no qualms, so we think that they would continue to be happy to walk over the road.

**Rob Gibson:** I will not rehearse the arguments about intermodal guidelines for movement between heavy rail and light rail. However, having remarked earlier on the promoter's playing up of an argument in one place and not in another, you gave me detailed figures for the Western general hospital but did not give me detailed figures for people getting off heavy rail at Haymarket and moving to light rail. To weigh up the traffic generation possibilities of Haymarket, would you not have to know the intermodal figures?

**Kristina Woolnough:** I need to clarify a couple of matters. First, Mrs Bourne prepared the evidence on the Western general. Secondly, I do not think that we are in disagreement. I agree that there should be intermodal connections at Haymarket station. We think that our proposal would achieve that, as well as serve the Haymarket area.

**The Convener:** Members have no further questions. Do you have a question, Mr Scrimgeour?

**Graham Scrimgeour:** I think that everything has been covered well, but Kristina Woolnough may want to add something.

**The Convener:** You cannot go on a fishing expedition. You must ask specific questions.

**Kristina Woolnough:** I am all fished out.

**The Convener:** I thank you for your evidence. I propose a five-minute break to allow Ms Woolnough to move across to the other side of the table. In the meantime, I remind those in the public gallery that they should not talk during evidence taking. Given your personal knowledge of the subject, I know that it must be tempting to contribute to what is going on, but I would rather that you refrained from doing that.

11:51

*Meeting suspended.*

12:00

*On resuming—*

**The Convener:** We will next address the proposed alternative route. Richard Vanhagen will be questioned by Ms Woolnough.

**Kristina Woolnough:** Mr Vanhagen, your proposed route is an alternative that avoids the Roseburn corridor. I presume that you value the Roseburn corridor as the other objector groups along the Roseburn corridor do.

**Richard Vanhagen:** Yes, I do. I agree fully with what has been said today.

**Kristina Woolnough:** You have also chosen an alignment that would serve the Western general hospital. Is that correct?

**Richard Vanhagen:** Yes. We are convinced that the tramline should pass the front door of the Western general hospital.

**Kristina Woolnough:** Your alignment differs slightly from those of other objector groups. In particular, it goes along Belford Road. What is the thinking behind that? Were you comfortable about having to choose an alternative alignment?

**Richard Vanhagen:** Like everybody else, I am not an expert; however, I felt that it was helpful and appropriate to consider an alternative route from the group's point of view. We discussed the matter as a group—I suppose because of the question of mitigation and the adequacy of that—and we considered an alternative route.

We observed that a dedicated bus service already serves the five art galleries, and we recognised the need for direct transport between them. We are conscious of the fact that people at the mound—tourists and the like—want to see all the galleries in Edinburgh, although they are spread out. However, because the bus runs only every 45 minutes, most visitors have to take a taxi if they are interested in visiting the Dean Gallery or the Scottish National Gallery of Modern Art. Many people express that interest—I have been there and have seen the large posters that are up; I am

conscious of the fact that many people would like to go to the galleries—but they feel that they cannot afford the time to do that. I have observed that as an individual, and I have heard people say that.

**Kristina Woolnough:** Objectors have had to propose alternative alignments although they are not experts—as you say, you have tried to be helpful. Great play has been made of the economy and speed of trams going along the Roseburn wildlife corridor. Do you think that meeting the existing public transport need, which your alignment meets, is more important than meeting the potential needs of the waterfront development?

**Richard Vanhagen:** Yes. The promoter said that it was lacking in radial routes from the waterfront to the city centre, and one can see, from a bird's-eye view, that the Crewe Road South alignment is a direct route—certainly, as far as the top of Orchard Brae and Queensferry Road. Looking at that and seeing the Belford Road possibility, that is why we opted for the alternative alignment. I initially thought that the line was going to run from Granton to Gyle; it was only some time later that the Haymarket issue became clear to me and to the group. We appreciate the interchange with Haymarket station.

**Kristina Woolnough:** And you think that your alignment meets that requirement.

**Richard Vanhagen:** We feel that it does. In one of the rebuttal statements, there is a photograph that is taken from Palmerston Place looking towards Haymarket station, which is clearly visible. That is not our photograph; it is the promoter's photograph. It is very close indeed. One can see Haymarket station as one comes to Palmerston Place and turns the corner.

**Kristina Woolnough:** It is there in front of you.

**Richard Vanhagen:** It feels as if one is actually there. There is no feeling of detachment.

**Kristina Woolnough:** Thank you. That is all that I have to ask Mr Vanhagen.

**The Convener:** Thank you, Ms Woolnough. Mr Thomson, do you have any questions?

**Malcolm Thomson:** Thank you, madam.

I would like to return to the tourist trail, as it were. Am I right in remembering that if one stands on the Coltbridge viaduct there is a little signpost to the footpath by the Water of Leith to the back of the Gallery of Modern Art?

**Richard Vanhagen:** Yes, there is.

**Malcolm Thomson:** That might be quite an attractive route for a tourist who has alighted from



a tram at the Coltbridge viaduct or thereabouts and who wanted to visit the galleries.

**Richard Vanhagen:** It is a signposted route for pedestrians. It is what you would call a tourist route, I suppose.

**Malcolm Thomson:** Would you accept the general proposition that the nearer a tram stop is to Haymarket station, the better it is likely to serve passengers using the station?

**Richard Vanhagen:** I have lived in Edinburgh all my life and have worked for 40 years in the west end. Like Mrs Milne, whose views I endorse entirely, I agree that the commuters spill out there: I was among them as I walked to work every morning. I mingled with those people, and I know that my colleagues' philosophy was that if one worked in the west end, one got off at Haymarket; if one worked in the east end, one got off at Waverley. It is only three minutes more in the train.

It is basically a commuter station. Haymarket station may be the third largest, but that is simply because it straddles the main line from Waverley to the west and north and to the west coast.

I have tried to use Haymarket all my life, but always found that Waverley was the hub; it was where one had to go to get to the east coast and to make connections. I expressed that view to Mr Buckman last week.

**Malcolm Thomson:** If you were designing a tram system to serve a railway station, would you accept the general proposition that the closer the stop is to the station, the better it is likely to serve it?

**Richard Vanhagen:** I agree. That is true.

**Malcolm Thomson:** Thank you.

**Richard Vanhagen:** I made the point last week that the Western general was an accepted distance away and that Haymarket station would seem to have priority over the Western general in that context.

**Malcolm Thomson:** Would you also accept the proposition that if the proposed tram cannot serve Waverley station from closer than a stop in St Andrew Square, that might be all the more reason to have a stop as close as possible to Haymarket station?

**Richard Vanhagen:** Waverley is the hub, and it always will be. I suspect that Haymarket station would have closed many years ago, along with Caledonian station, had it not been on the main line. Haymarket station is not well served with facilities; that is one of its main drawbacks.

**Malcolm Thomson:** As you have already pointed out, it is on the main lines to the west and the north.

**Richard Vanhagen:** It is on the main line, and therefore it has advantages.

**Malcolm Thomson:** Do you accept that your proposed route has certain disadvantages in that it runs for its whole length on road and mixes with other vehicular traffic?

**Richard Vanhagen:** That is an advantage.

**Malcolm Thomson:** Why so?

**Richard Vanhagen:** Because it will be able to absorb the tram traffic. Belford Road has buses, cars and heavy vehicular traffic. It is a busy road, and so is Orchard Brae. They serve the people. That is where the people are going; that is where they go to work and that is where there are businesses. I am absolutely convinced that that is the right route. The Roseburn corridor route connects nowt with nowt, as far as I am concerned.

**Malcolm Thomson:** Do you accept the general proposition that a tram that runs on an ordinary road and mixes with road traffic is likely to run slower than a tram that runs on a dedicated track?

**Richard Vanhagen:** I do not know. I am not an expert, but I would have thought that the most direct on-road route would be the preferred route. If the Roseburn corridor was not there, I imagine that that is the route that we would be talking about today.

**Malcolm Thomson:** Are you aware of the technical difficulties of getting a tram across Belford bridge, given the gradients that are involved?

**Richard Vanhagen:** Yes. I realise that it is not an ideal situation. I believe that, in past times, there has been talk of a span. I have no concrete evidence of that, but I believe that there was a proposal to span the area from the Dean Gallery grounds to the top of Douglas Gardens. I have not mentioned that simply because it is outwith my technical expertise. I am simply a layperson. I am just trying to be helpful.

**Malcolm Thomson:** Thank you, Mr Vanhagen. Thank you, madam, I have no further questions.

**Helen Eadie:** Mr Vanhagen, you used the word "commuters" throughout your responses to Mr Thomson's questions about the Haymarket site, but will you comment on the fact that others will use that site as well? If people have the option of switching from the mainline railway station to the tram at an interchange that is designed in a well integrated, intermodal way—perhaps people carrying suitcases or people like myself with two replacement hips—they will welcome the

opportunity to alight at Haymarket rather than travelling on to Waverley station.

**Richard Vanhagen:** I doubt that very much, because one of the problems with Haymarket is that it has steps. As I understand it, the platforms are at least 30ft below the road. In fact, the only exit that allowed people to come out at street level—the exit from platform 1 into the car park—has been closed, presumably for security reasons. People have to go down a great number of steps to get to the platforms from the entrance to the station. That is a problem. There are no lifts or escalators. Sometimes, one has to help people who have suitcases or children to get up or down the steps.

**Helen Eadie:** Bearing in mind that there are to be improvements to Haymarket station and that the committee visited the station and saw the special access arrangements, will you keep an open mind on the matter? Do you accept that that aspect will be improved and therefore that my point still stands? Somebody who has a mobility impairment or who is carrying luggage is much more likely to alight at Haymarket and access other transport options there.

**Richard Vanhagen:** I do not know about that. You are party to information that I have not seen. I asked the promoter last week whether it had commissioned a study from Network Rail about the integration of the tram and the train at Haymarket, but I got no response to that question. You are telling me something that I do not know. I would welcome improvements to access. However, at the moment, I would say that if I was carrying suitcases and the like I would go to Waverley station. When people phone up for advice they are told that Waverley is the hub and that is where they go.

12:15

I take Mr Thomson's point that if the tram stop were nearer Waverley station, that would make it more advantageous than Haymarket. The journey time between Haymarket and Waverley is only three minutes. That is why Haymarket has never been developed. The site is limited; Haymarket Yards has been sold. It is in a tight spot at the end of the tunnel from Princes Street gardens. That is not an ideal situation to develop.

That is my observation purely as a citizen of Edinburgh and is why the station to which I went as a boy is the same station to which I go as an elderly gentleman. I used to have to buy a ticket the day before travelling from Haymarket, because I could not obtain a ticket there. It is a rundown affair. I am pleased to hear that the station will be upgraded. That is long overdue.

**Phil Gallie:** You allege that your route would take less time than the longer Roseburn route. Do you take encouragement that your view is proved by the fact that that has been shown to be the case at Starbank, where the time that is spent on the road is shorter than that in the wildlife corridor?

**Richard Vanhagen:** I genuinely feel that. With tram priority, the route is the right one. I have no reservations about saying that. It is an on-road route. As I said last week, we are talking about an orbital route—Mr Oldfield uses that phrase—on the Roseburn wildlife corridor. If the route goes there and does not produce what we expect, we are stuck with it. An on-road route would provide a little more flexibility.

I realise that the route is a bit twisty from the top of Orchard Brae to Haymarket—the route will always be like that. If we are not prepared to span the Water of Leith, a difficulty arises. However, my proposed route is the quickest and most direct radial route from the Granton foreshore. I have no doubt of that.

**Phil Gallie:** Will you compare traffic density on the Belford Road route that you propose with that on the rather narrower and congested Starbank Road?

**Richard Vanhagen:** Starbank Road is not really what I am talking about; that is further down the route.

**Phil Gallie:** I am trying to obtain a comparison of traffic.

**Richard Vanhagen:** Crewe Road South is a wide road. The proportions are generous all the way up to Orchard Brae and on to Queensferry Road.

**Phil Gallie:** What about Belford Road?

**Richard Vanhagen:** Belford Road is busy. I use it all the time. Buses run on it and it handles the traffic adequately. That is a viable tram route.

**The Convener:** Other committee members have no more questions, but I will ask a question to clarify my thinking. Like you, I am not an expert, so I am taken by how firm you are about your route's desirability. Have you seen Mark Bain's rebuttal of your witness statement?

**Richard Vanhagen:** Yes.

**The Convener:** Paragraph 3.47 of that rebuttal says that the average gradient from Palmerston Place to Douglas Gardens and to Belford Road is 8.9 per cent. I understand from previous witness statements that Her Majesty's railway inspectorate does not allow a gradient of more than 8 per cent. How would you mitigate that problem?

**Richard Vanhagen:** I have talked about the span that has been suggested from the top of

Douglas Gardens to the grounds behind the Dean Gallery. Also, the tram has not been chosen, and we do not know what technical innovations are in progress. After all, none of us would have been talking about bendy buses or guided buses a few years ago. Technology will always bring improvements, so there may well be a tram that could be accommodated on the road, never mind having to go for an engineering solution.

**The Convener:** Do you accept that Her Majesty's railway inspectorate would discount the proposal completely, irrespective of what may or may not happen in the future, because of the gradient?

**Richard Vanhagen:** If that is the standard, one would accept that being on the road would require some engineering ingenuity to solve the problem.

**The Convener:** But currently it is a bit of a showstopper. Would that be accurate?

**Richard Vanhagen:** It is in the rebuttal. I am a lay person, just the same as you are. We are talking about technical issues and we are out of our depth. I know that there is an engineering solution to practically everything, if we really want it. I am sure that it exists.

**The Convener:** Are there any questions from committee members? If not, Ms Woolnough, do you have any follow up questions for Mr Vanhagen?

**Kristina Woolnough:** Just a few. With regard to the gradient, I imagine that you are thinking of some sort of infill or bridging arrangement to remove the gradient.

**Richard Vanhagen:** Yes.

**Kristina Woolnough:** When objectors devised the alternative routes, was it our understanding that the promoter organised the tram's gradient specification, and that it was part of the generic tram brief? I believe that the tram generic spec was changed from a 7.5 per cent gradient to 8 per cent, because of difficulties with the promoter's chosen alignment. Is it your understanding that when we were devising alignments the promoter set the gradient specification for the tram, as opposed to what appears to be related to HMRI?

**Richard Vanhagen:** Yes.

**Kristina Woolnough:** So it is possible that information has evolved, changed or been updated since we devised alignments.

**Richard Vanhagen:** Yes.

**Kristina Woolnough:** With regard to Mr Thomson's point about access to the modern art gallery, which is signposted at the Coltbridge viaduct, is it also the case that there are several tens, if not hundreds, of steps downwards?

**Richard Vanhagen:** There are 82 steps.

**Kristina Woolnough:** I have counted them, but I could not remember.

**Richard Vanhagen:** I regularly run up them, so I can vouch that there are 82. You are out of puff when you get to the top.

**Kristina Woolnough:** Would it be fair to characterise those steps and the possible walkway access to the modern art gallery, which has steps at the other end to get up to the modern art gallery—

**Richard Vanhagen:** I have not counted those, but there are a lot.

**Kristina Woolnough:** It is inaccessible unless you are fairly fit and healthy with no buggy or small children, and the access is fairly rickety, so you would not want to tackle it if you felt at all frail.

**Richard Vanhagen:** It is a tourist route for young, active people.

**Kristina Woolnough:** That does not compare with the access that you hope to provide with your tram stops at the gallery.

**Richard Vanhagen:** We would come to the front door. We are back to the Western general issue—entry to the gallery is by the back door.

**Kristina Woolnough:** And it is only for healthy people who can manage tens of steps.

**Richard Vanhagen:** Yes.

**Kristina Woolnough:** With regard to Haymarket station, the promoter's witnesses last week said variously that their proposed Haymarket Yards stop was 30m or 50m away from the main station. We have never specified where a stop would be in our proposed option, but Palmerston Place is 200m or so away from Haymarket station, so we are talking about a difference of perhaps 150m.

**Richard Vanhagen:** Yes.

**Kristina Woolnough:** Is it also the case that we have no detail of any Haymarket improvements? We do not know how there is going to be integration between the trams or the station, or whether there will be integration.

**Richard Vanhagen:** No.

**Kristina Woolnough:** So discussing integration with Haymarket might be a red herring, since a lot is unknown about Haymarket.

**Richard Vanhagen:** I have seen only one proposal to develop Haymarket, and that was 25 years ago. It was like Centre Point in London. The objectors to that proposal erected a barrage balloon to show the height of the complex sitting on Haymarket station. Out of that, we were going

to get escalators and lifts but, fortunately, it never came to anything.

That indicates the site's limitations. Any development would have to be vertical and would simply blot out views of the castle and the rock from the western side of the city. I worked in an even worse blot on the landscape when I worked in Canning House, which was 11 storeys high and a planning blight. I simply do not see how Haymarket will be developed with the selling of Haymarket Yards.

**Kristina Woolnough:** Do you believe that a tram stop on West Maitland Street in particular or Palmerston Place on the objectors' route would be more visible?

**Richard Vanhagen:** Yes. People who would come off the tram would see the station very clearly and would not be in any doubt about where they were.

**Kristina Woolnough:** So people who were coming out of the station would see the tram stop.

**Richard Vanhagen:** Definitely.

**Kristina Woolnough:** Do you think that the promoter has used the Roseburn corridor simply because it is there? Is serving existing public transport needs more important than the promoter's objective?

**Richard Vanhagen:** The weighting of speed and economy on the corridor has been overplayed and we would lose a great amenity asset by meeting the proposal. Our transport needs would be better served by the roads and what exists on the city's trunk routes, on which the tram routes should lie. The trams ought to go where the customers are, and they are on the roads. I do not think that the Roseburn corridor will generate 13 per cent of the scheme's patronage, if that is what Mr Buckman has said. We should not even contemplate running a tram through the Roseburn corridor because of the large residential catchment area there.

I have worked out by simple arithmetic that if there are trams every six minutes for 20 hours seven days a week—the figures are approximate—there will be more than 70,000 tram journeys a year on the Roseburn corridor. Going from no tram journeys and from there being only cycling and walking to 70,000 tram journeys would have an astronomical and catastrophic effect on the Roseburn corridor.

**Kristina Woolnough:** Is it fair to say that the objector groups are concerned about emerging information on the trams and that if some bits of the network are not built, the Roseburn corridor will have been sacrificed for nothing?

**Richard Vanhagen:** Yes.

**Kristina Woolnough:** Thank you, Mr Vanhagen.

**The Convener:** As there are no further questions, I thank Mr Vanhagen for his evidence. He can now leave the table. Ms Woolnough might or might not like to stay where she is.

Ms Woolnough will speak in a slightly different capacity and address the issue of alternative alignment on behalf of group 45. As there is no questioner from group 45, she can make a brief opening statement and address any issues that arise from the promoter's rebuttal statement or from her rebuttal of the promoter's witnesses. Mr Thomson may then cross-examine before she makes a closing statement. I invite Ms Woolnough to make brief opening remarks.

**Kristina Woolnough:** Many comments that I wanted to make have already been made this morning. I agree with those comments and share concerns about the impact on the wildlife corridor.

There are more than 200 members of the friends of the Roseburn urban wildlife corridor group—I think that there are 227—from throughout Edinburgh and beyond Edinburgh. The group is concerned with the wildlife corridor and not so much with the tram's impact on residents who live adjacent to the corridor. It focuses on wildlife, human usage and so on.

I have nothing else to add—I think that I am exhausted.

12:30

**The Convener:** Thank you. I am sure that Mr Thomson will bear that in mind when he questions you.

**Malcolm Thomson:** I wonder whether I could ask a question while the strength is holding out. As I understand it, the group 45 route that you are proposing is the same as the group 34 route, at least so far as it runs along Crewe Road South and up Orchard Brae.

**Kristina Woolnough:** That is correct.

**Malcolm Thomson:** Then it parts company from route 34 and turns right instead of left.

**Kristina Woolnough:** That is correct—on to Queensferry Road.

**Malcolm Thomson:** Then it would turn up Queensferry Terrace. It would not go across Belford bridge, but would turn into the grounds of the Dean Gallery.

**Kristina Woolnough:** That is correct.

**Malcolm Thomson:** Would it join Belford bridge before or after it crosses the Water of Leith?

**Kristina Woolnough:** I am not a technical expert, but the idea was that there would be a bridge crossing there, spanning the Water of Leith and adjacent to the existing Belford bridge, and that that would avoid the gradient issue at the bottom of Palmerston Place.

**Malcolm Thomson:** Do you envisage some sort of earth works within the Dean Gallery property to effect a change of level?

**Kristina Woolnough:** I would imagine that the bridge that I am describing would take off from part of the way down the slope from the Dean Gallery.

**Malcolm Thomson:** So the new bridge would be at a different level from the existing one.

**Kristina Woolnough:** It would be slightly higher, but I am not an expert. The route was proposed in 1947 for a road alignment, so the issue of crossing the Water of Leith has fascinated and caused trouble for city engineers for ever, as far as I can tell.

**Malcolm Thomson:** From Palmerston Place, do you favour the Rosebery Crescent or the Coates Gardens option, or are both of them involved?

**Kristina Woolnough:** We left that open, on the basis that we are not technical experts. The purpose of choosing an on-road alignment was to illustrate that there are ways of serving the Western general and avoiding the Roseburn corridor. There were numerous on-road alignments, but while this one moves away briefly from the west end along Queensferry Road, it does a very tiny dog-leg in comparison with the promoter's route. When one sees all the routes on a map one can see that this route is much shorter—as is group 34's route—than the promoter's route.

**Malcolm Thomson:** What is the purpose of using Rosebery Crescent or Coates Gardens rather than going down to West Maitland Street and turning left there?

**Kristina Woolnough:** To use a phrase of which the promoter is fond, it was illustrative of the fact that there are several different alignments to get to the Haymarket area. It is not a case of one alignment set against another among the objector groups; it was that the alignments are all illustrative of the fact that one can get to the Haymarket area along a route different from that which the promoter is proposing, and with a shorter distance involved.

**Malcolm Thomson:** Would you propose a tram stop on Rosebery Crescent or Coates Gardens, rather than on Haymarket Terrace?

**Kristina Woolnough:** I have no proposals for tram stops. I would leave that to the experts.

**Malcolm Thomson:** But would I be right in thinking that you would see the advantage of having a tram stop there to serve Haymarket station?

**Kristina Woolnough:** The intention is not to acknowledge such an advantage; it is simply to demonstrate another way of getting to the Haymarket area. It is not the case that I was thinking, with my group 45 hat on, "Ooh, we must serve Haymarket station better", or that, for another group, we thought, "That will not serve it so well." We simply wanted to illustrate that there are different ways of getting to the Haymarket area, which avoid the Roseburn corridor. We feel that the promoter should re-examine those alignments. That was the purpose of suggesting them.

**Malcolm Thomson:** Could we save time by agreeing that a lot of the points that I made to you in relation to group 34 with regard to on-road running and the route passing residential areas apply equally to this option?

**Kristina Woolnough:** I would repeat what I have already said, which is that we see a lot of merit in on-road running as opposed to—

**Malcolm Thomson:** I was assuming that.

**Kristina Woolnough:** Well, I will just put it on the record.

**Malcolm Thomson:** Are you recommending to the committee the group 34 proposal or the group 45 proposal that you are presently discussing?

**Kristina Woolnough:** If I am allowed to be so presumptuous, I recommend to the committee that the route alignment choices be re-examined, reappraised and re-investigated to avoid the Roseburn corridor and to ensure that the remit of tramline 1 is to serve existing public transport needs rather than developers on the waterfront. The exact detailed technical specification is a matter for experts, but it depends on the original remit for the tram.

**Malcolm Thomson:** Thank you, Ms Woolnough.

**The Convener:** Do committee members have any questions?

**Rob Gibson:** When you suggested that there should be a crossing at the Water of Leith beside Belford bridge, you said that it might be at a higher level and then mentioned a road that was proposed in 1947. Have stricter guidelines on the conservation of areas such as the west end of Edinburgh been introduced since then?

**Kristina Woolnough:** I imagine so. However, except for the section along the Granton waterfront, the tramline 1 alignment impacts entirely on conservation areas or world heritage sites. With such guidelines, we are talking about

degrees of impact, rather than wholesale impact. There have been many changes since 1947 and, in any case, Patrick Abercrombie's proposal at the time was for a road.

**Rob Gibson:** I want to focus on that aspect rather than on wildlife corridors or whatever else. I imagine that the powers that be would oppose the placing of a second bridge at a higher elevation than Belford bridge.

**Kristina Woolnough:** Actually, in that area, there is a modern hotel that I am sure has no heritage value at all. I do not think that a second bridge would impact on views or vistas, but I suppose that that depends on the bridge's design. I would not say that that would necessarily be the case.

**Rob Gibson:** So the bridge would be an additional new structure.

**Kristina Woolnough:** Yes. However, we envisage that the bridge will have minimum, if any, impact on built heritage, because it will run diagonally over an existing bridge. If it is well designed, it should not impact on Belford bridge. Indeed, it will be up against a hotel of modern design that could do with being disguised. I would not assume that heritage bodies would take issue with the proposal, because we do not know.

**Helen Eadie:** If the committee was minded to lodge an amendment that would place the tramline along the Western general hospital route, what would be your reply to the claim that such a move would delay the bill by 18 months or more and put the whole scheme at risk?

**The Convener:** I must interrupt, Mrs Eadie—I seem to interrupt everyone at these meetings. That matter should really be discussed by the committee, not with this witness. It is up to the witness whether she wants to answer, but I have to tell her that the committee will consider the matter in its totality.

**Kristina Woolnough:** I would so love to answer the question. The important thing is to get the project right, even if that involves a delay.

**Helen Eadie:** Even if that risks the whole scheme?

**Kristina Woolnough:** Yes, because we should not spend lots of money on the wrong scheme. For reasons that are not clear, it appears to be serving developers at the waterfront, but what happens if they do not build anything there? I understand that the property market is in a bit of jeopardy. A whole set of assumptions has been made; we should do away with those assumptions and concentrate on what we know. We know that people walk and cycle along the Roseburn corridor and that they need to get to the Western general hospital and Edinburgh royal infirmary. We must

remember that there is a proposal to move the sick kids hospital to the ERI. People in Edinburgh feel desperate about such issues; in fact, Mrs Eadie herself highlighted the issue of access to hospitals. Why are we unable to address what we know?

I am sorry—that was a bit of a rant.

**The Convener:** As members have no further questions, I invite Ms Woolnough to make some brief closing remarks.

**Kristina Woolnough:** I am silenced. I thank the committee very much, and I apologise if I have come across as a little over-aggressive or over-assertive. The process is quite stressful.

**The Convener:** We prefer to describe you as an enthusiast.

**Kristina Woolnough:** Thank you. That is very polite.

**The Convener:** There being no further questions for Ms Woolnough, I thank her very much for her evidence.

It is now 12.40. I propose to take a one-hour lunch break and invite everyone to return at 1.40, when we will resume with evidence taking from Steve Mitchell, Scott McIntosh and Tim Blower.

12:40

*Meeting suspended.*

13:43

*On resuming—*

**The Convener:** Good afternoon. Before we recommence our oral evidence taking, I remind Steve Mitchell that he is under oath and I now invite Tim Blower to take the oath.

TIM BLOWER *took the oath.*

**The Convener:** I am afraid that we will have to stop the meeting temporarily, while we sort out some problems with the sound system.

13:44

*Meeting suspended.*

13:45

*On resuming—*

**The Convener:** I gather that we are now back in business. You will hear me much more loudly than you did before—how unfortunate for you.

Steve Mitchell will be questioned on noise and vibration during construction by the representative of the promoter, Malcolm Thomson, and will be cross-examined on his witness statement and

rebuttal witness statement on this issue by Mark Clarke for group 34; Ian Dennison, for group 35, on noise only; Andy Aitken, for group 35, on vibration only; and on his witness statement by Lord Marnoch, for group 43. The witness will then be re-examined by Mr Thomson.

I do not propose to repeat that rather lengthy introduction for each witness but would refer all questioners to the helpful guide and timetable for oral evidence that has been sent to them and which clearly indicates which groups may cross-examine the witness and what type of cross-examination they may undertake. Needless to say, I will always guide you as to what is correct.

**Malcolm Thomson:** I have no questions in relation to construction but I will have one in respect of operation in due course.

**Ian Dennison:** Our questions are limited at this point, but I have some.

The predicted construction noise for Upper Coltbridge Terrace is 88dB(A) for 12 hours of the day for enabling works. Reference to British standard 5228 shows that a pneumatic breaker breaking concrete can produce a noise level of 88dB(A) at 10m. Chapter 13.3.3 of the environmental statement says that the mitigation predictions are, at best, 10dB(A). By some simple arithmetic, we arrive at 78dB(A), which exceeds your adopted criteria code of construction by 3dB(A). What do you propose to do about that?

**Steve Mitchell (Environmental Resources Management):** We propose to follow the code of construction practice and the obligations therein, which is to minimise the noise as far as we practicably can. There are noise limits that are set at 75dB(A) for the day time. The requirement is to achieve those if we practicably can and to do the best that we possibly can to minimise noise if we cannot, which is what will happen in this case.

There is a possibility that, with regard to the very closest properties—one of which you have, understandably, chosen as your example—it could be impractical to achieve 75dB(A) and we might have a residual noise impact of 78dB(A).

**Ian Dennison:** Would it be possible, prior to construction, to put mitigation measures that might have been eventual operational mitigation or an additional construction mitigation?

**Steve Mitchell:** If that is practicable—and it sounds like it might be—that would be one of the considerations in testing the best practicable means.

**Ian Dennison:** If you were still not able to reach the limits in the code, would it be practicable to provide temporary alternative accommodation for the people suffering the noise?

**Steve Mitchell:** I doubt whether that would pass the best-practicable-means test. There have been some cases of relocation for some major engineering projects, including railways. I would not put the example that you have given me in that category, however, primarily because of the duration of the event—which will be quite short—and the extent of the noise levels. The cases in which the best practicable means have included relocation tend to involve night works over a long period of time that affect large numbers of people. I do not believe that any of those tests apply in this case.

**Ian Dennison:** The purpose of the question was to draw to your attention the effect over and above the limits that you set. I am simply asking that you give due consideration to the plight of those in Upper Coltbridge Terrace.

**Steve Mitchell:** The contractor is required to give due consideration. That is why we have written the code. Best practicable means might sound like a fudge factor—people have put that to me—but there is a lot of case law that tests it. It can be onerous for contractors because they have to do everything they can. They can do a lot; we have specified a reduction of 10dB(A) but that is an approximation and they might be able to do better than that. If it is possible to do better than that, City of Edinburgh Council environmental and consumer services department has an obligation to check that the contractor is doing so.

**The Convener:** We move to Mr Aitken, who is asking questions on vibration only for group 35.

**Andy Aitken:** In your rebuttal of the group 35 vibration report, you talk about the vibration construction management programme, which is to be

“agreed between the Contractor, tie and The City of Edinburgh Council. This programme will include the location and frequency of readings and will identify to whom the results should be made available.”

I am anxious to know why you did not adopt the guidelines of BS 5228 for noise and vibration control in construction in open sites, which suggests clearly that the early establishment and maintenance of good relations with people who live adjacent to sites is important and that the formation of liaison committees with members of the public for longer-term projects needs to be considered. We have suggested several times that we would like the promoter to set up a residents construction liaison group and you have not rebutted that comment. Will you confirm that you agree to our request in principle?

**Steve Mitchell:** First, I got the impression that you were reading something when you said that the results should be made available. Were you quoting me on that point?

**Andy Aitken:** Yes. I was reading your rebuttal of the group 35 vibration report, section 3.2.

**Steve Mitchell:** My rebuttal of—

**Andy Aitken:** Dr Irwin's report.

**Steve Mitchell:** Sorry, bear with me while I find it; I have quite a lot of papers relating to this group.

**Andy Aitken:** It is on page 2 of the rebuttal. The question is simple. We would like to see a liaison group, because it is practical and is part of the guidelines of BS 5228.

**Steve Mitchell:** The reason I am struggling slightly is that as far as I am aware, from having vetted the code of construction practice, it specifically requires compliance with British standard 5228, which is highly relevant in this case.

The environmental and consumer services department will play a part in monitoring vibration results and deciding who should get them and when, because it has obligations to represent the public in these areas. That is why it will deal with the detail of how the information is disseminated. The code of construction practice has a whole section on community liaison, who should be talking to whom and what information should be set out. I rather expected that that would cover your question.

**Andy Aitken:** The liaison group does not seem to be mentioned, so I am asking that it be considered.

**Steve Mitchell:** I think it will be considered.

**Andy Aitken:** In this case, it is important because the local authority is both the promoter of and the jury in the work. It is important that residents feel that they have a contribution to make. Mr Dennison's example is a perfect case.

**Steve Mitchell:** Page 18 of the code of construction practice says:

"Without prejudice to the other requirements of this Section, the Contractor shall comply with the recommendations set out in BS 5228 *'Noise Control on Construction and Open Sites'*."

There is no intention not to use the code of practice. It is tried and tested and the contractor is required to use it.

**Andy Aitken:** I take it that we will be having a residents liaison group.

**Steve Mitchell:** I am afraid that I do not know the details of that.

**The Convener:** I call Lord Marnoch for group 43.

**Lord Marnoch:** I have no questions.

**The Convener:** Thank you.

Mr Clarke for group 34.

**Mark Clarke:** I have several questions on construction matters, but they also relate to operational issues as they primarily link to the baseline survey.

Do you agree that the change in ambient noise levels that are produced at sensitive receptors is an important consideration in assessing the noise impacts of a proposal such as tramline 1 and that we should get an accurate figure?

**Steve Mitchell:** We are in danger of moving to the next topic. Many operational phase noise guidelines and standards relate to the background conditions, but construction noise standards—certainly for daytime—do not. As you know, the vast majority of the works, certainly in the Roseburn corridor, will be done in daytime. The noise standard guideline, if you like, is set out in "Construction Site Noise: A Guide to Contractors". The document, which was produced in 2000 by the City of Edinburgh Council environmental and consumer services department, sets a limit of 75dB(A). I am happy to give you a copy of the document if you have not had a chance to see it.

That number is not dependent on the baseline. An assessment of construction noise for the daytime can be done without knowing the background at all.

**Mark Clarke:** Do you accept that residents who live along the Roseburn corridor currently encounter levels of noise from the corridor that are much lower than the 75dB(A) to which you refer?

**Steve Mitchell:** Of course.

**Mark Clarke:** Do you therefore accept that the construction works along the Roseburn corridor will cause a serious disturbance to them?

**Steve Mitchell:** They will elevate the ambient noise levels considerably. People will be very aware of the construction noise, but the Control of Pollution Act 1974 does not set noise limits. The act recognises that construction noise is a result of construction. It also recognises that construction happens and that it should not be prevented due to noise. In my experience, no project has ever been prevented because of construction noise. There will be some elevated noise levels and I am afraid that some residents will not enjoy that, but we are trying to minimise that disturbance and to achieve the standards that the council has always used. That is what is required of us.

**Mark Clarke:** But is it not the case that we are free at this stage to set an appropriate noise level to minimise the disturbance for the residents of the corridor? It may well be that 75dB(A) is not appropriate in this case.

**Steve Mitchell:** I am not sure that we are completely free to set noise standards. We are not doing anything new. The construction project is



taking place in a quiet area—I am happy for you to quote me saying that it is a quiet area. That happens. The noise standards that we use are practicable. There is nothing new about this case. People are affected by construction noise, but it comes and goes. It is transient, which is why it has in my experience never been a reason to stop a project being constructed.

**Mark Clarke:** But it is a planning consideration.

**Steve Mitchell:** It may be a planning consideration, but as I say it has never been one that has overruled a project.

To answer your question, I am not sure that we should set a new standard. I would feel much more comfortable if we set limits and standards that are based on experience and have been tried and tested in the past. That is what we have done.

**Mark Clarke:** As I understand it, the limit of 75dB(A) was taken from a Department of the Environment publication.

**Steve Mitchell:** Advisory leaflet 72 is rather old and is out of print. However—perhaps I should have submitted this document to the committee—the document “Construction Site Noise: A Guide to Contractors” is much more recent, as it was produced by City of Edinburgh Council in August 2000. In that short one-page document, the final paragraph on noise limits states:

“Noise affecting residential premises is likely to be restricted to a maximum  $L_{Aeq}$  (12 hour) of 75 dB.”

14:00

**Mark Clarke:** You will understand that I am at somewhat of a disadvantage in that I have not previously seen that document, which was not quoted in the environmental statement.

**Steve Mitchell:** It is quoted in the code of construction practice.

**Mark Clarke:** But not in the environmental statement.

**Steve Mitchell:** We do not quote everything that we ever use in environmental statements.

**Mark Clarke:** I understand that the environmental statement refers to the DOE advisory leaflet and I had some concern over the way in which that leaflet had been interpreted. That is why I have pursued the point.

**Steve Mitchell:** I can understand that. Most local authorities, including the City of Edinburgh Council, have adopted that DOE guidance, which I think was published in 1976.

**Mark Clarke:** However, does the DOE guidance give two separate standards?

**Steve Mitchell:** Yes. The City of Edinburgh Council has chosen the 75dB(A) standard.

**Mark Clarke:** The council chose the 75dB(A) standard, but that is not necessarily the standard that should apply for the Roseburn corridor. Let me just read what the leaflet says about the two standards:

“the noise level outside the nearest occupied room should not exceed:

- 75dB(A) in urban areas near to main roads in heavy industrial areas; or
- 70dB(A) in rural, suburban and urban areas away from main road traffic and industrial noise.”

Given that your documentation describes the Roseburn corridor as a peaceful environment, it seems to me that the corridor would sit better with the 70dB(A) standard than the 75dB(A) standard that has been used.

**Steve Mitchell:** It may seem that way to you, but it does not seem that way to the council.

The final section on noise in the code of construction practice—paragraph 6.1(g) on page 18—refers to the guidelines contained in “Construction Site Noise: A Guide to Contractors”.

**Mark Clarke:** I want to make another point about the choice of the 75dB(A) construction noise standard, which you say is referred to in that council guideline. That guideline seems to conflict significantly with the World Health Organisation guidelines for community noise. The levels that the WHO refers to are some 10dB(A), 15dB(A) or even 20dB(A) below the level that you suggest should be accepted by the people of the Roseburn community and others of a similar ilk who live near where tramline 1 is to be situated.

**Steve Mitchell:** I am sorry, but I am not sure of the question.

**Mark Clarke:** Why should we not use the WHO guidelines?

**Steve Mitchell:** There are a whole load of reasons. First, the WHO does not set standards but offers guidance on health effects. I pointed that out in my evidence, so I will not quote it again. That point is clear.

**Mark Clarke:** So despite the WHO's suggestion that individuals will suffer health effects if, for instance, they encounter an  $L_{Aeq}$  level in excess of 55dB(A) in outdoor areas, we should ignore that guidance and treat 75dB(A) as acceptable?

**Steve Mitchell:** I do not think that there will be health effects due to construction noise. You will not find that written down. The main reason why there will be no such effects is that construction is short term.

In the case of the Roseburn corridor, the construction will bother some people. There is no point pretending otherwise. Construction projects

bother people all the time, but the view of regulators all around the country—in the present case, the City of Edinburgh Council is the regulator—is that if the construction period is short and especially if the work will be done during the day time only, the nuisance that they cause is a necessary evil. The construction in the Roseburn corridor will be short term and intermittent. The WHO guidelines are not terribly relevant because the construction process will have such a short duration.

**Mark Clarke:** I live in Craigleith Drive. You refer to the enabling works to the Craigleith Drive bridge as being short term. In your estimation, how long will that short-term piece of work take?

**Steve Mitchell:** It might be better to ask one of the engineers—possibly Scott McIntosh, who is sitting on my right—about that. I would not want you to think that, because the tram might take two or three years to construct, the enabling works could take two or three years. I do not know the engineering detail of the case to which you refer, but even if the works were to last a few months, the noisy activity, which Mr Dennison asked me about earlier, would last for a much shorter period. One day something noisy will be done, but the next day things will be bolted or fixed, which will be much quieter. The length of time involved will probably be a matter of a few months or weeks, but within that there will be quiet spells. There are many reasons why construction noise levels much higher than those accepted for operation are permitted and the guidance that we use daily recognises that.

**Mark Clarke:** In table 13.3 in the environmental statement, why do you quote  $L_{Aeq}$  levels for the enabling works of 84dB(A) in Craigleith Bank and 88dB(A) in Balbirnie Place, for example? I understand that those are average noise levels. Are you saying that, during the enabling works, the average noise levels will be of that order?

**Steve Mitchell:** We need to be careful when we use the word “average”; I may come back to that later. If we use it in the general sense, the figures represent a 12-hour average. However, I would not use the word “average”. The figures are the predicted noise levels over 12 hours. The table to which you refer does not take into account mitigation, so although the levels in Craigleith Bank could be as high as 84dB(A), I believe that they will be much lower than that, with mitigation.

I think that you are suggesting that the noise levels could be 84dB(A) on average throughout the enabling works period. That is certainly not the case. The figures provided in the table are worst-case figures. The title of the table might even say that; I do not have it in front of me. However, the accompanying text certainly makes it clear that when we do an environmental assessment we

assess the worst case—for me, that means the noisiest occasion. In other words, the figures are what I would expect on the worst day of construction. There will be many days when construction is quieter than that, particularly after mitigation is taken into account. Do you see what I mean when I say that we should be careful when we talk about averages?

**Mark Clarke:** Yes. I must say that what you have just told me gives me some comfort, but none of that is apparent from the accompanying information.

**The Convener:** I intervene to remind Mr Clarke that we should be focusing on the rebuttal witness statement and that you should be posing questions. As anything you say is not being said under oath, it will not be considered by the committee.

**Steve Mitchell:** I hope that there is a section of the environmental statement that makes it clear that those noise levels are worst-case figures; I am sure that there is—it is just that I cannot find it at the moment.

**Mark Clarke:** To be fair to you, the title of the table is “Predicted Worst Case Daytime (Facade) Construction Noise Levels”.

**Steve Mitchell:** Thank you.

**Mark Clarke:** However, when I read the table and looked at the various figures, my understanding was that those were worst-case levels that would persist throughout the construction period.

**Steve Mitchell:** I can only apologise if that was your reading of it; that was certainly not what we intended. I hope that I have clarified matters. I suspect that the environmental statement contains an explanation that makes the situation clearer. It may be that you took a worst-case view of the information because you were concerned about the potential noise levels.

**Mark Clarke:** That is all the questions that I have on construction.

**The Convener:** Do committee members have any questions?

**Phil Gallie:** I would just like some reassurance. I accept most of what you say about inevitable construction noise that may at times be very annoying to people. However, these days, European law and the European Court of Human Rights play a big part in everyday life and there can be a tendency for people to go to litigation. I would hate to think that City of Edinburgh Council, or anybody else, would have to defend itself in external courts against charges that noise levels had exceeded the 75dB(A) or 70dB(A) levels. Are you content that we are not opening a Pandora's box?

**Steve Mitchell:** Yes. There is nothing new here; this is not an unusual construction project. In fact, the works on the Roseburn corridor are really quite minor in general terms. Large structures with deep foundations and all sorts of elaborate engineering design will make much more noise than the work on the Roseburn corridor. I work in London and infrastructure work often goes on in close proximity to people.

**The Convener:** Any other questions?

**Malcolm Thomson:** I have no more questions.

**The Convener:** I thank Mr Mitchell for that first part of his evidence. We now move on to the issue of noise and vibration during the operation of the tram. We will hear the objections of groups 33, 34, 35, 36, 43 and 45.

**Malcolm Thomson:** Mr Mitchell, what comfort should objectors take from the noise and vibration policy?

**Steve Mitchell:** Overall, the noise and vibration policy will deliver a responsible level of noise and vibration control, consistent with best practice within the industry. The policy will ensure that a fundamentally quiet tram system is built and operated. I expect the policy to result in substantial lengths of noise screens providing substantial noise reductions to a large number of residents along the Roseburn corridor. The policy will also ensure that the system is designed and operated to the best vibration standards that have been adopted across the industry. It will also ensure that disturbance to residents is avoided.

I know of three relevant noise and vibration policies in the United Kingdom—in Birmingham for Centro; in Nottingham for the express transit; and in London for the docklands light railway. I discussed those three policies with the City of Edinburgh Council environmental and consumer services department when we started work on the Edinburgh tram noise and vibration policy. I worked with the department to produce the policy, and the department has endorsed the final policy. The policy has also been accepted by TIE and the design team as being reasonable and deliverable.

The policy uses noise targets equivalent to those set in the other policies that I have just mentioned and in several areas it is more comprehensive than the other policies. I know of no better tram noise and vibration policy; I do not know of any objectors who have identified a better tram noise and vibration policy; and the three expert witnesses on noise and vibration—representing groups 35 and 43—have not quoted a better policy from anywhere else.

I have advised the promoter that the bill should be amended to require the noise and vibration policy to be approved and enforced by the City of

Edinburgh Council environmental and consumer services department, in the same way as it enforces and polices its statutory duties. I understand that the promoter is happy to make that commitment.

**The Convener:** I invite Mr Dennison to ask questions on noise only for group 35.

**Ian Dennison:** Mr Mitchell, I have a very large number of questions for you. I fear that we will be under some time pressure so I request that you keep your answers brief.

The first question relates to our rebuttal of your witness statement sections 2.1 and 3.4. Do you agree that the conclusions drawn in the environmental statement on noise mitigation for the Roseburn corridor are calculated from the predictions of tram noise impact, which, in turn, are relative to noise levels that were set with guidance from available standards?

14:15

**Steve Mitchell:** I am sorry, but I must ask you to repeat that. I was just finding the right document.

**Ian Dennison:** Do you agree that, in the environmental statement, the conclusions that are drawn on noise mitigation for the Roseburn corridor are calculated from the predictions of tram-noise impact which, in turn, are relative to noise levels that were set with guidance from available standards?

**Steve Mitchell:** Yes.

**Ian Dennison:** Do you agree that allowing tramline 1 noise limits to be guided by a standard whose noise levels are prohibited for application to a scenario such as tramline 1 would be a legitimate concern for Parliament, the public and residents of the Roseburn corridor?

**Steve Mitchell:** I am sorry, but that is a very long written question. Perhaps you could repeat it.

**Ian Dennison:** Do you agree that allowing tramline 1 noise limits to be guided by a standard whose noise levels are prohibited for application to a scenario such as tramline 1 would be a legitimate concern for Parliament, the public and residents of the Roseburn corridor?

**Steve Mitchell:** I think that I understand the question. I do not think they are prohibitive.

**Ian Dennison:** The question is whether you agree that such a prohibited application would be cause for concern.

**Steve Mitchell:** I really do not understand the question. I am sorry. Could you rephrase it for me?

**Ian Dennison:** I will move on, and we will return to that question.

Section 13.5.2 of the environmental statement says that if

“the instantaneous ‘peak’ as the tram passes ... exceeds 82 dB a significant impact is considered to occur, based on guidance in PAN56 on prevention of sleep disturbance.”

As that is the only guidance that is cited for peak noise, will you confirm that adoption of that 82dB noise level by the environmental statement was based on guidance from planning advice note 56?

**Steve Mitchell:** Yes—I think that it was based on guidance from PAN 56.

**Ian Dennison:** Do you have a copy of PAN 56 with you?

**Steve Mitchell:** Yes.

**Ian Dennison:** I invite you to turn to paragraph 52. As the committee may be aware, PAN 56 presents all its guidance on noise levels in annex 1, which is entitled “Noise exposure categories for dwellings”. Could you please read to us the first sentence of paragraph 52?

**Steve Mitchell:** I would like to put the matter in context.

**Ian Dennison:** Can you answer the question?

**Steve Mitchell:** I am going to answer the question. Paragraph 52 of PAN 56 is under the heading, “Residential Development and Transport Noise”. The section above that talks about noise exposure categories for new housing. I can paraphrase paragraph 52 to save time.

**Ian Dennison:** Please read the first sentence of paragraph 52.

**Steve Mitchell:** The sentence reads:

“It is important to note that the Noise Exposure Categories apply only where consideration is being given to introducing new housing development into an area with an existing transport noise source and not in the reverse situation.”

**Ian Dennison:** I put it to you that a new tramline passing through mature housing—the Roseburn corridor—is precisely that reverse situation: a situation that disallows the noise levels of PAN 56 to be used as credible guidance.

**Steve Mitchell:** The paragraph that I have just read says that we should not use noise exposure categories in the reverse situation, so I have not used noise exposure categories, of which there are four categories—A, B, C and D—that relate to increasing levels of noise.

**Ian Dennison:** Eighty-two decibels—

**Steve Mitchell:** I assume that you picked up the threshold—

**Ian Dennison:** Excuse me, Mr Mitchell. Eighty-two decibels is—

**Steve Mitchell:** Applied at the bottom of—

**The Convener:** Can I make a suggestion, Mr Dennison? We are not going to get anywhere if we all talk over one another. It might be helpful to know where you are going with this. Although I appreciate forensic questioning, it would be helpful if the committee knew what your end point was going to be.

**Ian Dennison:** Certainly. I was misunderstood by Mr Mitchell earlier. I tried to highlight the fact that we believe that the values on which the environmental statement has been based have been taken as guidance from a standard that is prohibited for application to a development such as tramline 1. We are concerned about that misuse. It is like a stack of cards: if a set of noise levels is created and then, in turn, the decisions about the tram’s impacts and the mitigation proposals are based on that, the whole hierarchy is based on the values that have been set at the base of that triangle. The question relates to the fact that the maximum or peak noise level of 82dB is taken from PAN 56, the purpose of which is to advise on existing noise sources for new housing developments. Clearly, tramline 1 is the reverse situation of a new noise source for existing residential areas.

**The Convener:** Why not pose the wider question, Mr Dennison—as you have just done to the committee—and see what Mr Mitchell says?

**Steve Mitchell:** I think that I have the gist of the question, convener and I am afraid that I have to correct Mr Dennison. PAN 56 is not only about new housing; in fact, only about one quarter of it is to do with new housing. It contains an awful lot of other guidance and, if we look just at the table of contents, we find that the “Noisy Development” section runs for about a third of the document.

**Ian Dennison:** I agree with you, but—

**Steve Mitchell:** The noise exposure categories make recommendations for new housing, but an awful lot of guidance is not just for new housing. You cannot say that PAN 56 is not relevant to a tramline, Mr Dennison.

**Ian Dennison:** I agree.

**Steve Mitchell:** I think that you did say just that.

**Ian Dennison:** No. PAN 56 as a document can be used as guidance, but the noise levels within it, which are presented in the noise exposure categories, cannot be used as credible guidance. I ask you to read the last sentence of paragraph 52.

**Steve Mitchell:** Again, this is paragraph 52, which comes under the heading “Residential Development and Transport Noise”. It states:

“The differing attitude and sensitivity towards noise between those who choose to live in a relatively noisy

environment and those who are subjected to new noise sources also prohibits the use of the NEC method in reverse."

**Ian Dennison:** I put it to you again that, in taking guidance on noise levels from a prohibited standard, the resulting predictions on tram-noise impact and noise mitigation for the Roseburn corridor were based on a false premise.

**Steve Mitchell:** The standard is not prohibited. I think that I now understand your first question. PAN 56 is—

**Ian Dennison:** I am not saying that the standard is prohibited, but —

**Steve Mitchell:** You just did.

**Ian Dennison:** But that the noise—

**The Convener:** Gentlemen. This evidence taking is for the benefit of the committee; it is not a private discussion. If you pose a question, Mr Dennison, I expect Mr Mitchell to answer it. I also expect you not to interrupt each other. I am the only person who gets to interrupt people. I take it that that is understood. Excellent: do proceed, gentlemen.

**Steve Mitchell:** The planning guidance is not prohibited. The noise exposure categories, if you like, are prohibited. I have not used them.

**Ian Dennison:** The values that were taken into the environmental statement are that if

"the instantaneous 'peak' as the tram passes ... exceeds 82 dB a significant impact is considered to occur, based on guidance in PAN56 on prevention of sleep disturbance."

I think that we read the quote earlier. You have taken the 82dB maximum level from the PAN 56 noise exposure categories and yet PAN 56 prohibits that use.

**Steve Mitchell:** No, I do not think that it does.

**Ian Dennison:** The opinion of our experts, who are sitting behind me, is that that is a misuse of the standard, which is extraordinarily clear on—

**The Convener:** We need a question, Mr Dennison.

**Ian Dennison:** The question? I put it to you, Mr Mitchell, that, in taking guidance on noise levels from a prohibited standard, the resulting predictions of tram-noise impact and noise mitigation for the Roseburn corridor were based on a false premise.

**Steve Mitchell:** The standard is not prohibitive.

**Ian Dennison:** I asked you to read the first and last sentences from paragraph 52, in both of which the word "prohibitive" is expressly used. The use in reverse situations is also disallowed.

**Steve Mitchell:** The question that you read to me did not mention noise exposure categories, did it? It mentioned just the standard. The standard is

not prohibitive. I have not used noise exposure categories.

**Ian Dennison:** If I can, I will return to my question. I put it to you that, in taking guidance on noise levels from a prohibited standard—okay, so that should have read "taking prohibited noise levels from a standard"—the resulting predictions of tram-noise impact and the noise mitigation for the Roseburn corridor were based on a false premise.

**The Convener:** I suggest that we should move on once Mr Mitchell has answered the question, Mr Dennison. The committee absolutely gets the point that you are making. We will study the *Official Report* of the meeting.

**Ian Dennison:** Excellent.

**The Convener:** I call Mr Mitchell.

**Steve Mitchell:** The answer is no.

**The Convener:** Fine. Let us move on now, Mr Dennison.

**Steve Mitchell:** I am very happy to talk about sleep disturbance, should Mr Dennison want to investigate further the 82dB number that we are talking about. That may be more helpful to the committee. I am sorry; that was not a question.

**Ian Dennison:** Mr Mitchell, are you surprised that the use of prohibited numbers from PAN 56 in the creation of an environmental statement for a new tram system that will pass through mature residential areas was not identified by peer review?

**Steve Mitchell:** I did not hear the last part of the question—I am sorry, there was a noise. I think that I do not agree, however.

**Ian Dennison:** The question did not require agreement. Are you surprised that misuse of the PAN 56 noise levels in creating an environmental statement for a new tram system passing through a mature residential area was not identified by peer review?

**Steve Mitchell:** Am I surprised that the peer review did not identify it?

**Ian Dennison:** Yes.

**Steve Mitchell:** I do not think that it had anything to identify; it was not a misuse because I did not use a prohibitive standard.

**Ian Dennison:** I think that the committee has already noted that this is the subject of a disagreement between our experts and you, so the committee will resolve the issue. I stand by what I said earlier.

**The Convener:** Mr Dennison, I remind you that you are asking questions. You are not making

statements. You are not under oath, so the committee will disregard statements. You will have an opportunity later to make statements under oath that will carry a great deal more weight than they do at the moment. It would therefore be helpful if you asked questions.

**Ian Dennison:** I apologise to the committee. The subject is complicated and it is difficult to develop concise questions. Please bear with me.

I have a question about paragraph 7.6 of Steven Mitchell's witness statement. Do you agree that allowing tramline 1 assessments of impact to be guided by a method that displays no common sense is a legitimate concern for Parliament, the public and the residents of the Roseburn corridor?

**Steve Mitchell:** It is, but let me take you back to something that you raised in a question to me. Did you know that the company that did the peer review had been retained by the Department for Environment, Food and Rural Affairs in England—

**Ian Dennison:** Are you asking me questions?

**The Convener:** Mr Mitchell, I excluded Mr Dennison's comment about the peer review. I chose to exercise some flexibility. I am not going to be so flexible with you. Could you answer his question please?

**Steve Mitchell:** I just answered it.

**Ian Dennison:** Do you agree that the environmental statement records the current measured ambient noise level to the rear of Garscube Terrace and Coltbridge Terrace as 35dB, and that it proposed a night-time noise threshold of 45dB?

**Steve Mitchell:** Yes it does. However, you should be slightly careful because those thresholds are associated with different time periods. To be technically correct, the 35dB was measured to represent a noise level for one hour late in the evening or early in the morning. The 45dB value to which you referred is an eight-hour average.

**Ian Dennison:** Right. We will return to that point a little later. I invite you to turn to the environmental statement; I presume that you have a copy.

**Steve Mitchell:** Yes.

**Ian Dennison:** Could you go to section 13.5.2 please?

**Steve Mitchell:** Could you give me a page number?

**Ian Dennison:** Page 211. Will you read the first sentence of page 211?

**Steve Mitchell:** The sentence reads:

"If noise with the scheme falls below these thresholds then no impacts are expected."

**Ian Dennison:** So, taking the Roseburn corridor as an example, if the predicted tram noise is 44dB, or one decibel below the proposed night-time threshold of 45dB, what would the impact be?

**Steve Mitchell:** There would be no impact.

**Ian Dennison:** With reference to the final bullet point of that section at the top of page 211, if the noise level that you predict for the same location is just 2dB higher at 46dB, that would be 11dB above the measured ambient noise of the Roseburn corridor. What would the impact be?

**Steve Mitchell:** It would be slight.

**Ian Dennison:** The final bullet point says that if it is greater than 10dB—

**Steve Mitchell:** I am answering your question. I am not quoting a bullet point.

**Ian Dennison:** Please—I am discussing the environmental statement. It is the severity of impact according to the final bullet point.

**Steve Mitchell:** No, in the case you just gave me—

**Ian Dennison:** I am asking you about the environmental statement. How does it describe the impact?

**Steve Mitchell:** I have answered your question.

**Ian Dennison:** You have not.

**The Convener:** Let us not get frustrated about this. Mr Mitchell, would you like to repeat your answer or give your answer.

**Steve Mitchell:** The impact would be slight.

**Ian Dennison:** The final bullet in that table at the top of page 211 says that an increase greater than 10dB is regarded as a severe impact.

**Steve Mitchell:** Yes but the section leading to that says

"If noise is above these thresholds"

and if you study the document, it says later that the tram noise will be just 1dB above the threshold, so the impact will be slight. It would not suddenly become severe.

14:30

**The Convener:** Can I make a suggestion? I am trying to follow your questioning in relation to the rebuttal statement. Your case is supposed to be based on areas of disagreement and dissent, which should be outlined in the rebuttal statement, so it would be helpful for us if you could refer, in part, to it.

**Ian Dennison:** The subject comes under sections 5.5 and 5.6 of Steve Mitchell's statement. It is simply to do with the calculation of the degree

of mitigation. According to my reading, and to that of the experts who are sitting behind me, there seems to be a variety of controls on the calculation, which in certain circumstances—in the Roseburn corridor—will produce a no-impact situation. However, with just a minor rise of just 2dB, we would progress straight to a severe impact.

**The Convener:** I think we understand. Your witnesses will, of course, be able to give evidence on the matter in considerable detail at the appropriate point.

**Ian Dennison:** Okay, but that is not really the point. The issue for us is that we have no confidence in such a method, which has such widely varying results.

**The Convener:** It might interest you to know that, at the preliminary stage, the committee considered the documents to be an adequate basis for assessment. We did not drill down into the specific detail as you have clearly done, but we consider the documents and, you may assume, the methodology that underpins them to be sufficient for us to make our decision at the end of the bill scrutiny process. Do carry on. However, I ask you to address your points to your rebuttal. That would be helpful.

**Ian Dennison:** I will try to close on this point. The methods that are being proposed for calculating the mitigation cause us major concern. I certainly cannot follow them and I do not believe that our experts can, either. I will ask you to quote another couple of sections for me. Could you please go to section 5.5 of your witness statement?

**Steve Mitchell:** Do you mean my main witness statement, rather than my rebuttal?

**Ian Dennison:** Yes. I ask you to read out section 5.5.

**Steve Mitchell:** It says:

“It is for these reasons that I consider these threshold levels to be stringent assessment criterion to adopt and criteria that should not be applied in isolation without consideration of pre-existing ambient noise levels.”

**Ian Dennison:** If you could now please read section 7.6.

**Steve Mitchell:** It says:

“Along the Roseburn Corridor ambient noise levels are generally below the threshold levels described above, so the baseline noise levels do not need to be known in detail in order to specify the required mitigation in these areas.”

**Ian Dennison:** On one page, you say that the baseline levels must be known; on another page you say that

“baseline noise levels do not need to be known”.

I put it to you that to allow tramline 1 assessments of impact to be guided by such a confused method is a legitimate concern for Parliament, the public and residents of the Roseburn corridor.

**Steve Mitchell:** Let me try to answer that in a helpful sense, rather than simply by quoting verbatim different sections of my own statement. It is important to know the baseline noise levels in order to assess the impact of the tram. That is in the environmental assessment. If it transpires that the baseline levels are low, it becomes important whether or not the level is above the threshold value. If it is below the threshold, tram noise is low enough to say that there will not be an impact. It does not actually matter what the baseline is. When mitigation is being decided on, it is not necessary to know the baseline in detail. To assess the impact, it is necessary to know the baseline.

**Ian Dennison:** You read out a section that says:

“I consider these threshold levels to be stringent assessment criterion to adopt and criteria that should not be applied in isolation without consideration of pre-existing ambient noise levels.”

**Steve Mitchell:** Absolutely. We would need to know the ambient noise levels, so that we know whether it is the threshold or the change in the baseline that is the determining factor. I know the baseline noise levels along the Roseburn corridor. It transpires that the thresholds are the critical factor in this methodology, which I have not invented myself. You obviously think that the methodology is wrong.

**Ian Dennison:** I do.

**Steve Mitchell:** It is a methodology that I have used on three tram schemes that have gone to public inquiries, and which have been scrutinised by planning inspectors and been found to be acceptable. I am not allowed to mention the peer review, which also found them acceptable.

**Ian Dennison:** I appreciate that it is difficult to put arithmetic across in such a forum but, according to the method that you propose, a value of 44dB has no impact but a value of 46dB has a severe impact. That bypasses any assessment that there would be slight impact, moderate impact and substantial impact on the way, and we do not accept that.

**Steve Mitchell:** I want to answer the question because it is an important point. You are not quoting the environmental statement or my evidence. If you read the environmental statement and the case that you are talking about—which is Garscube Terrace, I believe—you will see that the impact at reference 3d in table 13.5 is not severe. The environmental assessment does not say that the impact is severe. If you have misunderstood the methodology, I apologise for its not being

written more clearly, but I do not want you to misquote the environmental statement.

**Ian Dennison:** I have not misquoted it. You quoted the environmental statement earlier. It says:

“below these thresholds ... no impacts are expected.”

You also read from the table that says that a level greater than 10dB over the ambient noise is “severe”. Those are contradictory positions.

**Steve Mitchell:** No. You are jumping from one paragraph to three or four bullet points in a paragraph further down. If you follow the whole flow—

**Ian Dennison:** I have. It is actually a single paragraph with some bullet points.

**Steve Mitchell:** Yes, but you did not read the rest of the paragraph. For an impact to be severe the change in ambient noise must be greater than 10dB and the level must be above the threshold. In other words, the level must be in the zone in which noise affects people and the increase must be at least 10dB. That is a severe impact. In this case, the tram noise is below the threshold so it is not a severe impact. It is below the threshold at which tram noise has an impact so there cannot be an impact, regardless of the change in baseline.

**Ian Dennison:** As residents, our concern is that, if we do the arithmetic according to the environmental statement, a deviation of 2dB can jump us from no impact to severe impact, bypassing slight impact, moderate impact and so on. That just does not make sense to us

**Steve Mitchell:** I am afraid that you have misunderstood the methodology.

**Ian Dennison:** It is about 40 words. I cannot—

**The Convener:** Mr Dennison, the committee will consider the matter carefully. I think we have got the message on this one. Mr Mitchell has answered the question at least twice.

**Ian Dennison:** I move on to section 3.14 of Steve Mitchell’s rebuttal.

**Steve Mitchell:** Sorry, my rebuttal of whose statement?

**Ian Dennison:** Your rebuttal of our statement.

**Steve Mitchell:** I think I have done four or five rebuttals for group 35.

**Ian Dennison:** I refer to the one on the technical report.

**Steve Mitchell:** To Bernadette McKell?

**Ian Dennison:** Yes.

Mr Mitchell, if I started the clock on a 100m race while the athletes were warming up and I did not

stop it until they had warmed down, they would be rightfully upset about their times. Why, then, do you similarly propose that noise from trams running late at night and early in the morning should be measured by including the four and a half hours of silence in between?

**Steve Mitchell:** That is because I am drawing on guidance that is relevant to the project. I did not make up my own guidance.

**Ian Dennison:** I think you are referring to the fact that a standardisation is being pushed through the industry for an eight hour night-time period, but that represents a period, not necessarily that measurements should be accrued over that period.

**Steve Mitchell:** We have done the assessment. We looked at two time periods: the hour until when the tram will run at night—half past midnight—and the hour when it will start in the morning. In those periods, we looked at how people might perceive the change in noise. I do not think that one would average noise over eight hours if one was assessing whether it had changed. One would do that over a shorter period, such as one hour. When we talk about the thresholds and whether the noise level from the tram will be high enough to have an impact, we are drawing on recognised guidelines that use an eight-hour standard. Again, that is the standard that has been widely used in lots of other projects.

**Ian Dennison:** Again, I think that the eight-hour standard refers to the period but not necessarily to the measurement. If you mix operational hours and non-operational hours, as you have done, you dilute the result from the operational hours.

**Steve Mitchell:** I do not think so. The standard eight hours is used to assess a great deal of noise that comes and goes. Aircraft noise, for example, often operates late at night and early in the morning. There is no rule that says that it has to be noise that operates continuously through an eight-hour period.

**Ian Dennison:** Common sense suggests that mixing operational hours with quiet hours will dilute the effects of the operational hours.

**Steve Mitchell:** Common sense may say that, but my work is based on guidelines and standards that are drawn from more than 40 years of research into the effects of noise on people. The research was based on some very large social surveys. Often, many thousands of people have been asked whether noise bothers them. My work is based on guidelines that have been drawn from such research, which has shown over many years that the eight-hour value is a good indicator of annoyance and disturbance.

**Ian Dennison:** The eight-hour value is a period and not necessarily an instruction to measure—



**The Convener:** Mr Dennison—I think we get it.

**Ian Dennison:** Okay, fine. Chapter 13.5.3 of the environmental statement says:

“When averaged over a full 8 hour night the  $L_{Aeq}$ , 8 hour level is around 4dB lower than the  $L_{Aeq}$  1 hour levels because of the absence of service between 0030 and 0500.”

Therefore, there is clear recognition in the environmental statement that this creative arithmetic gives you a 4dB advantage. As the committee may be aware, 10dB is a doubling of sound, so the 4dB that have been generated by creative arithmetic are very significant for the residents of Roseburn corridor and are a major concern.

To propose to run trams specifically in the hours when people are preparing for or waking from sleep is bad enough, but I put it to you that to use creative arithmetic to allow an even greater effect on people at such times is completely unjustifiable.

**Steve Mitchell:** I have not used creative arithmetic; I have used the noise metrics in recognised standards.

**Ian Dennison:** Then we disagree.

**Steve Mitchell:** If I were to use four and a half hours  $L_{Aeq}$ , I would be making it up. I am using eight hours  $L_{Aeq}$  because I have guidance and the social research of many years to help me to interpret eight hours  $L_{Aeq}$ . That is why I have used it.

**Ian Dennison:** Does the committee understand that mixing operational and non-operational hours does not meet with common sense?

**The Convener:** The committee has understood the point that you are making. However, we will decide in due course what weight to attach to particular bits of evidence. It was simply that you did not need to repeat the same question in a different way: we understood your point.

**Ian Dennison:** Excellent. My next question concerns our rebuttal of Steve Mitchell's witness statement, section 7.19. You claim that the figures that limit the noise of trams should not be made a statutory part of the bill for fear that the tram system might be illegal if it were to exceed those figures. Is that the case?

**Steve Mitchell:** That is the gist of the paragraph.

**Ian Dennison:** It seems that you have correctly grasped the point that the tram system must be subject to controls on its operation if we, as residents, are to coexist happily with it. What legal qualifications do you have for your opinion that operators should not be held to such controls by law?

**Steve Mitchell:** I do not have any legal qualifications; I have never pretended to have any. We have a commitment through the noise policy to operate the tram in a way that meets noise-policy targets. This afternoon, I confirmed that the promoter is happy to refer to that in the bill. We have the noise policy.

Importantly, the noise policy has the test of best practicable means. That is essential, because it is conceivable that there would be some circumstance in which, even using all the best available engineering technology, it would not be possible to meet the standards. In that case, the promoter would have done everything possible and would therefore still be allowed to run the tram.

I will give you an example of where the test works, and has worked for many years. The docklands light railway noise and vibration policy, which is now 16 years old, has the same test. It has targets, which are not the same as ours because they predate some of the guidance, but they are very similar. The policy also has a requirement for the operator to achieve those targets using best practicable means. If you were to take the time to run on the different tracks of the docklands light railway, you would find noise barriers and track and mitigation works that have been done under that test. The commitment to you is in the noise and vibration policy, which has a requirement for the use of best practicable means.

14:45

**Ian Dennison:** You will appreciate that, as householders, we are extremely concerned that the promoter may not be held to noise levels unless they are statutory, particularly given that the promoter may seek to make savings in the presence of a funding shortfall.

**Steve Mitchell:** I understand that concern, which is why I gave the example of a policy with similar wording that has been highly successful. The Docklands light railway has mitigation works all over it. On the Westway and at Lewisham, track works are done regularly to try to reduce noise. The policy works to control noise and that is what we propose.

**Ian Dennison:** I put it to you that if a bill is passed into law that gives the promoter freedom to create new noise pollution close to existing households, it is only right that the same bill should give residents freedom from sleep disturbance.

**Steve Mitchell:** I am not sure that I agree with that. You have introduced another issue: that of sleep disturbance. I do not believe that the tramline will result in sleep disturbance, given the standards that we have set.

**Ian Dennison:** We will come back to that point. I request the committee to take a view on our proposed amendment on the specification for noise, noise monitoring and penalties. We have a deep concern about the monitoring of noise.

My next question relates to paragraph 2.1 of the rebuttal of your witness statement and to paragraphs 3.15 to 3.32 of your rebuttal statement. The environmental statement cited several available standards for guidance on noise levels, besides those that are prohibited in PAN 56. One was the World Health Organisation's "Guidelines for Community Noise", which set substantially lower levels than those that you have adopted from the PAN 56 prohibited noise levels. If the mantra of the design manual for tramline 1 is "Good is not good enough," why was the WHO guidance not the obvious standard from which to draw guidance on noise levels?

**Steve Mitchell:** I am having difficulty with the questions, as some of them are long and convoluted. I do not know to which standards you are referring. Do you mean the  $L_{Aeq}$  standards or the maximum levels?

**Ian Dennison:** All of them.

**Steve Mitchell:** Perhaps you could paraphrase the question, to help me.

**Ian Dennison:** The WHO standards present considerably lower noise requirements than those in PAN 56, in which certain noise levels are prohibited for use in developments such as tramline 1. If the mantra of the tramline design manual is "Good is not good enough," why are the WHO standards not the preferred ones?

**Steve Mitchell:** Because the WHO does not set standards.

**Ian Dennison:** The WHO presents guidelines. Throughout the environmental statement, you have sought to take guidance from standards, and the WHO community noise guidelines present guidance on the issue.

**Steve Mitchell:** The WHO tends to report the latest position on research, which is what it did in 1999 and before that in, I think, 1980. Local authorities and Governments decide how to interpret that and set guidelines and standards for their local conditions. Those are the ones that we have used. The WHO findings are at the basis of some of the standards.

**Ian Dennison:** You certainly refer to the WHO guidelines in the environmental statement, but, in our opinion, you do not make sufficient reference to them.

**The Convener:** You are supposed to be asking questions, Mr Dennison.

**Ian Dennison:** Okay.

I put it to you, Mr Mitchell, that you could adopt a 5 to 10dB reduction in noise levels for the intermittent character of noise such as that made by trams—as in the WHO guidelines—and that you chose to ignore that guidance on the intermittent character of noise when setting the noise limits in the environmental statement.

**Steve Mitchell:** As the WHO does not set standards, anything that it says about intermittent noise is not particularly relevant.

Let us look at national guidance on train noise and tram noise. We are told to predict it using  $L_{Aeq}$  through the calculation of railway noise. There is nothing in there about intermittent values. It says that we should predict using  $L_{Aeq}$  and assess that against the standards. There are no penalties. In fact, with railway noise, there is a well-recognised bonus; because it is steady and repeatable, people habituate to railway noise more than they do to some other kinds of noise. Lots of people tell us stories about that, saying that they live next to a railway and have got used to the noise.

**Ian Dennison:** So railway noise is good?

**Steve Mitchell:** No, I did not say that it was good; I said that people have got used to it. In fact, a lot of literature shows that people get used to railway noise—this is an important point—more than they do to other kinds of noise, because railway noise is repeatable and predictable. It runs to a schedule. It also has a low rise time, so it is not startling.

**Ian Dennison:** I find your thoughts quite incredible, but let me take you back to the WHO, which states that a level 5 to 10dB below continuous night-time exposure shows the intermittent character of noise that has to be taken into account when setting night-time limits for noise exposure. The environmental statement sought to identify a number of standards and guidelines from which you drew your guidance, including the WHO. As I said, I think that you chose not to draw on that guidance on the reduction of 5 to 10dB, because it did not suit your purpose.

**The Convener:** I shall interrupt again, Mr Dennison, as I am the only person who can do so. I recognise that question as having been asked in a similar way at least four times already. You might not always get the response that you want from Mr Mitchell, but that is the response that is on the record and we shall reflect on it. I must strongly caution you about the throwaway one-liners. We are at pains to be polite to one another on this committee, no matter how frustrating that might sometimes be. Could you move us on with your questioning?

**Ian Dennison:** I would like to complete this point. A further section of the WHO guidance states:

"Special attention should also be given to: noise sources in an environment with low background sound levels",

such as night traffic in a suburban residential area, and to environments where there are

"combinations of noise and vibrations",

such as night traffic in suburban residential areas. The WHO recommends that special attention be paid to those things. As the Roseburn corridor is covered by all those points, can you describe the special attention that you paid to the Roseburn corridor, to persuade me and the committee that you did not simply ignore the guidelines from the World Health Organisation?

**Steve Mitchell:** We have paid special attention, in so far as we have measured the baseline noise levels and reported the change in noise level. The environmental statement reports those changes. It then uses the recognised standards that have been used on previous projects with success, in that people have found them appropriate. I do not think that a detailed discussion on that section of the WHO guidance is relevant to setting those standards, because the WHO does not set standards.

**Ian Dennison:** You draw your guidelines from a variety of sources, including the WHO, which you cite in the environmental statement.

**Steve Mitchell:** I do not think that there was a question there.

**Ian Dennison:** No, but to keep repeating that the WHO is not setting standards ignores the point that you are using standards and guidelines from which to draw guidance for the environmental statement. The fact that the WHO does not set standards is therefore irrelevant.

**Steve Mitchell:** It is rather important to recognise that we have PAN 56 as a statement of planning policy, and an important one, that gives us a lot of guidance about noise and creating noise and which takes the research from the WHO report and puts it into the real world. If you used the WHO guidelines in the way that you are suggesting, you could follow Mr Clarke's argument that, during construction, we should not make more than a certain number of decibels, but that simply is not practicable or pragmatic, and no planning authority or Government has ever taken that route. There is a stage between reading the research that the WHO reports and setting real-world standards. That is an important stage and one that I do not think you should ignore.

**The Convener:** My committee members advise me that they feel that we have a sufficiency of evidence on that point. Therefore, unless Mr Dennison wants to draw to our attention something new, we will move on.

**Ian Dennison:** Certainly. My next question is a long one, so I wonder whether I will manage to achieve it.

**The Convener:** You will not.

**Ian Dennison:** Can I paraphrase the point that it makes?

**The Convener:** Absolutely. I would welcome that.

**Ian Dennison:** In his rebuttal, Steve Mitchell talks to our proposal to amend noise averages to 40dB for night-time running and 50dB for daytime running. He says:

"I can see no justification for this."

My lengthy question points to several places in the WHO documentation that argue for precisely those numbers. If I might very briefly—

**The Convener:** I have said that we feel that we have sufficient evidence on the WHO guidelines, so we will pick up that point later. It should be remembered that we have all the statements in writing and that we will consider them. They carry as much weight as the oral evidence that we hear today.

**Ian Dennison:** Can I draw your attention to a particular quote?

**The Convener:** No. I feel that I have been tremendously flexible. All the members feel that we have sufficient evidence on this matter and that you do not need to elaborate further. I will accept a new point, but will not accept further emphasis of the WHO guidelines.

**Ian Dennison:** I will move on.

Steve Mitchell rebutted section 3.1 of the document from Mr Aitken and me, in which we noted that residents close to the Nottingham tram system were advised to stay with friends and relatives during the intense noise pollution of track grinding. Would residents along the Roseburn corridor be invited to stay with friends and relatives if there were similar work there?

**Steve Mitchell:** I somehow doubt it. Under the noise and vibration policy commitments, they would be told whether it was necessary to carry out noisy maintenance activities on the tramway. Experience suggests that that would happen only once in several years. There would be noise disturbance from rail grinding because, with the best will in the world, it is a noisy activity. However, it would happen only occasionally. The only mitigation measure is to forewarn residents, because it would take a matter of a few hours to pass a given property.

**Ian Dennison:** I move on to your rebuttal of section 3.9 of our document. For 40 years, the Roseburn corridor has been extraordinarily quiet,

but the Caledonian railway set a precedent before then with a low-frequency service that started at 7:30 am and terminated at teatime, and which never ran on a Sunday. Is it not true that there is no precedent for running a transport system in the Roseburn corridor at hours that would disturb people as they prepared for or were awakening from sleep?

**Steve Mitchell:** It is true that the previous system did not operate at those hours. However, that system used steam trains and I am sure that they are much noisier than trams. I suspect that there was no mitigation for the trains, which is unlike what we propose for the trams. I also suspect that vibration levels are much higher for a steam locomotive than they are for a tram. This is all in my written statement, but you asked the question. However, I accept your point that the tram would operate at different hours from the previous train service.

**Ian Dennison:** As I said, those hours are when people are preparing for or awakening from sleep, which is a great concern to us.

My next question is about your rebuttal of section 3.5 of our document. The promoter made a deliberate choice of steel-wheeled vehicles on a steel track. Is steel on steel the best-in-class solution for low noise, according to all the available industry studies?

**Steve Mitchell:** I believe that there were tests on using rubber wheels on a French system.

**Ian Dennison:** I was asking about steel wheels. Is steel on steel the best-in-class solution for low noise, according to all the available industry studies?

15:00

**Steve Mitchell:** One of the alternatives to steel on steel is rubber wheels. I am aware of tests on the use of rubber wheels in which the results were not good, because noise levels were not significantly lower than those for steel wheels. There were other problems with a rubber-wheel system. Therefore, I do not believe that there are practical alternatives to steel on steel.

**Ian Dennison:** Is steel on steel the best-in-class solution, according to all the available industry studies?

**Steve Mitchell:** What do you mean by “in-class”?

**Ian Dennison:** I will remove that element of the question. Is steel on steel the best solution for low noise, according to all the available industry studies?

**Steve Mitchell:** For a tram system that would run down the Roseburn corridor, I do not think

there are proven technologies using other materials.

**Ian Dennison:** According to all available industry studies, there is no better solution than steel on steel.

**Steve Mitchell:** I am not aware of any.

**The Convener:** That is the fourth time that you have asked that question, Mr Dennison. Once is fine and, at a stretch, twice may also be fine—but four times is not.

**Ian Dennison:** Okay. I will move on to paragraphs 3.56 to 3.58 of Steve Mitchell's rebuttal of the Hamilton and McGregor statement.

Mr Mitchell, you say in your statement:

“The potential for noise impacts is therefore substantially greater along the Roseburn Corridor than elsewhere.”

However, in discussing all the mitigation data in tables 13.5 and 13.6, you do not explain the absence of proposals for mitigation for Garscube Terrace and certain other sections, although mitigation is planned for other sections of the route. That seems contradictory.

**Steve Mitchell:** Again, I am struggling with the question. The Garscube Terrace section does not need mitigation. According to our assessment method, there would be no significant impact on that section.

**Ian Dennison:** Our rebuttal stated that there were numerous inconsistencies in your calculation methodology and many errors in the tables. You have not rebutted any of that, so we must take it that you acknowledge those considerable errors. Therefore, we question whether the calculation for mitigation measures for Garscube Terrace is accurate.

**Steve Mitchell:** I do not think that I need to change the assessment for Garscube Terrace. I may not have rebutted your statement on that in detail, but I said at the beginning of my witness statement that there was no change to the points that I made in my original statement.

**Ian Dennison:** Okay. The main part of my line of questioning has been on methodology, because we question its accuracy. We do not have confidence in the proposed mitigation measures, which are based on numbers sourced from standards with which we do not agree. There are plenty of questions to be asked about the veracity of the environmental study on noise impact.

**The Convener:** I suggest that we take a short adjournment, because I need a comfort break and I suspect that others would benefit from one. We will resume with Mr Dennison's final question in three minutes.

15:03

*Meeting suspended.*

15:07

*On resuming—*

**The Convener:** Okay, please resume your seats. Mr Dennison, please continue.

**Ian Dennison:** Mr Mitchell, can you confirm that the noise modelling with respect to the properties on Garscube Terrace related to the top floors?

**Steve Mitchell:** Yes. I have confirmed that in my written evidence.

**Ian Dennison:** How many floors do the properties on Garscube Terrace have?

**Steve Mitchell:** It is either two or three. I am afraid that I do not have that detail because someone else did the modelling for me.

**Ian Dennison:** Do you know the receptor heights?

**Steve Mitchell:** As I say, someone else did the detailed work for me.

**Ian Dennison:** So at this point we are unclear as to which floor the modelling was based upon.

**Steve Mitchell:** No. It was based on the top floor. I checked with the person who did the modelling that he used the top floor. It would be crazy to do the modelling on the ground floor. In fact, I find objectionable the suggestion that I should do it on the ground floor. The first floor—or the second floor, if there is one—is generally the noisiest floor. That is the one that should be considered.

**Ian Dennison:** I was just seeking clarification that the top floor was understood to be the second floor.

I move on to paragraph 3.37 of your rebuttal of the Hamilton and McGregor report. In rebutting Dr McKell's observations on sleep disturbance, you say that

"the chance of the average person being wakened by an aircraft noise event was about 1 in 75."

Obviously, we are discussing sleep disturbance by trams, but that was the reference. Do you have a copy of the study of night-time aircraft noise by the department of operational research and analysis?

**Steve Mitchell:** I have a copy of the Civil Aviation Authority report of December 1992. Is that the one that you mean? It is the original field study.

**Ian Dennison:** Does paragraph 3.6 of that report start, "It was acknowledged"?

**Steve Mitchell:** No. The report has no paragraph 3.6.

**Ian Dennison:** Unfortunately, we are speaking at cross-purposes. I will read out the paragraph.

**Steve Mitchell:** What is the report?

**Ian Dennison:** It is the DORA study of night-time aircraft noise.

**Steve Mitchell:** DORA has done quite a few studies; I used to work for it.

**Ian Dennison:** We believe that your statement

"the chance of the average person being wakened by an aircraft noise event was about 1 in 75"

is a quote from the report, of which we have a copy. The paragraph in the report that follows that statement says:

"It was acknowledged that this key finding related to awakenings once asleep. The field study gave little information about effects on sleep onset latency (time taken to fall asleep) and premature awakenings in the early morning periods referred to as the 'shoulder hours'."

Our concern is that operating trams during the hours in which people are preparing for or awakening from sleep will cause the greatest disturbance. The report that you quoted to rebut Dr McKell's report clarifies that that finding has no bearing on that sensitive period.

**Steve Mitchell:** It is interesting that the work was undertaken around four United Kingdom airports. I have studied the full report and I know it quite well. Those airports tend to operate in the shoulder hours, which are the first and last parts of the night, so the report is highly relevant.

**Ian Dennison:** I agree, but the report says that the one in 75 figure for sleep disturbance does not apply to the shoulder hours.

**Steve Mitchell:** I am not sure whether it says that. As I said, the report gives the conclusion that you have described. Airports tend to operate in those shoulder hours.

**Ian Dennison:** I can only reiterate that the field study—

**The Convener:** Question.

**Ian Dennison:** The information is on the record.

**The Convener:** Absolutely.

**Ian Dennison:** That concludes my questions.

**The Convener:** That brings me to Mr Aitken, on vibration only, for group 35. I remind all subsequent questioners that if they do not want me to interrupt them, they must ask questions.

**Andy Aitken:** We will talk primarily about average and peak vibration.

Mr Mitchell, I will ask about maximum velocity vibration levels, which are a matter of disagreement in our various rebuttals. Your

witness statement to group 35 says that you used two metrics in your assessment of vibration effects—an average value, which is called vibration dose value, and a maximum velocity value, which is called peak particle velocity. In terms of tram operational vibration, where do you refer to velocity levels?

**Steve Mitchell:** I am not sure whether we do. You paraphrased a bit of the environmental statement that relates to the construction phase. There is a good reason for what has been described for that. Peaks that can result from what happens on a construction site could damage a building, so it is important to have a peak limit to protect buildings. We have talked about PPV—peak limits—during construction. During the operational phase—

**Andy Aitken:** Can I stop you there? I am not talking about construction.

**Steve Mitchell:** I tried to correct you.

**Andy Aitken:** I refer to paragraph 2.5 of your witness statement.

**The Convener:** Do you refer to the rebuttal statement?

**Andy Aitken:** I refer to Mr Mitchell's witness statement.

**The Convener:** It would help if we could follow the argument in the rebuttal statement, because questioning should focus on that.

**Andy Aitken:** We have raised the issue in our rebuttal to his witness statement.

**The Convener:** Where?

**Andy Aitken:** In paragraph 2.5 of our rebuttal of Mr Mitchell's witness statement—we put our rebuttals directly on top of his witness statement.

Paragraph 2.5 of Mr Mitchell's witness statement says:

"To explain my assessment of vibration effects I have used the following two metrics",

which are VDV and PPV.

**Steve Mitchell:** The introduction to the whole of my witness statement deals with the construction and operational phases.

15:15

**Andy Aitken:** In terms of tram operational vibration, where is the reference to PPV or velocity?

**Steve Mitchell:** I do not think that there is one, because that is in section 2.5, under the heading "Acoustic Terminology", which covers both phases.

**Andy Aitken:** So you have used it in construction vibration and in relation to operation and construction noise, but you have not used it in operational vibration.

**Steve Mitchell:** Actually, I have used it in operational vibration, where we discuss—I may need to correct myself—the possible effects on buildings. We talk about PPVs from trams, but we do not use PPVs to deal with the effect of tram noise on people.

**Andy Aitken:** We will come on to that in a minute.

Do you agree that by not including maximum vibration levels, you tell only half the story? I will explain that in simple terms. It is a little bit like me driving between here and Glasgow at an average speed of 60mph, but only when I tell you that I did 200mph at Harthill do you get a better picture of how dangerous my journey was. In other words, you can use the average metrics to give one aspect of the vibration picture, but you also need to include another aspect, such as velocity, to give a more complete picture.

**The Convener:** Before you answer that, some of the committee are not hearing you, Mr Aitken, so it would be helpful if you were slightly louder.

**Steve Mitchell:** There are two parts to my answer, Mr Aitken. First, I think that you are referring to the fact that we use the VDV to assess the effect of tram noise on people. To deal with your analogy of the speed of a car peaking at 200mph, the VDV is not a conventional average as people around the table would generally understand it. It is an averaging process that is very heavily biased towards the peaks, so it might not be as misleading as you think to use a VDV average for such a situation.

Secondly, you have been talking about one journey, with all the unpredictable factors of a car journey. With a tram, we have a frequency of service, which is important to the tram operation, so we know that there will be lots of similar events through the day. It is not like construction, where the peak from a single bang can cause problems, because there are many trams. The VDV limit that we have set ourselves effectively implies a peak limit within it, because there are lots of trams. Do you see what I mean?

**Andy Aitken:** Yes, of course.

**Steve Mitchell:** It is not as if one tram could come by and suddenly create something that would be lost in an averaging.

**Andy Aitken:** It is interesting that you think that you do not need to include a velocity level for the tram. Paragraph 5.10 of your witness statement details figures that have been taken from the Manchester metro. The first column is velocity,

therefore I am surprised that you do not include the velocity figures to create a better picture, given that they are referenced in the Manchester system. In addition, paragraph 13.3 of the environmental statement states:

"The threshold of perception for human beings typically falls within the peak particle velocity range of"

X and Y. In other words, there is reference in your documentation to the importance of velocity limits. It surprises me that they have not been included in the documentation for the tram operational limits. Do you agree?

**Steve Mitchell:** You should not be surprised. We included the Manchester metro peak values, or PPVs, because we know that people are concerned about building damage from trams. We used them in the operation to deal with that concern.

**Andy Aitken:** If you were developing a good, general specification for tram vibration or some other item, would you expect to see VDV supported by maximum velocity, displacement or acceleration? I am talking about a good general specification.

**Steve Mitchell:** If I was writing a specification?

**Andy Aitken:** Yes.

**Steve Mitchell:** For the design, construction and engineering of a tram system?

**Andy Aitken:** Of pretty much anything that relates to vibration.

**Steve Mitchell:** I might do that if I was writing a specification, but I am not sure that it is relevant to this matter.

**Andy Aitken:** If you were writing a good specification, you might include those factors. My point is that I suspect that, as they have not been included in this case, we do not have a good general specification for tram operation. We have it for construction and noise, but not for vibration.

**Steve Mitchell:** It is quite likely that the specification for the tram will have that requirement because, in my experience, the promoter will want to have some regard to comfort.

When you are examining the effect of railway noise on people, the VDV metric is perfectly adequate. Unfortunately, there is no specific guidance that tells us to use that; the only guidance that we have is BS 6472. However, the "Design Manual for Roads and Bridges" contains guidance on how to assess how vibration from a road could disturb people. It says that BS 6472 should be used. In that sense, the VDV is endorsed.

**Andy Aitken:** Yes, but you chose to use appendix A2 of BS 6472, which pulls out PPV or

average levels, and you bypassed section A of that standard, which describes the maximum velocity levels. Is that correct?

**Steve Mitchell:** I am not sure that I would say that I bypassed section A; I am aware of the whole standard.

**Andy Aitken:** You might be intending to write a specification for the contractor that will include maximum levels. It is difficult for me to comment on the process of the engineering works when I do not have sight of all of the relevant documentation.

**The Convener:** Could you tell me what part of the witness statement you are referring to?

**Andy Aitken:** Yes.

**Steve Mitchell:** I can answer the question. That specification has not been written but there will be all sorts of contractual requirements to help to guarantee the targets that we have set in the noise policy.

**Andy Aitken:** Yes, but those limits are not in the noise policy; that is my point.

**Steve Mitchell:** No, but there might be all sorts of other things that we put in to guarantee that we reach the noise policy targets. That is a matter for TIE—

**Andy Aitken:** Yes, but they are not in the noise policy targets.

**Steve Mitchell:** That is because they do not need to be.

**The Convener:** Gentlemen, private conversations are not allowed; questions and answers are.

**Andy Aitken:** That concludes my points on the issue of maximum vibration. Having talked about maximums, I would like to talk about the average vibration value or VDV.

Mr Mitchell, in sections 5.10 and 5.11 of your witness statement, you advise the use of BS 6472, from which you have drawn guidance in selecting a target average VDV. You have selected a value that just borders the point where possible adverse comment will begin. Is that correct?

**Steve Mitchell:** Yes, it is the top of the category in which adverse comments are unlikely, which is the same as the bottom of the category in which adverse comments are possible.

**Andy Aitken:** So it is just on that borderline.

**Steve Mitchell:** It is in the lowest category.

**Andy Aitken:** It is on the borderline. It is at the top of the lowest category and the bottom of the middle category.

**Steve Mitchell:** Yes.

**Andy Aitken:** The data in the table are derived from a study on human response to vibration. Are you aware of the source of that study and the background to the numbers in the table?

**Steve Mitchell:** I am not completely sure. I think that the study might have included railway vibration.

**Andy Aitken:** In fact, the numbers come from a study that examined the response to vibration of people who had chosen to live beside railway lines for many years. The railway lines were old and the houses were probably old as well. The study did not reflect the response of people living in residential, vibration-free areas who were being subjected to new railway lines. Therefore, the level that you have selected is one that will probably just fail to get adverse comment from people who choose to live beside long-established railway lines.

**Steve Mitchell:** As I said, I am not familiar with the detail of the research that went into BS 6472. I know that it includes railway vibration and is, therefore, highly relevant. As to which element came first, I suspect that the railway might have, although I do not know. I have not studied the social survey work that went into the study. However, I know that that is a recognised standard and I have used it many times on tram systems to the satisfaction of promoters and so on.

I also know that PAN 56 contains the heading "Noise from Railways" and that paragraph 23 of that advice note states:

"Advice on acceptable levels of vibration can be found in BS 6472".

Therefore, I think that that is the right standard to use.

**Andy Aitken:** I have no doubts whatever about the standard that has been used—I am simply pointing out that the introduction to the British standard says that the levels that are given for guidance must be applied with consideration. Therefore, it is helpful to understand where the data come from when the British standard is used.

Do you recognise that those on whom a vibration environment is imposed have a different attitude and sensitivity towards vibration than those who choose to live in a vibration environment?

**Steve Mitchell:** They may have in the short term, but people get used to noise and vibration. *[Interruption.]*

**The Convener:** I remind people in the public gallery not to interrupt and that they will be asked to leave if they do so. Please continue, Mr Aitken.

**Andy Aitken:** Mr Mitchell, you are aware that we dispute the average vibration level that you

have chosen and the amount of discretion that has been applied in choosing it. We believe that the vibration will be a considerable intrusion for those who live adjacent to the line. In fact, we understand that the level that is proposed is double the level that was originally proposed for line 2.

Dr Irwin, who is our vibration expert and is sitting behind me, has advised that great care and consideration must be applied when new railway lines are being introduced into existing residential areas. He is the chairman of the panel that wrote the British standard and drafted the table to which you have referred. Do you agree that he is likely to have a good understanding of the subject and of how to apply and select vibration values correctly?

**Steve Mitchell:** I would not question Dr Irwin's qualifications. I have read his documents carefully and noted the points that he has made, but I would counter what he says with my experience of working for promoters of tramways that have routinely used the same standard, which has been found to be acceptable. I am talking about new tramways, not situations in which people have chosen to live next to an existing tramway. The same standard was used for a corridor in Birmingham that is quite similar to the corridor that we are discussing, and it was found to be acceptable.

**Andy Aitken:** I do not disagree. The point that I am making is that the British standard is entirely appropriate, but we dispute the discretionary values that have been selected.

**Steve Mitchell:** My point is that exactly the same value has been used on other projects. Earlier, I referred to the Docklands light railway policy, which has operated for 16 years and uses the same standard, which was introduced in the Lewisham extension. The DLR does not have problems with people complaining about vibration. The standard has worked and has protected people who are exposed to vibration from new railways.

**Andy Aitken:** Perhaps we can agree to disagree, although the committee will acknowledge that we believe that we have the best available expert to advise us.

I want to talk about statutory limits. There is dispute about the practicality of statutory limits for noise—I refer to section 3.17 of your witness statement—but no rebuttal in relation to vibration has been intimated by you. Therefore, we conclude that there is agreement in principle.

**Steve Mitchell:** I do not think so. There might have been an oversight on my part, as I have rebutted a lot of evidence, particularly from your group. I think that the same principle applies. The noise and vibration policy that I introduced at the



beginning of the afternoon is appropriate and similar to other schemes. I am afraid that I am not a lawyer and cannot give an answer about the statutory limit.

**Andy Aitken:** We have discussed the need to include maximum velocity levels and the average vibration level. Our group is extremely concerned that in special cases in which the promoter is not wholly independent of the local authority—or where the fox and the cat are in charge of the chicken coop, as my grandfather would have said—we need extra protection. There is a high risk that, because of the shortage of funds, we may not receive that protection. That is why we are requesting a statutory level.

I would like to discuss the mitigation effects for vibration. In your witness statement and in section 3.5 of your rebuttal of Dr Irwin's vibration report, you discuss the use of resilient mountings, as any expert in the industry would. Where in the documentation under discussion will I find a description of the method that has been used to assess whether my house will be adjacent to resilient rails?

15:30

**Steve Mitchell:** We have not assessed every house along the corridor and around the route; we have to deal with matters in a more general sense, for practical reasons. We have stated the limits to which we are committed, through the noise and vibration policy, by using any number of track forms that may meet those limits—there are all sorts of track forms around.

**Andy Aitken:** Can you tell me where, in all the documentation, I can find the methodology that has been used to assess whether my house will need mitigation?

**Steve Mitchell:** In the environmental statement, we have—as you said earlier—tabulated some data on vibration levels from a similar tram system.

**Andy Aitken:** Which one?

**Steve Mitchell:** The Manchester system. We refer to those data, which are from a similar tram system. We have assessed the situation in that sense. From that, we are quite confident that we can achieve the British standard using the available track forms. I have lots of other vibration data available to me to help me to make that judgment, on behalf of the promoter, and to commit the promoter to achieving that acceptable standard.

**Andy Aitken:** How you are going to make that assessment is not stated in the documentation. You are saying that you are looking at stuff that you have done in Manchester. At what point, when

you are designing the tram system, will you decide that you should use a resilient rail?

**Steve Mitchell:** In the environmental statement, we say that, looking at the Manchester levels, the VDV standard will be achieved at 4m or 5m from the rail. Your property is further than that from the rail, so it will not require a track form of that type to be used.

**Andy Aitken:** I was using the phrase “my house” loosely.

**Steve Mitchell:** In a general sense. Sorry.

**Andy Aitken:** Some houses in the Upper Coltrbridge area are within that 4m to 6m—I think that that is what you said.

**Steve Mitchell:** I said 4m to 5m. That is what the environmental statement says.

**Andy Aitken:** Am I right in thinking that if a house is less than 5m from the line, you will apply resilient rails?

**Steve Mitchell:** If that is necessary, once the engineering comes through. For example, the tram speed could be slow at that location, in which case such mitigation may not be necessary. There is more work to do; however, there is a clear commitment that we will achieve the standard, which is the same standard that is used for lots of other systems.

**Andy Aitken:** A considerable amount of work has been done on noise, mitigation and so on. However, there seems to be an omission in that no predicted vibration level that would require resilient rails has been made available in the documentation. I am curious. If you decide that you want to use resilient rails because a house is 5m from the line, what would happen if you came to a house that was 5.1m from the line? How will you make the decision about whether resilient rails are to be used, and when will you make that decision?

**Steve Mitchell:** I am certainly not going to make the decision now. The engineering will develop and evolve. The speeds may change, the alignment may move slightly and that 5.1m may become 5.2m.

**Andy Aitken:** But how will you go about that process?

**Steve Mitchell:** Oh—I see. Well, the noise and vibration policy gives the commitment, and the designers are very aware of that commitment, as I said earlier. They believe that it is reasonable and achievable. It will go through the design process and, ultimately, the contractual requirements and so on. The system will be designed to achieve those standards.

**Andy Aitken:** How?

**Steve Mitchell:** I cannot tell you that because we have not done the detailed design yet. What I can say is that other systems achieve the standard, and it is achievable.

**Andy Aitken:** So, whether or not you use resilient rail next to my house, what will happen if the tram exceeds the vibration levels?

**Steve Mitchell:** I do not think that that will happen, as the design process should avoid that. If it should happen—which I do not expect—we would be in breach of our policy, to which we have given a clear commitment.

At the commissioning stage, when monitoring is done, particularly at pinch points, the problem will be picked up and, if necessary, the track will be changed at that stage. The best-practicable-means test will apply to see whether there is a practical solution.

**Andy Aitken:** Once the trams are running, you will take measurements and say, “Oops, we’ve made a mistake.”

**Steve Mitchell:** I was referring to what would happen during commissioning.

**Andy Aitken:** My expert advises me that it is extremely unlikely that any retrospective mitigation will be applied.

**Steve Mitchell:** He is absolutely right that it is difficult to dig up a track and relay it. People will try to avoid that. That is precisely why there will be a margin in the design process. If the vibration is anywhere near those limits, a sensible designer, which I am sure that TIE will have, will allow a design margin and put resilient track in to be sure.

**Andy Aitken:** Pooling figures from Manchester, which might have completely differently soil conditions, water table levels and rock formations, will not allow you directly to relate distance from the line to vibration levels in Edinburgh. Are you a civil engineer?

**Steve Mitchell:** No.

**Andy Aitken:** Dr Irwin, who is a civil engineer, advises me that it is necessary to take ground propagation measurements.

**The Convener:** Question.

**Andy Aitken:** That is what happened in Croydon when the tramline was being put in. The people involved there used the same vehicles that were used in Sheffield. They went to Croydon and measured the ground—

**The Convener:** Mr Aitken, please ask a question.

**Andy Aitken:** Do you consider it necessary to take ground propagation measurements, Mr Mitchell?

**Steve Mitchell:** Ground propagation is important. However, if we are talking about distances of 4m or 5m, it becomes less important. I share your concern that the Edinburgh tram could produce vibrations that are different from those in Manchester, but I rather hope that it will produce lower levels, because things have moved on quite a bit. It is important that we have committed to the standard, which I have advised is practicable and achievable. I have data from Croydon where the standard has again been achieved; I did not base my findings on the one system that we chose to quote in the environmental statement. I am confident that we can achieve the vibration standard.

**Andy Aitken:** The point is that better practice has been applied in other situations and that best practice is not being applied in Edinburgh. It is worth pointing out that distance from the line is not necessarily the determining factor in—

**The Convener:** Mr Aitken, comments will be ignored by the committee; questions will not be.

**Andy Aitken:** Thank you.

Do you think you have followed best practice in determining vibration mitigation for Edinburgh, Mr Mitchell?

**Steve Mitchell:** We have not determined the mitigation yet; that is your frustration. However, we have used best practice in setting the standard, and the environmental assessment is perfectly adequate in addressing the issue. The fact remains that tram systems, particularly in Roseburn corridor-type areas, can quite readily be designed to avoid vibration problems. That is why you might not see as much about vibration in the literature as you see about noise. We have had a lot of debate about noise mitigation on the Roseburn corridor, because we have to work hard on it. Light rail and tram systems do not produce enough vibration to cause people problems in the sort of situations that we are talking about. The design is straightforward; it is industry standard, so we do not need to do anything special.

**Andy Aitken:** It seems that it is being done in Croydon. Why is it not being done in Edinburgh if it is best practice?

**Steve Mitchell:** I am sorry, but what is being done in Croydon?

**Andy Aitken:** They applied—

**The Convener:** You are to answer questions, Mr Mitchell, not to ask them.

**Steve Mitchell:** I am sorry.

**The Convener:** Apology accepted.

**Andy Aitken:** We are getting lost.

**The Convener:** Indeed.

**Andy Aitken:** I will wrap this up.

Mr Mitchell, I take the point that you have not yet determined mitigation. However, it is difficult for me to comment on the works for tramline 1 if I am unable to see all the available data.

My next question relates to the residents liaison group. The point is pretty similar to the one that I made about construction. We are extremely anxious that the on-going vibration issues that will present themselves in tram operation should be dealt with in a tripartite way, with a residents group. In particular, the residents group should have access to all the vibration monitoring data that are produced. That concludes my questions.

**The Convener:** That was not a question, was it? That was a statement of desire.

**Andy Aitken:** Sorry.

**The Convener:** That is fine. I just want to be clear that I am not inviting Mr Mitchell to come in again.

**Andy Aitken:** Could I—

**The Convener:** You can turn it into a question. If you begin, “Do you agree”, that would be appropriate.

**Andy Aitken:** Do you agree, Mr Mitchell?

**Steve Mitchell:** I agree that you would like to have access to the monitoring results. The noise and vibration policy talks about the City of Edinburgh Council environmental and consumer services department having access to those monitoring results, and it is highly unlikely that it would withhold them from you.

**Andy Aitken:** It is the old fox in charge of the chicken shed story, though.

**Steve Mitchell:** The council has statutory duties to deal with noise and nuisance. It is unlikely that it would withhold information from you.

**The Convener:** I get the sense that my fellow committee members would appreciate the sharing of that information. Does that conclude your questions, Mr Aitken?

**Andy Aitken:** Yes.

**The Convener:** We move on to Lord Marnoch for group 43.

**Lord Marnoch:** Mr Mitchell, I will ask you questions only about noise arising from the operation of the trams. I am not concerned about vibration—at least, I am concerned about it, but I will not ask you about it. I would like to make it clear at the outset that we agree about the importance of the noise aspect of the proposals. In that regard, am I right to say that the

environmental statement that the promoter had to produce had to cover the issue of noise?

**Steve Mitchell:** Yes.

**Lord Marnoch:** Am I right to say that the promoter also had to cover the issue of noise mitigation?

**Steve Mitchell:** Yes.

**Lord Marnoch:** Can we agree at the outset that noise mitigation for people in Wester Coates is an essential aspect of the proposal?

**Steve Mitchell:** Yes. The environmental statement had to report the potential impacts and suggest how—

**Lord Marnoch:** We are agreed that it is an essential aspect of the proposal.

**Steve Mitchell:** It had to suggest how they will be mitigated in an outline sense, defining them adequately for the purposes of that statement.

**Lord Marnoch:** It is essential.

**Steve Mitchell:** That is an element of it, yes.

**Lord Marnoch:** Thank you. I intend to ask questions on only two aspects of the matter as disclosed in your various statements. As I understand it—I confess that it is my own fault, but I may not have understood very much of what has already happened this afternoon—I may traverse some of the material that Mr Dennison canvassed with you. However, if I do, I hope that it will be in a rather different context.

First, I will ask you questions about  $L_{Aeq}$ —is that the technical expression?

**Steve Mitchell:** It is one of them, yes.

**Lord Marnoch:** Could that be described for layman’s purposes as averaged-out noise over a period?

**Steve Mitchell:** Some months ago I produced a guide called “What is noise?” It is appendix 1 to my—

**Lord Marnoch:** Sorry, could you humour me? I am slightly deaf.

**Steve Mitchell:** I tried to explain what  $L_{Aeq}$  is to community liaison groups and—

**Lord Marnoch:** I know that. I read it, but for shorthand purposes I am suggesting that  $L_{Aeq}$  involves averaging out the impact of noise over a period.

**Steve Mitchell:** I would say that it involves accumulating the noise level over a period. If we use the word average, it suggests to people a certain type of average with which they are familiar. In my document “What is noise?” I explain that  $L_{Aeq}$  is not that familiar average. It is an

average that is biased towards peaks. That is why it is used for railway noise.

**Lord Marnoch:** It is an average.

**Steve Mitchell:** It is a logarithmic average.

**Lord Marnoch:** With respect, why could you not agree that it is averaged-out noise?

**Steve Mitchell:** I will use the expression "logarithmic average" if you do not mind.

**Lord Marnoch:** We can call the averaged-out logarithmic average—to use your expression— $L_{Aeq}$ . I am right, I think, that the criteria that you have adopted for acceptable levels of  $L_{Aeq}$  derive from the levels said to be acceptable for noise exposure category A in planning advice note 56 of 1999.

15:45

**Steve Mitchell:** Those are the same levels, yes.

**Lord Marnoch:** No. I shall repeat the question. I am right, I think, that the criteria that you put forward derive from that table.

**Steve Mitchell:** Which table?

**Lord Marnoch:** If it is a difficult question, perhaps you would refer to page 27 of your statement.

**The Convener:** Where is that in the rebuttal statement, because that is what we should be focusing on?

**Lord Marnoch:** With respect, convener, not entirely so. To understand the context of what is said in the rebuttal statement or anything else, one has got to see what was originally said in the statement.

**The Convener:** Committee members are privy to all that information in writing and will give it equal weight. In the guidance prepared by the clerks for all objectors, and indeed for the promoter, it was made clear that the focus of today's oral evidence session would be on the remaining areas of dispute—those contained in the rebuttal witness statements. It would therefore be helpful for us if the focus of attention was on that.

**Lord Marnoch:** I do not want to get at cross-purposes with you, convener. We do not have to rebut that, because that is what the witness said originally. I can read it to you.

**The Convener:** If that is what the witness said and it has not been rebutted, we take that to be agreed.

**Lord Marnoch:** I am grateful for that clarification, convener, but the witness will not agree that the criteria derive from planning advice

note 56. That is critical to me and I would like to quote what he himself has said in his statement. May I do that?

**The Convener:** You may do that provided it is in context and brief. Then we can get to the points in the rebuttal statements. I shall allow you that flexibility.

**Lord Marnoch:** Mr Mitchell, I remind you of what you said in the appendix to your statement on the noise and vibration policy, to which you yourself have referred. You said:

"Options for noise mitigation will start to be considered if the free-field noise level outside the window of any sensitive receiver exceeds either of the upper values specified in PAN56 (2) for Noise Exposure Category A".

**Steve Mitchell:** Yes.

**Lord Marnoch:** So the criteria that you have adopted for  $L_{Aeq}$  derive, do they not, from noise exposure category A in planning advice note 56?

**Steve Mitchell:** Well, yes, they do.

**Lord Marnoch:** I thought that you were doubtful about that. That being agreed, could you now look again at planning advice note 56? As far as those noise exposure categories are concerned, I refer you first to paragraph 50 and then to paragraph 52. Convener, this document was sent to the committee and you have got it.

**The Convener:** Yes.

**Lord Marnoch:** I shall go through paragraph 50 with you first of all. It is headed

"Residential Development and Transport Noise"

and it reads:

"This advice note suggests the use of Noise Exposure Categories",

which includes category A. Is that correct?

**Steve Mitchell:** Yes.

**Lord Marnoch:** It goes on:

"to help planning authorities determine applications for residential development on sites subjected to noise from road, rail, air, and 'mixed' transportation noise."

Is that correct?

**Steve Mitchell:** Yes.

**Lord Marnoch:** Is not it clear from that alone that noise category A is concerned with just that—applications for residential development on sites already subjected to noise from road, rail and air?

**Steve Mitchell:** Perhaps I am slightly pre-empting your question. We have used the reference NEC A as the standards that we have adopted, but PAN 56 talks about lots of other things. The appendix is useful; it tells us where those standards come from. What we have not

done is use all the other NECs—B, C and D—as it would be inappropriate to do so. We have used the threshold at which you enter the NEC realm. We have used that threshold value to assess tram noise, not the NEC process itself.

**Lord Marnoch:** Mr Mitchell, I am afraid that I must press you on the issue. I am well aware that PAN 56 covers lots of things. You pointed that out to Mr Dennison. I am equally aware—we have just agreed—that the  $L_{Aeq}$  levels that you give derive from noise exposure category A, which is set out in PAN 56. I put it to you plump and plain that paragraph 50 makes it clear that the noise exposure categories have nothing to do with what is appropriate for  $L_{Aeq}$  in what is already a quiet environment. Do you understand the question?

**Steve Mitchell:** I understand the question and I am endeavouring to answer it. There are four noise exposure categories. We have used as our basis the threshold, which is the point at which you fall out off the noise exposure category realm. There is no specific guidance on noise levels for new railways, which is the situation that we are confronted with today.

**Lord Marnoch:** I will take a note of that. You say that there is no guidance in PAN 56 for the introduction of railways.

**Steve Mitchell:** I said that there are no specific noise standards for new railways—

**Lord Marnoch:** Or new tramways.

We agree on that.

**Steve Mitchell:** There is no strict guidance. Someone such as myself who is confronted with doing an environmental statement must use the available guidance and adopt a standard that we think is appropriate. That is what I have done.

**Lord Marnoch:** I have to suggest to you that for the reasons that I have given, PAN 56 is not appropriate guidance in this connection.

**Steve Mitchell:** I hear your point of view. I have looked at all the guidance—

**Lord Marnoch:** It is not a point of view—it is a question.

**The Convener:** Can you allow Mr Mitchell to complete his sentence?

**Steve Mitchell:** I have looked at all the guidance. That is what I do as an acoustician in environmental noise. I have looked at all the guidance and this is the most appropriate standard that I have managed to find. I am not aware that any of your experts or anyone else has mentioned other guidance that is more relevant. I believe that I have used the most relevant guidance.

**Lord Marnoch:** You say that it is the best or most relevant guidance that you can find, but it is

not expressly in point.

**Steve Mitchell:** As I say, there is no specific guidance. That is stated all over the place in the evidence.

I cannot pick out a standard for railway noise—in fact I can, but it is for noise insulation.

**Lord Marnoch:** I have to suggest to you, plump and plain, that paragraph 52 makes it clear that the compilers of PAN 56 had no intention that it should be used in the situation that we are now in. Paragraph 52 states:

“It is important to note that the Noise Exposure Categories apply only where consideration is being given to introducing new housing development into an area with an existing transport noise source and not in the reverse situation. The statutory planning system can be used to impose conditions to protect incoming residential development from an existing transport noise source. However, planning conditions cannot normally be applied”

to the same effect otherwise.

Does that not make it clear that the compilers of PAN 56 had no intention that it would be used in this sort of situation?

**Steve Mitchell:** That is right. They did not intend the four noise exposure categories to be used in this situation. However, as I say, apart from the standard for noise insulation there are no standards for new railways anywhere in the guidance. As I have explained, the standard for noise insulation is at very much higher noise levels than we expect to occur in this case.

**Lord Marnoch:** Let us accept your statement that there is no guidance for this situation then let us look at the fact. The fact is that as applied to Wester Coates Terrace the criteria in your noise and vibration policy, which you told Mr Thomson about at the outset, would increase the average noise level, day and night, by about 10dB  $L_{Aeq}$ .

**Steve Mitchell:** That is correct.

**Lord Marnoch:** For the record, that can be found in table 13.5 of the environmental statement and on page 27 of Steve Mitchell's statement.

On your own say so, Mr Mitchell, an increase of 10dB—I quote again from what you said in the noise and vibration policy—would be perceived “as no less than” a doubling of the existing  $L_{Aeq}$  level. Is that correct?

**Steve Mitchell:** Yes. That is right.

**Lord Marnoch:** So without any guidance that expressly refers to this situation and in the face of a statement in the planning advice note that it must not be used in this situation, your noise and vibration policy imposes on the residents of Wester Coates Terrace a  $L_{Aeq}$  level that they will perceive to be double what they have to put up with at present, day and night.

**Steve Mitchell:** I have just answered the double question. The noise and vibration standard that we adopted is a tried and tested standard on other tramways. It accepts that noise levels will increase. I have never denied that; I have always been frank—

**Lord Marnoch:** I would like an answer to my question.

**The Convener:** I think that Mr Mitchell is attempting to answer it.

**Lord Marnoch:** I apologise, convener. I was not aware of that. Have you finished, Mr Mitchell?

**Steve Mitchell:** I think so.

**Lord Marnoch:** Well, I would like to know whether you agree that the noise criteria in your noise and vibration policy will impose on the Wester Coates Terrace residents a  $L_{Aeq}$  level that they will perceive to be double what they have to put up with at present; day and night.

**Steve Mitchell:** Yes. I believe that I have now answered the question three times.

**Lord Marnoch:** Next, and lastly, I turn to the matter of sleep disturbance. Can we agree that that is quite an important matter?

**Steve Mitchell:** Yes. It is an important matter.

**Lord Marnoch:** Right. And when we are considering the matter of sleep disturbance, it is not the logarithmic averaged-out noise that matters—we can forget all about that; I do not want to talk about it any more, unless you do, Mr Mitchell—but the noise that is caused at the moment the tram passes. Is that correct?

**Steve Mitchell:** Yes. That is more important.

It is possible to assess sleep disturbance in terms of  $L_{Aeq}$ , but the maximum level is a very good way of assessing sleep disturbance.

**Lord Marnoch:** That is called  $L_{Amax}$ .

**Steve Mitchell:** Yes.

**Lord Marnoch:** Am I right in saying that your criterion for  $L_{Amax}$  is 82dB?

**Steve Mitchell:** Yes.

**Lord Marnoch:** Again, in paragraph 5.7 of your statement, you claim that that figure is “derived from”—wait for it—planning advice note 56.

**Steve Mitchell:** Yes. It is talked about in there.

**Lord Marnoch:** No. You said that it was “derived from” PAN 56.

**Steve Mitchell:** Yes.

**Lord Marnoch:** Where do we find the figure of 82dB in planning advice note 56?

**Steve Mitchell:** It is certainly in one of the appendices.

**Lord Marnoch:** If it helps, it is in annex 1, on page 15. That is the only place that I have found it; it is in note vi.

**Steve Mitchell:** Yes. It is there.

**Lord Marnoch:** Right.

Let us see what annex 1 is talking about. Paragraph 1 says:

“The purpose of categorisation is to identify the need for development proposals to address noise issues and to put forward recommended standards for noise exposure to which new housing development should comply.”

Then we have in the following table:

“Noise levels corresponding to noise exposure categories for new dwellings”.

That is  $L_{Aeq}$  again. Is that right?

16:00

**Steve Mitchell:** Yes.

**Lord Marnoch:** And then we have A, B, C and D. The only reference that we get, unless you can find another, to the magic figure of 82dB is in note vi of annex 1 of the planning advice note. It reads:

“Night-time noise levels (23.00 - 07.00): sites where individual noise events regularly exceed 82 dB  $L_{Amax}$ ... more than twice in any hour during this period should be treated as being in NEC C, regardless of the  $L_{Aeq,8h}$ ”.

Is that correct?

**Steve Mitchell:** What that means is that a maximum noise level of 80dB or 81dB would be in noise exposure category A. In that case, noise need not be considered a planning matter. In other words, if one were building a new house, which we are not, and the  $L_{Amax}$  was 81dB, noise would not be a consideration.

It is unlikely, however, that the planning authorities would say, “You needn’t think about noise” about a level of 81dB.

**Lord Marnoch:** Try 82.

**Steve Mitchell:** If it were just less than 82dB, it is unlikely that a planning authority would say, “You needn’t think about noise” if the noise was loud enough to waken people.

**Lord Marnoch:** Can we just stick with 82dB? The figure comes from the planning advice note. It says that if one has a  $L_{Amax}$  figure of 82dB, one must treat it as a category C case. That is what it says.

To find out what is meant by category C, we have to go back to page 10. Under the heading, “noise-sensitive developments General” paragraph 52 of the planning advice note says that in category C

"Planning permission should not normally be granted."

Planning permission should not normally be granted in a category C case. Therefore, if there were 82dB  $L_{Amax}$ , planning permission should not normally be granted. All right?

Paragraph 52 continues:

"Based upon the evidence contained within a Noise Impact Assessment, however, it may be possible to grant permission subject to measures that ensure an adequate level of protection against noise."

That would include the 82dB  $L_{Amax}$ , would it not?

**Steve Mitchell:** Yes. Although that relates to planning permission for a new house.

**Lord Marnoch:** Yes it does, but I am just asking what category C means. It means that if one is in planning category C, there is a presumption against getting planning permission for a new house unless one can produce proposals to reduce the noise levels, including  $L_{Amax}$ .

**Steve Mitchell:** Of greater than 82dB, yes.

**Lord Marnoch:** I therefore suggest to you, plump and plain, that the noise level of 82dB, when properly understood from this document, has absolutely nothing to do—I am tempted to use worse words—with what is acceptable for noise disturbance.

**Steve Mitchell:** I said earlier that I am not lucky enough to have guidance that tells me how much noise to allow from a new railway, apart from the noise insulation regulations in England and Wales—

**Lord Marnoch:** Do you understand that?

**Steve Mitchell:** I think that I ought to be able to answer what has been quite a long question from you. I would like to answer it, as we have agreed that sleep disturbance is an important point.

I do not have a standard before me for a new railway. Therefore, I look to the relevant guidance and I apply it, using the professional skill that I have acquired over several years in this business. What I do know is that the planning authority would allow a new house to be built if the  $L_{Amax}$  were less than 82dB, without consideration of noises that determine planning permission.

That is not the situation that we are in, but it suggests to me that levels of less than 82dB are acceptable because the planning authorities are not interested if the levels are below 82dB.

We do not have any guidance on railways, but we do have some guidance on new roads. Let us consider that, if you do not mind, because I think it is relevant in that a new road is a linear transport system with vehicles travelling up and down it, which create noise. The "Design Manual for Roads and Bridges" tells us in detail how to assess noise

from new roads. Chapter 5 refers to sleep disturbance due to traffic noise. How do we examine that?

**Lord Marnoch:** Which page are we on, please?

**Steve Mitchell:** Do you have the "Design Manual for Roads and Bridges"?

**Lord Marnoch:** No, and I do not think that we have had any notice of it. I must suggest that it is something totally different from tramlines.

**Steve Mitchell:** In answering the question, I am trying to use some related guidance.

**Lord Marnoch:** Madam—

**The Convener:** In fairness, allow Mr Mitchell to answer the question. I take your point that you have not had access to the document in question. The committee will apply its own weight to the evidence that it hears today.

**Steve Mitchell:** I suspect that your experts—

**Lord Marnoch:** Can I—

**The Convener:** Yes, you can question me. Where that will get you, Lord Marnoch, I do not know, but you may try.

**Lord Marnoch:** All I am questioning this witness about is the proper understanding of planning advice note 56.

**The Convener:** Sure. It is my understanding, however, that if the committee and the Parliament pass the bill, that supersedes planning. We should all be mindful of that. Naturally, we wish to be guided by the planning context in which we sit. However, I am quite clear about the effect of passing the bill.

We should let Mr Mitchell answer the question, because I think that it will add to our understanding. I again make the point that the committee will attach a certain weight to the evidence received. The fact that you have not received a copy of the "Design Manual for Roads and Bridges", Lord Marnoch, has been noted.

**Steve Mitchell:** I have been told that the guidance I have used is not completely relevant. I have said that there is no guidance that is completely relevant. I am therefore drawing on another piece of guidance that I think is of relevance, relating to new roads and bridges. It tells us how to assess sleep disturbance. I will not quote it, because you do not have it in front of you. Needless to say, it discusses the 80dB average level and refers to the DORA study—by the department of operational research and analysis of what was then National Air Traffic Services—to which Mr Dennison directed me earlier. It refers to the chances of waking up as 1 in 75 and so on.

If we were building a new road down the corridor, rather than a new railway, we would be

obliged to consider the maximums of 80dB to 82dB, with a correction for ground effect. That would be the prescriptive guidance for building a new road. I accept that it is not completely relevant. Perhaps I should not mention it. I cannot help thinking, however, that it is of some relevance to the situation that we are in. The guidance seeks to avoid vehicles on new linear transport infrastructure waking people up at night. In that sense, I think it is highly relevant.

**Lord Marnoch:** Why did you not refer to this “highly relevant” material at an earlier stage?

**Steve Mitchell:** It is referred to in the annex to the environmental statement. Perhaps I can find the reference.

**Lord Marnoch:** But not in this context, or in your statement.

**Steve Mitchell:** With Mr Dennison, we referred to the 1992 sleep disturbance study by National Air Traffic Services—now the Civil Aviation Authority. That is the base document. Lots of planning guidance, including PAN 56 and the “Design Manual for Roads and Bridges”, draws on it. I expect that it also applies to other guidance on other structures.

**Lord Marnoch:** I suggest that you were quite right not to refer to it in your statement. The nature of road noise is inherently different from that of railway noise.

**Steve Mitchell:** It is different. As I said earlier, in terms of annoyance and, I suspect, sleep disturbance, railway noise is found to be less disturbing because it is repeated and predictable. I believe that habituation to railway noise is greater than that to road traffic noise or to aircraft noise.

**Lord Marnoch:** Anyway, I want you to be clear as to the question that I was really putting to you, because it is important. I am suggesting to you that the 82dB  $L_{Amax}$ , which we find in planning advice note 56, is totally irrelevant to the  $L_{Amax}$  figure for sleep disturbance.

**Steve Mitchell:** No, I think that it is highly relevant, for the reasons that I have just put.

**Lord Marnoch:** Very well. Is that a matter on which planning consultants could differ?

**Steve Mitchell:** I have read Mr Mackenzie’s evidence, to which I am sure you are referring. It is interesting that in his main statement he suggests that the tram should be limited to 60dB  $L_{max}$ , but in his rebuttal statement he changes his mind and uses 70dB  $L_{max}$ .

**Lord Marnoch:** I inform you that that is a typographical error and should be read as 60dB.

**The Convener:** The issue properly belongs to the cross-examination of the gentleman who is being referred to, when he appears as a witness.

**Steve Mitchell:** I was just quoting another planning consultant, which is what the question was about. I was asked whether experts differ and the answer is that we do.

**Lord Marnoch:** It is a normal question. I doubt whether Mr Thomson would argue this, but case law shows that an issue that may be relevant to the committee’s consideration is that of whether the proper understanding of planning advice note 56 on the limit of 82dB  $L_{Amax}$  is a matter on which planning consultants could differ. Do you say that you must be right?

**Steve Mitchell:** No, people have different opinions. Sleep disturbance is a difficult subject, but it is one that I have studied in depth—I know very well the work that has been done on aircraft noise sleep disturbance.

**Lord Marnoch:** I will now make a suggestion that may be the basis of evidence that we will lead later. It is important that you get the issue clearly, so I will say it slowly. I suggest that, if we leave aside planning advice note 56—for the reasons that I have given, although you may not agree with them—the correct  $L_{Amax}$  figure for sleep disturbance purposes is 60dB at the outside wall of the receiver house, which, with an open-window attenuation of 15dB, would produce an interior  $L_{Amax}$  of 45dB. Do you understand the proposition?

**Steve Mitchell:** I understand your suggestion.

**Lord Marnoch:** Do you agree with the open-window attenuation of 15dB?

**Steve Mitchell:** Yes.

**Lord Marnoch:** In support of the proposition that I have put to you, I will refer you to two documents and one or two facts, and then you will be quit of me. The first document is the World Health Organisation’s “Guidelines for Community Noise”. You said that that document is not very important because it does not set standards. I will suggest certain matters to you in that regard. Of course the World Health Organisation cannot legislate for standards, because that is a matter for national states, is it not?

**Steve Mitchell:** Yes.

**Lord Marnoch:** So we cannot expect the World Health Organisation to produce standards. However, with the vast amount of research that is at its disposal, it can suggest guidance. Is that correct?

**Steve Mitchell:** Yes, that is what it does.

**Lord Marnoch:** If there is no national standard or guidance, there is absolutely nothing wrong at all in looking at World Health Organisation guidance, on that premise.



**Steve Mitchell:** It is worth looking at WHO guidance, but I have also looked at other national guidance.

**Lord Marnoch:** I am saying that if there was nothing else, it would be perfectly permissible to look at World Health Organisation guidance.

**Steve Mitchell:** Yes, if there was nothing else, but there is other guidance.

**Lord Marnoch:** I put my question on that premise.

I refer you to table 1 in the World Health Organisation's "Guidelines for Community Noise" from 1999, which, I think, was made available to the committee.

**The Convener:** Yes, the committee has the document.

**Lord Marnoch:** What does table 1 state about the specific environment of an inside bedroom?

**Steve Mitchell:** Among other points, it talks about an  $L_{\max}$  of 45dB.

16:15

**Lord Marnoch:** While we have the WHO guidelines in front of us, there is an incidental matter that I want to ask you about. In paragraph 3.11 of your rebuttal statement, you say that that guidance applies only to sensitive people. Do you remember saying that?

**Steve Mitchell:** I did not say that; I said that because there were large variations in people's sensitivity to sleep disturbance, the WHO was understandably concerned with the most sensitive individuals.

**Lord Marnoch:** I suggest to you that what you said in paragraph 3.11 of your rebuttal statement about the WHO being concerned with sensitive people is incorrect. In that regard, I want you to look at page xii.

**Steve Mitchell:** Of which document?

**Lord Marnoch:** The WHO "Guidelines for Community Noise".

**Steve Mitchell:** Is that the page that was attached to Mr Mackenzie's rebuttal evidence?

**Lord Marnoch:** I cannot tell you that, but I can pass the page to you, if you would like me to. [Interruption.] I am told that it is not the page that you mentioned.

**Steve Mitchell:** You are referring to a new document that I have not seen.

**Lord Marnoch:** The document is referred to in Mr Mackenzie's rebuttal. I am sure that you are familiar with the WHO guidelines, as you referred to them.

**Steve Mitchell:** I am familiar with them, but I am not sure that the committee is.

**The Convener:** I will make a suggestion. The committee has sufficient evidence on the point that is being made about the WHO guidelines. Unless there is a headline question that you want to ask, I think—

**Lord Marnoch:** There are two points that I want to deal with. The first is the suggestion that the WHO guidelines are concerned with sensitive people; with the greatest respect, that has not been dealt with. Page xii of the guidelines states:

"When the background noise is low, noise exceeding 45 dB  $L_{A\max}$  should be limited, if possible, and for sensitive persons an even lower limit is preferred."

Does that not indicate that the limit of 45dB  $L_{A\max}$  is not restricted to sensitive persons?

**Steve Mitchell:** I think that it is necessary to read the whole document to understand the point.

**Lord Marnoch:** I have done so.

**Steve Mitchell:** I have done so, too. I have also read many other things and, on that basis, I have a good understanding of sleep disturbance.

**Lord Marnoch:** Page xiv of the WHO document states:

"Although the guideline values refer to sound levels impacting the most exposed receiver at the listed environments, they are applicable to the general population."

Does that not suggest that you were wrong in what you said in paragraph 3.11 of your rebuttal?

**Steve Mitchell:** I have just read my paragraph 3.11 and I think that it is understandable that the WHO would take a cautious approach in its guidelines.

**Lord Marnoch:** I am suggesting that, when one reads the document, one finds that the WHO does not take a cautious approach.

**Steve Mitchell:** The WHO would be being highly irresponsible if it were not cautious. It seeks to give guidance on the onset of health effects.

**Lord Marnoch:** The next document to which I wish to refer you is a new document—the British Standard code of practice BS 8233:1999—which is referred to plump and plain in Mr Mackenzie's rebuttal statement.

**Steve Mitchell:** I am afraid that I do not have that document in front of me.

**Lord Marnoch:** Did you not read a reference to it in Mr Mackenzie's rebuttal statement?

**Steve Mitchell:** Yes, I did.

**Lord Marnoch:** Did you not have a look at it then?

**Steve Mitchell:** Yes, I did.

**Lord Marnoch:** Did you not think that it might be useful to bring it along with you?

**Steve Mitchell:** No, I did not.

I have Mr Mackenzie's appendix, but not the whole British Standard.

**Lord Marnoch:** I would quite like an answer to my question. Did you not think that it might be useful to bring it along with you?

**Steve Mitchell:** The whole of the British Standard?

**Lord Marnoch:** Why not?

**Steve Mitchell:** I have many documents with me, but that one is not in my bag.

**Lord Marnoch:** Do you have it now?

**Steve Mitchell:** I have the appendix, which consists of page 19 of BS 8233:1999.

**Lord Marnoch:** Would you please read out the footnote for bedrooms that appears in table 5?

**Steve Mitchell:** The note states:

"For a reasonable standard in bedrooms at night, individual noise events (measured with F time-weighting) should not normally exceed 45 dB LA<sub>max</sub>."

Perhaps I should explain that I did not bring the document along because I do not believe that BS 8233 is particularly relevant in this case.

**Lord Marnoch:** I shall return to that in a second.

Is it just coincidence that exactly the same interior decibel level for L<sub>Amax</sub> in connection with sleep disturbance is given in both BS 8233 and the World Health Organisation guidelines?

**Steve Mitchell:** No, it is not coincidence. The reason is that BS 8233 provides guidance on noise levels for new buildings. For new buildings, we would take a cautious approach and ensure that the design took account of a most sensitive person who is not habituated to noise, such as a visitor who lives in a very peaceful spot. That is a very conservative approach to design. Indeed, I think that the very name of the standard shows that it is to do with designing new buildings.

**Lord Marnoch:** I am grateful to you for saying that, because that takes me to my first fact. You say that BS 8233 is not applicable because it applies only to new buildings. Is that right?

**Steve Mitchell:** Yes.

**Lord Marnoch:** Am I right in thinking that most local authorities insist on the same figure—45dB L<sub>Amax</sub>, as derived from BS 8233—for all new buildings?

**Steve Mitchell:** For a new building that is to be designed to a good standard, one would choose

BS 8233—bearing in mind all the factors that I mention in my rebuttal statement—as the standard for internal noise levels.

**Lord Marnoch:** I would like an answer to my question. Am I not correct in thinking that, for new buildings, most local authorities insist on that figure?

**Steve Mitchell:** Yes, they tend to do so.

**Lord Marnoch:** Is the City of Edinburgh Council such an authority?

**Steve Mitchell:** Yes, of course.

**Lord Marnoch:** Please, if you will, attend to this next question. Did you yourself not rely on BS 8233 in dealing with the objection to the bill from the chartered accountants institute of Scotland?

**Steve Mitchell:** Pardon me. Do you mean the Institute of Chartered Accountants of Scotland?

**Lord Marnoch:** Yes.

**Steve Mitchell:** I may have referred to it for offices and things, yes.

**Lord Marnoch:** But you were not dealing with new buildings in that context.

**Steve Mitchell:** That is true, but I did not refer to the standard in the context of sleep disturbance.

My understanding of the noise levels that wake people up is based on a reading of the core documents—in particular, the Civil Aviation Authority's "Report of a Field Study of Aircraft Noise and Sleep Disturbance"—that underpin the standards that we have talked about. As I have shown today, the "Design Manual for Roads and Bridges" mentions a maximum noise level of 80dB(A)—or 82dB(A) with a ground effect—which is the same number as the one that I have talked about.

The position is that, for the design of new buildings or for planning permission for a new house, one would understandably go for a cautious approach. For building new infrastructure, one would take a more pragmatic view by accepting the 80dB(A) level that I have talked about. I believe that I have provided written evidence along those lines.

**Lord Marnoch:** I am afraid that I will need to chase you on that. These questions may be unpleasant, but I think that they are relevant.

Initially, you told me that BS 8233 was not applicable to all buildings because it was relevant to new buildings. You now accept that you referred to that standard in connection with a previous objection that involved existing buildings.

**Steve Mitchell:** We might have referred to BS 8233 in connection with CA House, which is an

office building, but we certainly did not refer to it in the context of sleep disturbance, which is what we are discussing today.

**Lord Marnoch:** So BS 8233 sometimes applies to existing buildings but not always. Is that the position?

**Steve Mitchell:** BS 8233 provides useful guidance for new buildings, and I am aware of that guidance.

**Lord Marnoch:** Apparently, it also sometimes applies to old buildings.

**Steve Mitchell:** No. I do not think that it particularly applies to old buildings. It provides guidance on standards for different types of spaces.

**Lord Marnoch:** However, you referred to BS 8233 in connection with an old building?

**Steve Mitchell:** Yes, I did.

**Lord Marnoch:** I suggest that that is entirely correct. Can you think—take as long as you like to consider this question, Mr Mitchell—

**The Convener:** No. Be brief. Brevity is much valued by the committee.

**Lord Marnoch:** I am sorry if I am getting tiresome, but I am near the end of my questioning. I want Mr Mitchell to be clear about this.

**The Convener:** Absolutely.

**Lord Marnoch:** Mr Mitchell, can you think of any sensible reason why the City of Edinburgh Council should insist on a noise level of 45dB for a new building next to a tramline but on 82dB—which would be, say, 70dB inside—for an old building?

**Steve Mitchell:** With respect, I think that the figures are a bit inconsistent. For example, you have introduced the figure of 70dB, which refers to the noise level if a window is partially open, not to the noise level—

**Lord Marnoch:** I am sorry—I cannot hear you.

**Steve Mitchell:** I said that you had rather confused the question by introducing the 70dB figure.

In response to your question, the reason is that anyone who builds a new building has the opportunity to achieve the best possible conservative standard. However, if one builds a railway or a road, one cannot always achieve the same standards. If we looked for a noise level of 45dB inside when we built new roads or railways, none would be built. They would all be in tunnels. As a result, we need to take a more pragmatic view. Indeed, the example that I gave from the “Design Manual for Roads and Bridges” takes just such a view. The fact is that people sleep quite

comfortably with maximum noise levels of 82dB outside their house.

**Lord Marnoch:** Are you saying that, even if it were required of you, you could not attenuate the noise level to 45db inside?

**Steve Mitchell:** I think that that sort of maximum noise level would be difficult to achieve by measures at source.

**Lord Marnoch:** But what sort of measures? I am sure that in Wester Coates Terrace you could take attenuation measures that would bring down the noise level to 45dB inside and 60dB outside.

**Steve Mitchell:** That would be quite difficult.

**Lord Marnoch:** Are you saying that it would be impractical?

**Steve Mitchell:** In that location—and perhaps in others—we would have to build very high screens or, more likely, put the line in a tunnel.

**Lord Marnoch:** But surely one way of dealing with the problem is to lay the track differently.

**Steve Mitchell:** I do not think that there is any practicable scheme that could achieve an  $L_{Amax}$  of 45dB inside or 60dB outside.

**Lord Marnoch:** I was advised otherwise. Whom should I ask about this? Not you, obviously, because you are not an engineer.

**Steve Mitchell:** I am an acoustician.

**Lord Marnoch:** A what?

**Steve Mitchell:** An acoustician.

**Lord Marnoch:** Yes, well, whom should I ask about whether the noise levels could, if necessary, be attenuated?

**Steve Mitchell:** You could ask your expert witness what sort of measures he would envisage at the source—

**Lord Marnoch:** No. Which of the promoter’s witnesses should I ask about whether this could be done? I understood that it would be no problem. It would, of course, be more expensive.

**Steve Mitchell:** I have not looked at the matter because I do not think that it is necessary. I believe that people will still sleep if the noise levels are much higher than that.

**The Convener:** I think that the point has been made. Indeed, I am struggling to find where the matter is mentioned in the rebuttal witness statement, but I have allowed a degree of latitude. Can we move on?

**Lord Marnoch:** I have two more questions for you, Mr Mitchell. Although your rebuttal statement refers to a World Health Organisation expert group in 2002 that suggested that only field studies should be used—

**Helen Eadie:** On a point of order, convener. You have already determined that we have received a sufficiency of information on this point.

**The Convener:** Thank you for the reminder.

**Lord Marnoch:** With the greatest of respect, I should say, before you rule on this matter, that the WHO document is very big. I wish to refer to a quite different part—

**Helen Eadie:** I understand that, but you—

**The Convener:** I ask committee members to stop engaging in debate with the objectors' representatives. I am minded to rule that we have received a sufficiency of written and oral evidence from a number of questioners on this matter. Lord Marnoch, I ask you to move on.

**Lord Marnoch:** Are you aware that, in 2004, a group produced another report to which you have not yet referred?

**Steve Mitchell:** I am not sure about that one—I do not know which group you are referring to. Many groups are examining different aspects of transport noise.

**Lord Marnoch:** I ask about that particular group because you refer in your rebuttal statement to a WHO group report in 2002. We have a report from another WHO expert group that—

16:30

**The Convener:** I am trying to be as flexible and patient as I can be. To which rebuttal witness statement are you referring? Is it the one from Richard Mackenzie to the statement that was prepared by Steve Mitchell, or is it something else? I can find no reference to what you describe in the rebuttal statement, but I might have missed it.

**Lord Marnoch:** I think—but I have been thinking quite a lot, recently—that we find in Mr Mitchell's rebuttal statement a reference to the World Health Organisation group in 2002.

**The Convener:** Yes. My understanding is that we are discussing 2002, not 2004.

**Lord Marnoch:** But we got the rebuttal statement that refers to the group in 2002, and we have had no opportunity to do anything since then because our rebuttal statement had already been submitted. What we find in the rebuttal statement—this is my only opportunity to bring the matter to your attention—is misleading, as a subsequent group was formed in 2004, which has said something different.

**The Convener:** Give me a second, please. *[Interruption.]* If you wish to make a brief point on the matter, by all means do so. However, I am sure that you will bring this out when you examine

your own witness, and I am sure that you will lodge the document if it has not already been lodged.

**Lord Marnoch:** Certainly, convener. However, I believe that it is only fair to give the witness an opportunity to comment on the matter, which is what I am trying to do.

**The Convener:** I like fairness as well as brevity. Carry on, Lord Marnoch.

**Lord Marnoch:** Are you aware that a group statement was made by the World Health Organisation in 2004?

**Steve Mitchell:** No. I do not know the document to which you refer. If you tell me its full title, I may recognise it.

**Lord Marnoch:** It is a group report from 2004, which has two bits to it. The full title is "Report on the second meeting on night noise guidelines" and it is dated "Geneva, Switzerland, 6-7 December 2004". The third conclusion of that document makes it clear that the existing guidelines, which are in the 1999 paper, are

"based on experts' best judgements. The consensus and advice of this group will be one of the crucial elements of the final document."

**Steve Mitchell:** I do not know to which part of the guidance you are referring. It may or may not be the sleep disturbance section. The WHO guidance covers numerous aspects, as you know.

**Lord Marnoch:** In paragraphs 3.26 and 3.27 of your rebuttal statement, you refer to the field study into aircraft noise. Is that correct?

**Steve Mitchell:** Yes.

**Lord Marnoch:** Am I right in thinking that that study was sponsored by—surprise, surprise—the Civil Aviation Authority?

**Steve Mitchell:** The CAA is the author of the study. It was probably sponsored by the Department for Transport at the time.

**Lord Marnoch:** In any event, it was not clear to me what you were telling us about paragraph 3.6 of that document. On the face of it, that seems to be important because it acknowledges that the document is to do with deep sleep in the middle of the night. However, it gives us no information about the difficulty of getting sleep and the business of waking early due to  $L_{Amax}$ . Do you understand?

**Steve Mitchell:** Yes, I understand your question. I was asked a fairly similar question earlier.

**Lord Marnoch:** I did not quite get the answer.

**Steve Mitchell:** There are lots of comments in the document about what the authors would have

liked to research but, unfortunately, did not. The document is very scientific and a huge amount of meta-analysis is done on the data to extract what information is there. One of the things that the authors would have liked to do was to look at that particular aspect of time of night, but they did not have enough data to do that. It is interesting that, as I said earlier, airports tend to operate flights late at night and early in the morning, a bit like when the tramway will operate. I do not think that there is a major reservation about the data that were used.

**Lord Marnoch:** The document does not tell us about the business of having difficulty in getting sleep and waking up early because of  $L_{Amax}$ .

**Steve Mitchell:** That is what I am trying to answer. The report says that its authors would like to do more research on that—that is what such documents always say. Please bear in mind the fact that airports operate in those hours, so the report is highly relevant.

**Lord Marnoch:** Perhaps I am sounding argumentative. How can the report be highly relevant if it says that its authors have not done enough research to express a view on the matter?

**Steve Mitchell:** It says that they have not done enough research on a whole score of things. It is a highly scientific paper, and the authors would like to do more research on lots of things. It just so happens that the temporal distribution of aircraft flights around the four UK airports that were studied is probably quite similar to the temporal distribution of our tram services.

**Lord Marnoch:** This is my final question. In regard to both  $L_{Aeq}$  and  $L_{Amax}$ , you said to Mr Thomson that the noise and vibration policy gives responsible levels consistent with best practice. However, far from doing that—I regret to put this to you—your noise and vibration policy does nothing of the sort. However, you disagree.

**Steve Mitchell:** Of course I do. I have written three or four such policies, which have been acceptable to other authorities.

**Lord Marnoch:** That is all I have to ask.

**The Convener:** Thank you, Lord Marnoch. I hope that you did not find the experience too unpleasant.

**Lord Marnoch:** It was different, convener.

**The Convener:** I am sure that it was. I shall take lessons from you in the future.

**Lord Marnoch:** And I from you, madam.

**The Convener:** I suspend the meeting for two minutes for a quick comfort break.

16:36

*Meeting suspended.*

16:42

*On resuming—*

**The Convener:** We resume with Mr Scrimgeour for group 34, who will put questions to Steve Mitchell.

**Graham Scrimgeour:** In discussion with the clerks, we agreed that the questions would be split between me and Mark Clarke. Mark will deal with the first half of the statement.

**The Convener:** They never told me that.

**Graham Scrimgeour:** I discussed it with David Cullum and Jane Sutherland this morning.

**The Convener:** On the basis that somebody is apologising in my ear, I take what you say to be accurate. That does not necessarily extend the session.

**Graham Scrimgeour:** No.

**The Convener:** As you know, brevity is much appreciated. Will Mr Clarke go first?

**Mark Clarke:** Yes. I had several points to make about the WHO guidelines—I know that you are nodding and shaking your head, convener, but I ask you to allow me to finish my sentence. I realise that the guidelines have been covered significantly over the piece, but I have two one-line points to make that have not previously been made.

**The Convener:** Okay.

**Mark Clarke:** Mr Mitchell has said that he could conceive of no way to achieve 45dB(A) for trams in the evening. Section 2.2.2 of the WHO “Guidelines for Community Noise”, which is on transportation noise, says:

“Railway noise”—

that is the best reference that I can achieve—

“depends primarily on the speed of the train”.

Therefore, we suggest that reducing the tram speed would be a method for achieving a much lower noise level for residents.

**Steve Mitchell:** Reducing the tram speed would reduce the noise, but it would also increase the period of the noise event as the tram passed a house. I do not believe that reducing the speed would suddenly reduce noise to 45dB.

**Mark Clarke:** But you agree that if the speed were reduced, the noise would be reduced.

**Steve Mitchell:** Yes, of course.

16:45

**Mark Clarke:** My final point refers to page 28 of the guidelines. The final paragraph, which covers the WHO's views on sleep disturbance, is well worth referring to. I rewind to my opening question, regarding baseline noise measurements. Do you agree that an important consideration in assessing the noise impact of tramline 1 is the change in ambient noise levels that it will produce at noise-sensitive receptors, such as residential dwellings and schools?

**Steve Mitchell:** Yes. I think that I answered that earlier.

**Mark Clarke:** The baseline noise survey was performed during July when, in comparison with winter, the available daylight, gardening and lawn mowing activity, children's play, bird and animal activity, and recreational use of gardens in the walkway, would all be at a peak. How can the readings that were taken be truly representative of the average annual sound exposure of the residents?

**Steve Mitchell:** As I am sure you are aware, the critical noise levels are those at night, and I do not think that those levels are affected by the sources that you listed.

**Mark Clarke:** We did not just survey at night. Surveys were performed across the whole period. My position is that the survey does not represent a proper annual representation of the noise experience of the Roseburn corridor residents.

**Steve Mitchell:** The survey followed practice that is used for environmental statements. Of course, I would have liked to have more baseline noise survey data—that is always a good thing—but we had enough to do the assessment. The seasonal point that you raise is not strong. The baseline survey was adequate. Peer reviewers mentioned that it was adequate. I do not think that it jeopardised our assessment. In terms of the mitigation that we recommended, as I said earlier, strangely enough, because it is the threshold levels that are critical, the extent of mitigation is not critically dependent on the baseline.

**Mark Clarke:** But you agree that, had a wider survey been performed, the results might have been different and might have been lower.

**Steve Mitchell:** One day, one will measure higher; the next day, one will measure lower. In doing surveys, a lot of skill is needed to avoid extraneous and atypical events. My surveyors are trained to do that. They have the necessary qualifications and years of experience behind them to perform a representative baseline noise survey. Doing a survey is not as simple as pointing a sound level meter and measuring everything. It is important to be aware of unusual events and to do a professional job.

**Mark Clarke:** Surely you agree that doing a survey in July, when activity around the gardens and walkway is greater, would be bound to give higher sound level readings than would be obtained over the winter months. In the winter, people would not be mowing lawns, listening to the radio in their garden, or playing or walking around the walkway, or at least they would be doing so to a lesser extent?

**Steve Mitchell:** I assure you that my surveyors would not have recorded ambient levels as typical if a lawnmower or radio was going. They would have avoided those events. They are trained to do that.

**Mark Clarke:** So you are telling me that none of those noises would have been recorded.

**Steve Mitchell:** They would have come back at another time or moved to a representative site nearby. When one is doing a baseline noise survey and one comes across something that is atypical, or relatively unusual, one excludes it because it could give a higher value.

**Mark Clarke:** But is that not what the  $L_{A90}$  reading does—exclude the higher values?

**Steve Mitchell:** It may do, but if the radio is operating all the time, it does not. It is good practice to avoid such things. Quite commonly, when someone is doing a noise survey a dog will bark at them, but they would not record that value because it would be rather unprofessional to do so.

**Mark Clarke:** Okay. Thank you. I will move on. Baseline readings were not generally taken at the extremes of the hours of operation—at 12.30 am or 5 am. That would have been relevant in making a true comparison of the change in the noise environment for those times, given that those readings are likely to have been the lowest ambient readings and that most sleep disturbance would be caused then. Why were readings not taken at those times?

**Steve Mitchell:** We generally tried to take measurements after midnight and before 6 or 7 in the morning. Obviously there are practical limitations such as how much time there is and how difficult it is to do that.

**Mark Clarke:** But taking readings at the extremes would have provided a better representation of the ambient levels at that time.

**Steve Mitchell:** Some of the measurements were taken at the extremes.

**Mark Clarke:** I do not believe that any of the measurements in table 12.1 are at the extremes; I have looked at it carefully. Some of them are after midnight and some are as early as 5.40, but none is at 5 and none is at 12.30.

**Steve Mitchell:** I have an understanding, as do my surveyors, of how noise tends to vary with time. It does not vary that quickly by time of night. If we measure within half an hour or an hour, we will get a similar noise level. The times are representative. The precise time is not critical.

**Mark Clarke:** Do you agree that the eight-hour  $L_{Aeq}$  between 11 pm and 7 am gives a skewed result for the tram operation noise, as it includes the silent period between 12.30 and 5 am?

**Steve Mitchell:** Are we still talking about measuring baseline? I am sorry, but I did not understand the question.

Let me try to answer more positively. The eight-hour  $L_{Aeq}$  is the tram noise level that we have used to assess against the threshold levels, but it is not the noise level that we have used to assess the change in baseline. As I said earlier, we used typical one-hour values in the hours in which the tram will operate to assess the change in the baseline. We predicted the tram noise level at midnight, measured the background noise level around midnight and compared the two to see the change in noise level. People have been talking to me about those changes today, quoting my work. There is no question of averaging the baseline over eight hours; we have not done that.

**Mark Clarke:** Excuse me for a second. I am just flicking past the questions regarding the WHO guidelines and PAN 56, which I think have been well covered.

**The Convener:** Excellent. I commend you for that action.

**Mark Clarke:** I will mention the WHO, but in an entirely different context. A fundamental issue with the noise survey is that it measures sound not noise. Noise, as defined by the WHO is unwanted sound. Do you agree?

**Steve Mitchell:** I agree with the second part, but not the first. The sound level meter measures sound, as its name suggests. It measures everything.

**Mark Clarke:** Do you agree that the definition of noise as unwanted sound is reasonable?

**Steve Mitchell:** Yes, that is a good definition to distinguish noise from sound.

**Mark Clarke:** The sounds measured at Blinkbonny Road and Craighleith Bank—the two areas nearest to Craighleith Drive, where I live—were of pedestrians, cyclists, joggers, birdsong and, at Craighleith Bank only, the distant buzz of traffic. I suggest that only the traffic fits the category of unwanted sound. The disturbance caused by the noise of the trams must be more significant. Do you agree?

**Steve Mitchell:** No.

**Mark Clarke:** Is it not the case that the noise of the trams would be at an entirely different frequency from the noise made by joggers or birds?

**Steve Mitchell:** It would perhaps be at a different frequency and would of course be of a different character. I am trying to think of an example. If somebody was listening to the radio, which would be a sound, in the back garden, it might well mask the noise of the tram. When we measure the baseline noise in the environment, we measure everything.

**Mark Clarke:** My understanding is that the different frequency of noises cannot be directly compared. Is that the case?

**Steve Mitchell:** It depends on what you are doing. If you are doing an environmental assessment, it is a well established procedure to use the A-weighted values—the A refers to the A in  $L_{Aeq}$ —which I think that you have endeavoured to understand. None of the experts here has questioned that. It takes care of the whole frequency question. It implies a frequency weighting to the sound, which takes care of the subject.

**Mark Clarke:** My understanding was that if, for instance, tram noise or the noise of a machine were introduced into an environment—irrespective of whether the reading that is being taken is an A-weighted reading—the birdsong effect would be cumulative rather than supportive, as it were.

Although I am not a widely experienced acoustician like you, I have tried to investigate the levels of noise increase. Will you please explain the meaning of the rule of thumb for noise?

**Steve Mitchell:** Yes. Is it the rule of thumb of 3dB being a perceptible change in noise that you want me to explain? I am happy to do so.

**Mark Clarke:** I am talking about the fact that, according to the rule of thumb, the way in which people perceive loudness is dependent on the frequency of the noise that is created. Therefore, the noise of 10 violins might be experienced as being double the noise of one violin, whereas the noise of a piece of machinery operating at approximately the same dB(A) level as birdsong might be experienced as being double the level of noise.

**Steve Mitchell:** With respect, that is a rather confused understanding of the issue. I will try to help. I have explained the issue in the "What is Noise?" document but it might be better if I were to explain it to you interactively.

If you place a noise source next to an identical noise source, twice as much sound energy will be produced and the noise level will be increased by approximately 3dB. Most people in an

environmental situation will just about notice that as being a bit noisier than it was before, but the sound intensity will double. If you were working at dangerous noise levels, such as those that concern the Health and Safety Executive, that would be quite significant. However, in terms of how that change would be perceived, it would be only just noticeable. The ear is very sensitive in that sense.

**Mark Clarke:** That is the case when the noises are similar. What about when they are dissimilar?

**Steve Mitchell:** When they are dissimilar, the noise will be more noticeable. In fact, you can hear sounds that are below the existing background noise levels.

**Mark Clarke:** In other words, if you introduced the tram into an environment in which one is measuring ambient noise such as birdsong and joggers, the noise of the tram would be extremely noticeable.

**Steve Mitchell:** The noise of the tram would be noticeable because it has a different character. However, the overall ambient noise levels would not increase by a significant amount, if we are talking about an increase of less than 3dB.

**Mark Clarke:** But the loudness would be more significant.

**Steve Mitchell:** If the noise level passed the 3dB rule of thumb, most people would say, "It has become louder around where I live." Of course, they would hear the tram.

17:00

**Mark Clarke:** The baseline survey was intended to be representative, yet the houses on Craighleith Drive that are closer to the proposed tramline than almost all the houses that were included in the survey were missed out of the initial survey. Many of the houses in that area, including those referred to, will experience the worst exposure at first-floor level and yet, in your table 13.5, you say that the screening effect of the embankment will reduce noise levels for Craighleith Drive by 6dB, even though the windows of those houses at first-floor level—in other words, the bedrooms—are broadly parallel to the existing walkway. Does the 6dB figure apply to those windows?

**Steve Mitchell:** We modelled that in some detail and that is the case. It is to do with the fact that the embankment does not stop exactly where the railway stops but protrudes beyond the track. That allows enough space for people to escape and suchlike and for it to be stable. The section outside the rail provides some acoustic screening. In your case, it is about 6dB.

On your first question, on the baseline, we did not have access to the first-floor bedrooms when

we did the baseline survey; it is very rarely practicable to do that. We tended to undertake the survey on the corridor itself. I suspect that we could have measured lower levels than some first-floor bedroom windows. That is because elevated places are sometimes exposed to more distant noise sources.

**Mark Clarke:** But you are saying that the embankment would provide 6dB screening.

**Steve Mitchell:** Yes, given the design of the embankment as we envisage it at present. We modelled it in three dimensions in a computer simulation and that is the estimate that it gives.

**Mark Clarke:** Okay.

**Steve Mitchell:** If you are concerned about that, I can add that the modelling work will have to be updated and the design may adjust. The work will be repeated and revised. The commitment is to achieve the policy noise levels at your first-floor window.

**Mark Clarke:** My concern is that—

**The Convener:** We need a question, Mr Clarke.

**Mark Clarke:** I will not pose that question.

In appendix I4, which contains the glossary of acoustic terms, we find a definition of the—

**Steve Mitchell:** We are on the environmental statement now, are we?

**Mark Clarke:** We are on an appendix to the environmental statement.

Describing decibels, it says,

"This is not an additive system of units"

and so on. That broadly complies with the definition in PAN 56. However, it is relevant that the prefix

"For noise of a similar character"

is missing. So, the statement that

"A change of 10 dB corresponds to a doubling of loudness"

is for noise of a similar character only.

**Steve Mitchell:** Well, yes.

**Mark Clarke:** Okay. Thanks.

**Steve Mitchell:** But that does not mean that the methodology that we have used is wrong.

**Mark Clarke:** I hear what you say.

Has the resultant change in traffic flows in and around the tramline—in particular at tram stops—been built into the noise predictions?

**Steve Mitchell:** Some noise sources that may or may not happen around tram stops cannot be modelled because they are not easy to predict.



**Mark Clarke:** So they have not been modelled.

**Steve Mitchell:** They have not been modelled in the noise predictions in the environmental statement.

**Mark Clarke:** What effect do you think that the change will have, especially in the evening and in the early morning when drivers make their way to tram stops?

**Steve Mitchell:** Sorry?

**Mark Clarke:** I presume that it is anticipated that people will drive to tram stops, leave their cars and get on the tram.

**Steve Mitchell:** I do not think that that is the assumption.

**Mark Clarke:** Will that not happen?

**Steve Mitchell:** I do not know the answer to that question as that is not my area, but I do not think that we are expecting lots of cars to queue up at a tram stop. That is not what happens with trams. People walk to the stop, get on the tram and make their journey.

**The Convener:** I will try to be helpful at this point, because I am aware that there has been a considerable amount of questioning on noise and vibration. Our technical knowledge has been improved a hundredfold. By all means. Mr Clarke, you may ask any new technical questions that would test different areas, but perhaps we should get to the point of what you want to happen by way of mitigation.

**Mark Clarke:** Should I address you on that?

**The Convener:** You might choose to address Mr Mitchell on the issue. I can be of no assistance to you in that regard. You may choose to lead evidence with your own witnesses on that point. I appreciate the degree of technical questioning that has gone on, but committee members have now exercised their minds on those issues. If there is something fresh that has not been addressed in other questioning led by Mr Dennison, Andy Aitken and Lord Marnoch, by all means share it with us.

**Mark Clarke:** At this stage, I will concede the floor to Graham Scrimgeour.

**The Convener:** Before you concede the floor, I point out that tea and coffee have arrived outside for everybody. Before there is a stampede, I invite witnesses and the objectors' representatives to help themselves first.

Mr Dennison, Mr Aitken and Lord Marnoch have waited patiently. They are more than welcome to stay but if they have had enough, we would understand and they are free to leave at this point.

17:07

*Meeting suspended.*

17:13

*On resuming—*

**The Convener:** I resume the meeting and ask people to cease the conversations that are taking place around the room. That includes the people who are standing beside the entrance doorway—I ask Mr Vanhagen and Lord Marnoch to resume their seats or to leave, whichever is their preference.

We broke off as I was about to invite Mr Scrimgeour for group 34 to pose his questions to Mr Mitchell.

**Graham Scrimgeour:** I will wait for Mr Mitchell to get ready.

**The Convener:** I think that Mr Mitchell is paying attention.

**Graham Scrimgeour:** I have crossed off a lot of my questions. I aim not to cover anything that has been covered before, unless it is to fill in a point that has not been addressed.

**The Convener:** You will be my favourite person if you do that.

**Graham Scrimgeour:** My starting point is where we were when Mr Mitchell began to give evidence today, which is the amendment that you are proposing. Much of our evidence has related to a number of amendments that we have proposed, which go way back to objections from 18 months ago. Not a lot has been said today about the amendment that is now proposed, but I would like to explore what is being proposed so that we can fully understand it and compare it to what we were looking for. Can you fill us in on the proposed amendment that we heard about earlier?

**Steve Mitchell:** I do not think that I can fill you in on it, other than on the principle, which is that there will be reference to the noise and vibration policy along the lines of what I said. I have not drafted an amendment or anything like that, but there will be reference in the bill to the noise and vibration policy and its enforcement. That is the amendment that I have been recommending.

**Graham Scrimgeour:** Would that cover the level of noise and its mitigation throughout the operational lifetime of the tram?

**Steve Mitchell:** All such an amendment would do is refer to the noise and vibration policy, so if you are going to ask me a whole sequence of questions about what is in and what is out, I can tell you that it will be a very short reference. It will say that what is in the policy, which has been carefully thought out, will apply.

**Graham Scrimgeour:** I have not fully studied that document recently, but we had various amendments—or separate elements of amendments—relating to enforcement. I want to establish whether what we are being offered meets that.

**The Convener:** I suggest that in line with other welcome commitments that the promoter has made, the committee would like more detail. It will be of interest to us to know how the City of Edinburgh Council or the promoter—whichever is appropriate—will ensure enforceability of the noise and vibration policy. An explanation of that process would be very helpful indeed.

**Steve Mitchell:** That will come subsequently.

**The Convener:** Yes.

**Graham Scrimgeour:** That was the big question. There are some lesser points. We talked today about rail grinding with one of the earlier questioners. Do you think that the frequency of grinding will be less than annual or perhaps annual?

**Steve Mitchell:** I think that it will be less than annual. I am reluctant to say that it will be every X years, because I could be wrong. It might be X-1 or X+1. All I can do is give you an example to illustrate the point. I understand that some sections of the Croydon system, which opened in May 2000, have not been ground and that some sections have been ground once in five years.

**Graham Scrimgeour:** If grass track bed is used along the Roseburn corridor, might that increase the frequency with which rail grinding would be required to bring the rails back up to standard?

**Steve Mitchell:** No.

**Graham Scrimgeour:** What would the noise level be from grinding activity?

**Steve Mitchell:** That would depend on the machine and on this, that and the other thing; however, what I have said before is that the grinding will disturb some people—it is very difficult to do quietly.

**Graham Scrimgeour:** Will the noise level be 70dB, 80dB, 90dB or 100dB?

**Steve Mitchell:** The answer depends on where you are asking me about. I do not want to put a number to it, but I accept that it could disturb people.

**Graham Scrimgeour:** It is proposed at the moment that the grinding should happen at night.

**Steve Mitchell:** It will have to happen at night to avoid disrupting the tramway during daytime.

**Graham Scrimgeour:** Could the tram perhaps be closed one line at a time over a section and the

work done during the day, when it would cause less disturbance, particularly as it will be required only every few years?

**Steve Mitchell:** I am not necessarily the person to answer that question, but I know that there is a strong preference against that. You are not going to like what I say, but what you suggest would greatly inconvenience the people who would, by that stage, be travelling daily on the tram.

**Graham Scrimgeour:** If the grinding was done outside peak hours, perhaps it could be worked around.

**Steve Mitchell:** I accept that, but I cannot answer on the mechanics of when it will and will not happen. I do know that it is quite a brief activity and that several hundred metres can be covered—

**Graham Scrimgeour:** The matter relates to one of our proposed amendments, which is that maintenance that causes noise should not happen at night.

I move on to something in your statement to us and my rebuttal of it. In section 7.4 of your statement, you state that the tram runs in a cutting as it runs under Craighleith Drive, and that that cutting would screen the noise.

**Steve Mitchell:** I apologise for that. That is an error. The tram will clearly run on an embankment in that section.

**Graham Scrimgeour:** What would the effect of the embankment be on noise mitigation?

**Steve Mitchell:** That is a typographical error. There is a list of three locations that I describe as being deep cuttings, and that section is included. Clearly it is not in a cutting, but we have not modelled it in a cutting, but on an embankment. I apologise.

**Graham Scrimgeour:** So there is not an error in the work that has been done.

**Steve Mitchell:** No—there is an error in the wording.

**Graham Scrimgeour:** I accept that.

In section 7.19, you talk about the promoter not being able to accept mandatory limits on noise and vibration. We were concerned by that, as was discussed briefly earlier. Our concern is mostly about noise mitigation, which is set out in the environmental statement. Do you expect mitigation levels to be achieved?

**Steve Mitchell:** Yes, I do. I base that on my professional judgment. I hope that that judgment carries some weight, because this is not the first scheme of its kind that I have looked at. I have advised TIE and the promoter that I think that the

levels are achievable. We outlined the noise screening measures that might be included. There could be up to 2.5km of noise screens on the Roseburn corridor to achieve the noise standards that we have set ourselves.

**Graham Scrimgeour:** What about enforcement?

**Steve Mitchell:** I have a responsibility to set targets that I believe to be achievable. The targets are based on experience; they are not guesswork.

**Graham Scrimgeour:** In your rebuttal and in your statement you said that you cannot have a limit. What would be the nature of the enforcement if it were not mandatory?

**Steve Mitchell:** I would call it a target rather than a limit. I will try to explain what I mean.

**Graham Scrimgeour:** What would happen if you missed the target?

**Steve Mitchell:** In that case, we would have to test whether the target was achievable using best practicable means. We talked about that previously. It is just possible that for some unexpected reason a target cannot be reached, so the tramway would have to be closed, which is why we cannot accept a mandatory limit. However, we have offered the best-practicable-means test.

I referred earlier to the docklands light railway, which has been very effective at requiring mitigation. Each time an extension is built, mitigation is designed and built into it. The line from London city airport to the DLR is nearing completion. If you were to pay it a visit—if you were to fly to London city airport you would ride on that light rail system—you would see many noise barriers. They work; they are feasible in engineering terms and that is what we propose for the tramline 1 scheme. The docklands light railway does not have mandatory limits; it has the same target process that we are promoting here.

**Graham Scrimgeour:** We have heard quite a lot about that. Earlier, there was discussion of whether a 45dB mitigated level is achievable. You said that you could not guarantee that it is achievable at source. I presume that you mean mitigation alongside.

**Steve Mitchell:** That is what I meant, yes.

**Graham Scrimgeour:** What other mitigation could achieve that level, including mitigation at source and other mitigation?

**Steve Mitchell:** By “at source” I mean within the limits of deviation.

**Graham Scrimgeour:** Before you get to the dwelling, or the inside of a dwelling, what else could you put in place?

**Steve Mitchell:** The hierarchy of measures is outlined in the policy; you can have a look at it when you get a moment. If we cannot introduce mitigation at source, we must consider noise insulation, but nobody wants that.

We are talking about the achievability of the 45dB mitigation level internally; we have heard that it is about 65dB outside. However, I would like to put that number in context. During the national noise incidence survey in 2000, which included more than 1,100 sites, every site had an  $L_{Amax}$  at night of more than 60dB. Therefore, it is not relevant to suggest that a level of 60dB makes people's lives unbearable or that any of the other terminology that was used in the evidence is appropriate. Every site that was surveyed, so that the survey represented the whole of the United Kingdom, had an  $L_{Amax}$  of above 60dB at night. Of course people can sleep through that; they cannot all be deprived of sleep.

Although we have had a debate about PAN 56 and its technicalities, it is important to look at the raw data on a spreadsheet on the Department for Environment, Food and Rural Affairs website. It is plain that one does not need to go as low as 45dB to avoid sleep disturbance.

**Graham Scrimgeour:** I have not raised the issue of sleep disturbance. What about properties that have a lower baseline at the back? The survey to which you refer deals with noise at the front of properties.

**Steve Mitchell:** Yes, it does. However, the survey was carried out all over the country; it was designed to represent the dynamics of the whole country.

**Graham Scrimgeour:** The Roseburn corridor runs mainly behind properties, so there is a very low baseline to start with.

**Steve Mitchell:** It is not the baseline that determines whether one gets woken up. It is the—

**Graham Scrimgeour:** Again, I have not asked a question about sleep disturbance. I am simply asking about the level of noise and the practicality of mitigating it. Perhaps a level of 45dB could be achieved inside properties at night through source mitigation and sound insulation.

**Steve Mitchell:** That could be the case if all the properties were insulated against noise. My point is simply that that does not need to be done because people will sleep comfortably through the noise levels.

**Graham Scrimgeour:** But people may be enjoying a quiet, peaceful and restful space before they go to sleep.

**Steve Mitchell:** There is no precedent for carrying out such insulation. The noise insulation

regulations cover very much higher noise levels of 68dB during the day and 63dB at night. Those levels are very high compared with the levels that we are discussing.

**Graham Scrimgeour:** I want to move on. Paragraph 3.12 of your rebuttal of my witness statement says:

“Users of the corridor are transient and are not as sensitive to the effects of noise”.

We contend that walkers and cyclists use the walkway because it is quiet and peaceful and is a relaxing place to be. People feel that they have escaped from the busyness of the city. Do you agree that if trams run along the corridor, it will no longer be as quiet and peaceful as it currently is and that users will be affected?

**Steve Mitchell:** Users will be affected in some way because the corridor will become noisier, but they will still be able to use the corridor as they currently use it.

**Graham Scrimgeour:** They will get from A to B, but they would not necessarily enjoy the experience as they currently do.

**Steve Mitchell:** I cannot comment on enjoyment, but there will be an effect because noise levels will increase.

**Graham Scrimgeour:** We are saying that people use the corridor to relax and to get away for peace and quiet.

**Steve Mitchell:** I accept that.

**Graham Scrimgeour:** Paragraph 3.15 of your rebuttal of my witness statement mentions noise in gardens and says that my comments are not relevant because they apply only to the first few metres of gardens that are closest to where the tram would be. Many properties in my street have upper and lower flats and gardens that are split parallel to the Roseburn corridor. The gardens of the upper-floor flats are further away from the property and are nearer the embankment. About half of my garden and the gardens of similar properties would be about 6m from the tram and nearly all of it would be within 11m. Do you still think that my comments are not relevant?

**Steve Mitchell:** We will have to check the comments to which you refer. I think that you said something like the bottom of your garden would be 6m from the track and that you spoke about the effect of being 6m from the track. I am merely saying that you will not always be 6m away. I think that you will accept that gardens are used intermittently and occasionally.

**Graham Scrimgeour:** They are used at weekends.

**Steve Mitchell:** People do enjoy their gardens at weekends.

**Graham Scrimgeour:** People can have lunch outside in their gardens with friends.

**Steve Mitchell:** Of course.

**Graham Scrimgeour:** One wants to hear their conversation, but the described level of noise when a tram passes is like the noise that a lorry makes when it passes 7m away. The peak noise that would be generated would interfere with whatever people were doing in their gardens.

**Steve Mitchell:** I do not know the distances and speeds that are involved to work things out properly, but people may have to raise their voices to enjoy a conversation if they were right at the bottom of their garden.

**Graham Scrimgeour:** All of my garden would be near the tram.

I will move on. We have discussed bells. Paragraph 3.37 of your rebuttal states that the bell will be audible and that it will be a necessary safety feature. I do not dispute that, but there would be additional noise. You say that the bell will be used only occasionally, but colleagues have stated that it is likely to be used whenever a tram leaves a stop in order to get people who have just alighted out of the way.

The papers that I submitted in support of my statement refer to Nottingham, where bells are audible a quarter of a mile away and are used whenever trams stop or start. You have stated that use of the bells would be rare, but we fear that it will not be used only rarely. There are examples from elsewhere of bells' being used frequently and of their being intrusive.

**Steve Mitchell:** There has been quite a lot of misunderstanding about the use of bells. That misunderstanding is based on press articles and, perhaps, on television programmes about Nottingham in the early days of commissioning and operating trams there. Let us be clear: once the tram is operating, there will be no need to ring the bell at every stop. I am lucky enough to have spent time riding on tram systems such as those in Nottingham and Croydon, which I regularly visit.

The bell is not sounded every time a tram pulls off. The Roseburn corridor is quite similar to the far reaches of the Nottingham scheme—its northern section. The last time I rode on that tram, I travelled on the section north of the depot, which is a few kilometres long, and the bell was not used once. That is a corridor-type area. The bell will be used only rarely at stops along the Roseburn corridor. It will be used if the driver thinks he needs to warn someone who is in the way. That does not happen often in Nottingham and it will not happen often here. However, when it happens, the bell will be heard in the nearest gardens.

17:30

**Graham Scrimgeour:** I accept your assertions, but given that we are talking speculatively, could monitoring of bell use form part of enforcement? If the bell were used excessively in the corridor, could following up and investigating that be part of the enforcement scheme?

**Steve Mitchell:** Yes. The last paragraph of the noise and vibration policy covers that. I am happy to quote it to you, but in essence it says that the tram operator will have to develop a policy on the use of the bell in consultation with the council's environmental and consumer services department. Drivers cannot be allowed not to think about their surroundings. Sometimes, drivers think a bit two-dimensionally. The policy will require them to think laterally about where they are. If they must ring the bell for safety reasons, of course they will do that, but the objective of the policy requirement is to ensure that drivers do not use the bell unnecessarily. Perhaps I will read the policy to you to ensure that you are happy with it.

**Graham Scrimgeour:** If a problem—perhaps of design—led to a requirement for frequent use, that might produce a need to review and change how things work. Is that allowed for and required?

**Steve Mitchell:** To be perfectly clear, I will quote the policy. It says:

"The operator will establish a policy on the appropriate use of vehicle horns in accordance with safe working practices."

All I can say is that if you examine other similar systems, you will become more comfortable that there will be infrequent use of the bell. That is my experience; I see nothing fundamentally different about the scheme that we are discussing.

**Graham Scrimgeour:** I agree with everything that you said, but if bell use became an issue, would a mechanism to deal with it be available? If people strayed on to the line at one stop and the bell was used frequently there, would a mechanism be available to address that?

**Steve Mitchell:** Yes. The policy will provide such a mechanism. A statement will be made that a driver will use a bell here and not there and that when some events happen, he should not use it. It will say that he should think about where he is and whether a footpath is nearby, for example. A mechanism to address the issue will be in place. The policy might need to be revised to make it specific to a site.

**Graham Scrimgeour:** That has covered my point.

**The Convener:** Your questioning is wider than was indicated to the committee. I am conscious that I have allowed two questioners for group 34. You were supposed to ask questions about

paragraphs 5.5, 6.4 and 7.5 to 7.21 of Mr Mitchell's statement. Do you agree that we have strayed wide of them?

**Graham Scrimgeour:** I have done that only in responding to Mr Mitchell's rebuttal. Anyway, I have finished.

**The Convener:** Excellent. It should be borne in mind that I allowed two questioners for group 34 and that I expect people to stick to the point.

We move on to Ms Woolnough.

**Kristina Woolnough:** I have few and general questions, because the subject is fairly impenetrable. When she gave evidence about the Starbank and Trinity options, your colleague Karen Raymond answered yes when it was put to her that

"noise in a quiet place has a much greater impact than noise in a loud place."

She also said that

"the increase in loudness"

in a quiet environment

"is greater than it would be if"

a noise

"were added to a noisier environment."—[*Official Report, Edinburgh Tram (Line One) Bill Committee*, 13 September 2005; c 632-33.]

Do you agree with both of those statements?

**Steve Mitchell:** Yes. That is why the environmental statement predicts impacts and therefore the mitigation that is needed along the Roseburn corridor. The street-running section has few impacts that need mitigation.

**Kristina Woolnough:** That is our argument for an on-road alignment.

**Steve Mitchell:** I understand that argument.

**Kristina Woolnough:** I am sure that you appreciate it. A lot has been said about the detail of the decibels and so on, so I just wanted to highlight that.

**The Convener:** Question.

**Kristina Woolnough:** Have the potential noise and vibration impacts on pedestrians and cyclists on the Roseburn corridor been measured?

**Steve Mitchell:** No. We do not have any way to quantify that or to consider how people will be affected in those situations.

**Kristina Woolnough:** I presume that there is a method of assessing what the impacts might be of noise coming into what is currently a traffic-free environment.

**Steve Mitchell:** We have not assessed that in detail.

**Kristina Woolnough:** Could there be mitigation of the noise and vibration impacts on users of the corridor? I am talking about people who are walking or cycling along the corridor.

**Steve Mitchell:** There is mitigation in the policy. To start at the beginning, we are committed to buying a fundamentally quiet tram system with a specification that matches the highest industry standard. Therefore, fundamentally, the trams will be quieter than they could be, which is a mitigation measure.

**Kristina Woolnough:** They will not be quieter than having no trams at all.

**Steve Mitchell:** Of course not. Let us not bore ourselves with stating the obvious.

**Kristina Woolnough:** Will certain construction features that have been planned for the corridor make noise worse? I am thinking for example of retaining walls at the bottom of cuttings. Will they exacerbate the noise for users of the corridor?

**Steve Mitchell:** If you are talking about reflections from such surfaces, there are ways of dealing with that. Strong reflections can be treated acoustically if necessary.

**Kristina Woolnough:** Are those measures included in the landscape and habitat management plan?

**Steve Mitchell:** I do not think that the plan goes into details such as the exact materials of retaining structures, although it may refer to that.

**Kristina Woolnough:** Is the impact of noise and vibration on human users and wildlife included in the landscape and habitat management plan?

**Steve Mitchell:** No, detailed mitigation measures for that are not included in the plan. You have raised the issue a few times, so let me answer. We do not have measures for pedestrians who are walking along streets. I would assess the issue that you raise in a similar way.

**Kristina Woolnough:** You are aware that local people would assess the matter in terms of amenity, which is why I am asking whether mitigation proposals to maximise what may be left of the amenity have been factored into the landscape and habitat management plan.

**Steve Mitchell:** The issue is what measures are practicable and sensible and would not otherwise compromise the corridor. The best one, which I have talked about already, is mitigation through having fundamentally quiet trams. We are committed to that.

**Kristina Woolnough:** Has the impact of construction noise and vibration on wildlife been assessed, with your input?

**Steve Mitchell:** Not with my input, although that may have been done as part of the STAG process.

**Kristina Woolnough:** So you have not had recent input, as a noise and vibration expert, to the landscape and habitat management plan.

What would be the impact on wildlife of track grinding?

**Steve Mitchell:** I imagine that it would be similar to the impact on wildlife of track grinding on railways.

**Kristina Woolnough:** Obviously, the environment that we are considering has not experienced track grinding for many years. Do you agree that there will be an impact and that it should be mitigated?

**Steve Mitchell:** Do you mean an impact on wildlife?

**Kristina Woolnough:** Yes.

**Steve Mitchell:** As I said, track grinding happens on heavy railways throughout the country, on corridors that have ecological value. I presume that animals cope with that.

**Kristina Woolnough:** But you have not had input on the subject with your colleagues who deal with the environmental impact.

**Steve Mitchell:** It is not necessary to assess that, for the reasons that I have just given.

**Kristina Woolnough:** That reason is that, as track grinding happens elsewhere, it will be fine on the Roseburn corridor.

**Steve Mitchell:** No: it is that evidence shows that where track grinding happens animals manage quite well. I am bound to mention Mr Coates—if you want to consider the effects on animals, some of your questions will have to go to him. However, I am aware that badgers live in rail corridors up and down the country. I presume that they are exposed to rail grinding from time to time, but they continue to live there.

**Kristina Woolnough:** You will accept that we have a genuine concern that those impacts were not factored into the landscape and habitat management plan. Obviously, we feel that they should be taken into account and that you, as a noise expert, should speak to your colleagues about them.

**Steve Mitchell:** I think that I just answered that point.

**Kristina Woolnough:** Okay. I have finished. Thank you.

**Helen Eadie:** Page I-8 of annex I of the Mott MacDonald report refers to noise levels at the

facades of residential buildings and states that WHO guidance suggests a guideline facade  $L_{Aeq}$  of 45dB. It also states:

"This also assumes that windows may be open at night."

What are the comparative noise reductions of a closed single-glazed window and a closed double-glazed window?

**Steve Mitchell:** The rule of thumb for a partially open window is a 15dB noise reduction. That figure was put to me earlier and I agreed with it. When a single-glazed window is closed, the noise reduction will depend on the window. However, the rule of thumb for that is a 25dB reduction, which is 10dB more than for a partially open window.

**Helen Eadie:** If the measurement was taken within a building, the noise reduction would rise from 55dB to 70dB, so noise disturbance would be mitigated.

**Steve Mitchell:** Yes. For modern, double-glazed windows, 30dB is reasonable, but there are systems that get much better figures. Secondary-glazed windows are better again, because the glazing is wider.

**Helen Eadie:** Under the Control of Pollution Act 1974, does a local authority have the power to control noise from construction sites at all times of the day?

**Steve Mitchell:** Yes. There is no restriction on the time of day.

**The Convener:** Members have no further questions. Mr Thomson, do you have any follow-up questions for Mr Mitchell?

**Malcolm Thomson:** Yes. Mr Mitchell, can I take you back to one of Lord Marnoch's lines of questioning about the  $L_{Aeq}$ ? He took you through the arithmetic of adding 10dB and producing a perceived doubling of the existing noise level. That was what he put to you and you agreed with his methodology and arithmetic. What would be the consequence of doing that in a setting such as Wester Coates?

**Steve Mitchell:** The consequence would be that people would perceive it as a noisier place, because the ambient noise level would have roughly doubled. However, recent social survey work that I considered shows that, in the longer term, there would be no residual annoyance. People do not generally use the word "annoyance" when they are asked how they feel about the noise. That is why we set our standards as they are. Very few people will be annoyed in the long term with noise that meets our threshold levels.

**Malcolm Thomson:** You said that the level that you fixed in the noise and vibration policy was

tried and tested on tramways elsewhere. Can you tell the committee where those tramways are?

**Steve Mitchell:** There are two in Birmingham. One is the Centro extension, which the secretary of state approved, from Wednesbury to Brierley Hill. I said that slowly because I was asked to clarify it when I said it previously. The other Birmingham route is the city-centre extension. We also used the same noise and vibration standards as were used in the Liverpool scheme on Merseytram line 1, which has also been approved under the Transport and Works Act 1992.

**Malcolm Thomson:** Has any of those approvals occurred since 1999?

**Steve Mitchell:** Yes, all three have.

**Malcolm Thomson:** They followed the WHO guidance.

**Steve Mitchell:** Yes.

**Malcolm Thomson:** So they were all done in the knowledge of the existence of that guidance.

**Steve Mitchell:** Yes.

**Malcolm Thomson:** Did any of them feature areas similar to Wester Coates—established residential areas with gardens backing on to the proposed tramline?

17:45

**Steve Mitchell:** Yes, the Wednesbury to Brierley Hill extension in Birmingham has a rail corridor that has some similarities to the corridor that we are discussing. Although the housing that borders it is a little bit different, the situation regarding noise assessment is very similar. My work on the Wednesbury to Brierley Hill extension was the first time that I had to go through the process of establishing a reasonable balance in setting a reasonable target for a noise policy. The policy for the docklands light railway, which predated that scheme by some years, is one of the documents that I used for that purpose. The Birmingham scheme has a corridor that is similar to the one that we are discussing and which is in similar proximity to quite a few houses.

**Malcolm Thomson:** Are those examples of the pragmatic approach that you spoke about, as opposed to the approach that one might take when considering whether to grant planning permission for a new house?

**Steve Mitchell:** I am sorry; I did not catch that because someone made a noise.

**Malcolm Thomson:** Are the approvals of noise policies for those three tram schemes examples of what you described as a pragmatic approach, as opposed to the approach that one might take when considering whether to grant planning

permission for a new house, in which circumstance it might be possible to incorporate soundproofing in the design at day one?

**Steve Mitchell:** Yes. I think that those policies recognise that, pragmatically speaking, there are limits to what one can do when one builds new infrastructure. For example, when one builds a road, there are limits to how quiet one can make the process. The policies that you asked about apply a pragmatic approach and the situation to which they relate is very different from the new house situation.

**The Convener:** I am sure that Mr Mitchell will be relieved that there are no further questions for him. I thank you for giving evidence this afternoon.

In a change to the advertised programme, which was made at the request of the promoter and which has the agreement of the objectors' representatives, we will take Tim Blower next. He will address the issue of ground conditions on behalf of groups 34 and 35. I have agreed that group 34 can have two questioners, as long as there is no duplication in the topics that are asked about.

**Malcolm Thomson:** Mr Blower, what ground condition investigations have been carried out along the Roseburn corridor and what have they disclosed?

**Tim Blower (Mott MacDonald):** In accordance with BS 10175, a phased approach has been taken to the investigations that have been undertaken to date. That is standard industry practice. The first phase of such work is a desk study, during which all existing information is examined before boreholes are drilled and so on. That desk study—which, in accordance with BS 10175, is called a preliminary investigation—has been completed and reported on. Following a preliminary investigation, an exploratory investigation is conducted. During a preliminary investigation, special features along the route are noted that might be anticipated to give rise to problems. One would pay particular attention to those areas in the exploratory investigation.

So far, we have completed the preliminary investigation—the desk study—and the exploratory investigation, which is the first phase of physical works on the site and which involves drilling boreholes, taking laboratory samples, testing and so on. The results of those investigations have thrown up a number of interesting features, but no unexpected problems. We have found what one might expect to find along a former railway corridor.

**Malcolm Thomson:** Do you have any previous experience of the construction of tramlines on disused railway corridors?

**Tim Blower:** I have, indeed. I have had most experience with phase 3 of the Manchester metrolink and I have worked on lines 2 and 3 of the Nottingham NET scheme. I have also worked on the Merseytram system in Liverpool and on other light rail and guided busway schemes in Wigan, Leigh, Luton and so on. All of them reused old railway corridors.

**Malcolm Thomson:** Thank you very much, Mr Blower.

**The Convener:** Mr Clarke, on behalf of group 34, will address issues in paragraphs 1 to 3.10 of Mr Blower's witness statement.

**Mark Clarke:** Mr Blower, in your statement, you say that the site investigation is at an early stage. Is that right?

**Tim Blower:** Yes.

**Mark Clarke:** Do you agree that unknown ground conditions are a high risk to construction costs?

**Tim Blower:** Yes.

**Mark Clarke:** Is a lack of information at this stage a major obstacle to the scheme and should the Parliament treat it as such?

**Tim Blower:** No.

**Mark Clarke:** But you agree that unknown ground conditions represent a high risk to costs.

**Tim Blower:** Yes. You are quite right to pick on the word "risk". For such major schemes, problems with ground conditions are usually dealt with through taking a risk-assessment approach. In the phased approach set out in BS 10175, one carries out a preliminary investigation that takes a broad perspective of the scheme by locating areas where one might expect to find major problems. In the subsequent exploratory investigation, one focuses on those areas. With such an approach, one always has to take two more steps, which might be the main investigation that has yet to be undertaken and, if necessary, some supplementary investigations. At each step, we try to manage down the uncertainty. I believe that, after carrying out the preliminary and exploratory investigations, we have an adequate handle on the scope of any likely problems.

**Mark Clarke:** Do you agree that the potential consequences of possible major earthworks and drainage could seriously affect the future reasonable expectation of enjoyment by residents of the properties along the Roseburn corridor?

**Tim Blower:** The construction of major earthworks along the corridor would have a significant impact only during the construction phase. Are you talking about earthworks during construction?



**Mark Clarke:** Yes.

**Tim Blower:** They could have an effect. However, we do not envisage any significant earthworks on the project.

**Mark Clarke:** I have no further questions.

**Graham Scrimgeour:** Mr Thomson helpfully asked my first question, which Mr Blower answered by confirming that site investigations have been carried out and that nothing unexpected has been found.

I will concentrate on three points in the last part of my rebuttal. Neighbours who have lived in the area since the 1930s note that, with heavy rail, landslips occurred and parts of the embankment appeared to fill with waste material. If parts of the embankment are not well built, would putting a tram on top of it cause problems?

**Tim Blower:** In general, I cannot see why a light rail scheme should cause problems if a heavy rail scheme operated in the same area for decades. As you said, problems occurred with heavy rail, but I would like to separate out the landslip issue from the waste material issue. Evidence that I have seen from certain people mentions soil being washed over or down the surface of the slopes. In technical terms, that is not a landslip, but a drainage problem. Gary Turner or other witnesses might address that point later. To me, a landslip is a large bulk movement of soil that happens when the soil's strength is exceeded by the stresses that have been imposed on it.

As I said, what has been described in evidence sounds like a drainage problem. As far as I can ascertain, the incidents that have been described do not appear to me to be landslips as such. They are more of a water management or drainage type of issue. If there have genuinely been landslips, I assume that that would be picked up in the further stages of ground investigation. The normal design processes of civil engineering involving earthworks would be applied and we would end up with an adequate factor of safety. I do not quite know which type of waste material is being referred to. Could you clarify that?

**Graham Scrimgeour:** It could have been ballast, clinker or what have you. I have not investigated; that has simply been reported to me.

**Tim Blower:** Ballast and clinker are pretty robust granular materials. If anything, I would want to have those in my railway embankment, rather than take them out. Generally speaking, they will be good granular materials of high strength.

**The Convener:** We now come to Mr Jones and group 35.

**Alan Jones:** Mr Blower, you mentioned low retaining structures. What form do those take?

**Tim Blower:** That has not been determined yet. They could be of solid construction, using reinforced concrete. It is perhaps more likely that they will be gabion retaining walls or even reinforced earth. The final face that people will see could be a hard surface, but it could just as easily be a stone or earth surface.

**Alan Jones:** What sort of height would they be?

**Tim Blower:** I think that that will come out in the detailed design. I do not envisage them being many metres high. When we say "low retaining walls", to my mind that implies something of man height or less.

**Alan Jones:** At the Coltbridge viaduct, there will be the tram track and, I believe, a footpath at the side of the bridge. How will the earth at the top of the embankment be strengthened?

**Tim Blower:** A structural solution could be applied. Wimbles could be attached to the widened bridge and the earth could be supported in that way. I imagine that, if that is not done, a reinforced earth solution would be applied. That would involve excavating a certain amount of material and putting in what is known as a geogrid—that is a very high-strength plastic grid, which allows natural soil to stand at a steeper angle than it would otherwise be able to.

**The Convener:** There are no further questions. Thank you very much, Mr Blower, for waiting to give your evidence today.

This has been a long, technical day. Having consulted fellow committee members, I do not feel that we would do the last witness justice today, given the substantial amount of evidence that we would like to take from Mr McIntosh. I therefore propose that we take all Mr McIntosh's oral evidence at our next meeting and that we close early today. Can I confirm that I have the agreement of my colleagues?

**Members:** Yes.

**The Convener:** That concludes item 2 on the agenda. We now move to item 3, our discussion in private of the oral evidence that we have heard today. Members will recall that we agreed to take such consideration in private at the end of each oral evidence-taking session to enable the committee to give some consideration to the evidence that it has heard. That will greatly assist us in drafting our report at the end of phase 1 of the consideration stage.

17:58

*Meeting continued in private until 18:05.*



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