

APPLRG / pteg: Light Rail and the City Regions

Transcript

Day 3 – 25 November 2009

Session 1 – Trampower

Questions 143 - 163

Q143 Paul Rowen: Today we're starting with Lewis Lesley who I understand is the Technical Director for Tram Power. It'd be helpful Lewis if you want to make an opening statement and then we'll both ask you questions.

Lewis Lesley: As you very kindly introduced me, chairman, I am the Technical Director of Tram Power Limited. My previous incarnations, as an academic and as a member of a large local authority, as a public transport officer, involved fifteen years of researching into buses. And it was only realising that buses have their limitations that I switched to light rail, essentially to try to make light rail costs equivalent to bus costs. And I've got something like fifteen patents for light rail development to my name. One of the side issues of being an academic is that I now have got a nickname in the industry as the mad professor but I don't mind that. Bit of sanity. But what I want to point out is that I'm not a politician, I'm an academic and an engineer and my professional life has been dealing with facts, contestable research and measuring. I feel a bit like Copernicus because the accepted wisdom is that the earth is the centre of the universe and the sun goes round the earth and poor old Copernicus was trying to persuade everyone it was the other way round. So maybe I'm a bit like that today. I hope not. Railways, in my opinion, whether they're tramway type railways or railway type railways have a lot in common with the medieval church in my opinion. There's a priesthood, they have their own special vestments, special language and they only survive because of large indulgences of public money. I'm also inclined to think that tramway progress has been a bit like the two sailors who are marooned on an iceberg getting more and more despondent because they're going to die of starvation or freeze to death and suddenly one jumps up and says "Look, we're saved, we're saved." And the other one says "How do you know?" And the first one says "I can see the Titanic coming." If we look at continental Europe, I want to take as our model Germany. If we see Germany as a model for the application of light rail in the UK, at our present rate of progress, it will take us a hundred and fifty years to catch them up, assuming they stand still. But of course, the Germans are building more systems, they're extending their system, so at our present rate of progress we'll never catch them up. And there are other aspects of German economy where they are rapidly going into sustainability, buildings, power generation, etc, etc. Already a third of their electric power comes from renewables. One of the things that was touched upon last time was innovation versus procurement and I mentioned in our documentation, that you all have a copy of, that the fact that with John Parry, Parry People Movers we bid to supply the tram trains in the Northern Rail Huddersfield trial but were disqualified because neither of us had had successful contracts. And one of the issues for the public sector is that most of the contracts are based upon successful contracts and trading. For new companies with innovation it's almost impossible to break into that

cycle. And I've touched upon that in my notes in 2.4, 2.5 and 5.0 if you want to check that up. Which is one of the reasons that Tram Power has gone down the privately promoted route because in the private sector we can buy whatever products we like from ourselves if necessary in order to make progress. And we can judge the risk of problems against the much lower costs of doing it. What we have to offer in Tram Power is, in our opinion, global cutting edge products. And we know this because we have, every day, people from abroad contacting us, asking for information about our products. But the killer question is "Can we come and see it in operation in the UK?" And we have to say "We can't." And they say "Why not?" So we're then falling back on "Well, we can't get it into the public sector. It's almost impossible to get new products into the public sector if you're a small company." And I'm sure that John made a similar point last week when he spoke about this. In order to make private funding possible, schemes have to be commercial. They have to generate a profit to pay for the capital investment and so the choice of route goes not on what's necessarily the most socially desirable, but the ones which will produce a commercial return in the first instance. Having built a core network of profitable lines you can then add on socially desirable ones on a marginal basis later on. I've set out in the document some details of, and there's links to our website, of our principle products, the tram itself, there's also an appendix 1A. We know from work that was done by Manchester University it's the most energy efficient vehicle in its class at one kilowatt hour per kilometre, more energy efficient than even Blackpool trams. The industry standard's about four kilowatt hours per kilometre. When we did the original design work we assumed it would be about two kilowatt hours but our control electronics are so efficient that it's one kilowatt hour. So that energy saving will pay for the cost of the vehicles in about ten years. [*Shows model*]. The LR55 track, this is a full size model, not the real stuff because it's too difficult to carry round, and I've brought with me a sample, full size, of standard tram rail put against it to show you that you can fit this onto the road without having to dig a deep foundation. And if you want to find out more about railway and tramway problems this is my latest addition to the knowledge fatigue problems in railway infrastructure [*shows document*]. Which retails at a mere hundred and twenty pounds which I'm told is good value for a hundred pages so there we go. The rail is set out in A2 in the document, overhead lines in A3 and we have some software which we use to evaluate the financial viability of potential tramways. And I've brought an example here from our CROST project in London of how we can do a quick evaluation of how many passengers, how much it costs to run, how many trams we'll need, what the runtime is, how much revenue we can get, competition from buses, cars, taxis and other methods of transport. And then that gives us a very quick guide and we can do sensitivity analysis and I'll come back to that in a minute. So those are the four principle products we have, three hard products and one software product. And we've teamed these together in Galway. The Galway project looked at seven routes and this is the map of the two routes that we're going to build. That's in A3.1, B1 I should say. This has been evaluated by MVA consultants appointed by the City Council, who said they couldn't believe the figures but they've now shown the figures are sensible. And they've also validated independently by a contractor who's been appointed namely Corillion Irishenco. In Birkenhead there is a little historical tramway which the council wants to dispose of because they're running short of cash. And a group of private companies, the BEST Group, who are concentrating on sustainable environmental technologies have put together a bid to take over the tramway and one of the buildings as a museum and the turnover of the combined group is about half a billion so we think we have a credible bid. Who's our principle

rival bidder? Merseytravel, obviously a public body. We don't know what their proposals are; I can't comment on that. And then finally the project for central London, trying to pick up the wreckage, so to speak, of the cross river project which, many years ago, Scott Macintosh and I discussed at length when he worked for London Transport about how it could be built more affordably. That's my opening statement chairman, I hope it wasn't too long.

Q144 Paul Rowen: That's great, I'm very interested in this Galway project because obviously earlier on in your paper you allude to the problems you have with the tram train bid in Huddersfield because they said you weren't trading anywhere successfully. When is this going to be open?

Lewis Lesley: We're aiming for 2012.

Q145 Paul Rowen: And you say it's two hundred million Euros.

Lewis Lesley: It's about a hundred and forty million Euros construction and sixty million Euros contingency because no one's done it before so we're being very cautious.

Q146 Paul Rowen: The twenty-one kilometres, given the strictures that you operate on here in England, what's the comparable cost?

Lewis Lesley: Two hundred million Euros at today's prices is about a hundred and eighty million pounds.

Q147 Paul Rowen: Yes, but if you were to do it to our standards, what would it cost?

Lewis Lesley: Well, when you say "Our standards" ...

Paul Rowen: UK, the Department for Transport.

Lewis Lesley: Well if it was done as a public project then it would be about, I guess, two hundred and twenty million pounds. Being done as a private project it would be about a hundred and seventy million pounds.

Q148 Paul Rowen: No, if we put the same line in Manchester and Leeds, with all the sorts of high levels of engineering that are insisted upon that you alluded to with that diagram, what would be the comparable cost in the UK?

Lewis Lesley: Well it's, who is we? That's the issue.

Paul Rowen: We know Manchester's costing six hundred million.

Lewis Lesley: I know exactly how much Manchester's costing and when the first stage was built, the 3.4 kilometres through the city centre, we did an analysis of that cost. And eight million pounds of that was for service diversions and six million was for track works and we reckon, although our track is slightly more expensive, the utility diversion will be less and the total cost would have been about eight million pounds.

Q149 Paul Rowen: Can I ask you about the difficulties then in getting new technologies to fruition? What's your experience with those?

Lewis Lesley: Sometimes they're very frustrating experiences and it's a bit of a Catch Twenty-two. Everyone wants proven products, but how can you get proven products unless someone is willing to buy the product? And I don't know how to break out of this presently unless the public sector is required to do a balance between the risk and the lower cost. What Tram Power have tried to do is to prove our products as far as possible in a controlled environment so we've built the track, it's been in for thirteen and a half years in Sheffield without failure. We replaced a piece of track which failed after less than a year. We've put up an overhead line in Carnforth, it was put up in November 2004, January 2005, when there were the worst gales for a hundred years which blew down part of the west coast mainline overhead line and blew down a quarter of the trees on the site but our overhead line stayed up. We built a tram and we've run it in Birkenhead and Blackpool. So we've done all the things we think we can do prior to getting something into service. But every time we bid, we bid for the most recent contract in Manchester, we didn't make the final short list. We bid for the Blackpool contract, nine bidders, short list of six, we weren't even in the short list. We bid for Edinburgh, didn't get into the short list for Edinburgh. And it's all because we haven't got a trading record so it's almost impossible to get out of. Which is why we've gone down this private route because that's the way we know we can get into the market.

Q150 Paul Rowen: So would the Galway system have your trams running on it?

Lewis Lesley: Yes. And our track and our overhead.

Paul Rowen: So you will then, once it's running, have a full-scale working model?

Lewis Lesley: Yes, indeed.

Q151 Paul Rowen: I'm interested in this difference between public and private. What is the role for the public sector?

Lewis Lesley: I think the public sector has a very important role. They set the agenda. They give the statute of permissions and I think those are such important roles that it's almost a conflict of interest for the public sector to be doing anything else. Clearly you can't put a tramway into a city which has said "We don't want trams." So unless it's in the Local Transport Plan that public transport has to be improved, then we as a company will not go to that city and put in or even offer to provide a tram system. And the second part is to get the necessary approvals. Now, from our point of view there are two principle approvals. One is that we satisfy the Highway Authority and the other is planning permission because that's a principle part of the Transport and Works Act, and as a private company we would not want to go down the compulsory purchase route for all sorts of reasons which I won't bore you with. But we found in talking to our partners who have done a lot of private construction projects, that by private treaty it's possible to get the land or the buildings you need and keep people happy and on board. You get a backlash by having compulsory powers. So those are the two critical things. It's just occurred to me that one of the consultees in Galway is

E-Net who are installing broadband systems in Galway. And they've done for broadband installation what we're doing for tramways. Originally their costs when they installed in the first city were about a hundred and twenty Euros a metre. They've now got it down to fifty Euros a metre by adopting a very similar approach to that we've adopted to our track, which is to cut a slot and drop the cables in. I won't bore you with the details but it's a very similar approach. And they saw right away as a private company what we were trying to do with LR55 as a private company and have offered cooperation, giving us their site plans, giving us their information and the quid pro quo is that when we lay our tracks we're going to install their cables. So it's a 'you scratch our back and we'll scratch your back' approach.

Q152 Baroness Hanham: Baroness Hanham, I'm Shadow Minister for Transport in the House of Lords. With the tram schemes, all of them run on line track as well as overhead. It seems to me that takes up a huge amount of road space. In Manchester there's a colossal amount of road taken up for both the stations and the track. Is there any possibility, rather than turning to trolley buses, that trams don't need to have all that space? Is the technology there for that?

Lewis Lesley: There are two separate issues. One is can we fit in tramways more slickly. We will go for a low floor vehicle with low platforms so we wouldn't need such high platforms, and these can be fitted easily, for example, by taking the existing footway and maybe slightly extending it. In Galway we will share our tracks in the city centre with buses. There's no reason why trams and buses can't co-exist. The real issue is modal split. In Galway four per cent of all trips are by bus. Our two lines will add sixteen per cent so raise the total to twenty per cent. If you look all around the world, not just in Britain, people will not get out of their cars to go by bus, whether it's a trolley bus, a diesel bus, a hybrid bus, they're all tarred with the same brush. When I was a young graduate full of enthusiasm I was taken to Runcorn new town to be shown the busway which had been built and the new town built round it. I was told the busway in Runcorn will carry fifty per cent of all the trips in Runcorn. As an older academic I did a lot of work in Runcorn and the most it got up to in the early to middle 1980s was fifteen per cent. It's now down to about eight per cent of all trips. There's a market acceptance for rail-based transport which is not there for buses. This was shown from a 40 year long term study undertaken by the US Transportation Research Board and published in their Report 1221.

Q153 Baroness Hanham: Right. Can I just add, before we move on, in your statement you said that the Germans, for example, had made far more use of light rail and trams. Now in this country, in your view, is it the technology, the policy or the money which is holding up development or is it the land space?

Lewis Lesley: Lot of threads to pick up there. The Germans were a bit fortunate in that after the war they were in penury so they couldn't afford to scrap their tramways, they had to keep them running. And then by the late 1950s they had a manpower shortage because their industry was booming and they found if they strung two or three trams together they could have one driver driving two or three trams. Whereas if it was two or three buses you'd need two or three drivers. So that freed up the workforce. In this country we have a de facto public sector monopoly for tramways and therefore the rate at which tramways can be introduced is dependent upon the availability of public money. And in the last twenty years, as the National Audit

Office pointed out, we've installed five systems and at that rate it will take us a hundred and fifty years to catch up with Germany. If we wanted to catch up in twenty years we need to install a system every four months. Now clearly that's way beyond the capacity of the public sector to fund. But it's not beyond the capacity of the private sector to fund, given the right signals from the public sector to do it. And essentially this is the message that we want to get across, that we've got the technology which reduces the unit cost of constructing tramways. If you choose the right routes, primarily into high income areas with high car ownership, high levels of work, you can make them commercially viable, and therefore pay for the investment. Having got the core network in, you can then later extend it on a marginal cost basis to other parts of the city which of course was how the first generation of tramways were built in the United Kingdom.

Q154 Paul Rowen: I'm intrigued by that Lewis, given that you're saying you'll do all this, it won't cost the public purse anything, it'll be cheaper, it'll be done with far less hassle, why aren't Blackpool or Manchester, Liverpool or Leeds biting your hand off?

Lewis Lesley: I think you need to ask them why. We've tried to get in, we've been told we haven't got the track record, to use a pun, we haven't got a trading account so we don't qualify even to get to the short list.

Q155 Paul Rowen: Given the fact that there's so many tram schemes on the continent, why have you not got some there?

Lewis Lesley: Oh we are, we've got lots of interested people on the continent but they all say "We want to come and see your system running in Britain," not unreasonably.

Paul Rowen: So when the Galway system's up and running ...

Lewis Lesley: That'll be a good showcase. We've got a couple of other systems in the UK which unfortunately I can't tell you about at the moment, but one of those might be up and running at the same time.

Paul Rowen: Right. You say you've got a design for a track that uses a lot less electricity and uses it a lot more efficiently ...

Lewis Lesley: Not just a design, we actually have a tram. We built it, tested it and run it in Birkenhead and Blackpool.

Q156 Paul Rowen: Right, and what's the cost of that in terms of trams which say Manchester are buying from Bombardier?

Lewis Lesley: About a million pounds for a twenty-nine metre long vehicle. It obviously depends on the specification. If you want high end seats, air conditioning, it puts the price up, with one of our more basic models it reduces it. But if you take about a million pounds it's not very far off. And the last order I saw was about 2.1 million pounds for new trams so that's the market place really. I think the marker we would go against is we've tried to reduce the cost of tramways to be more like buses but not to make them bus-like. And if you look at the same capacity of buses, it would cost about four hundred thousand pounds. So people say, "Oh well, but buses will

only last fifteen years so you're going to need two buses.” So two buses are eight hundred thousand pounds, it's still a lot less than two point one million pounds and how do buses have low costs? Because they have piggy backed on the truck industry. They use engines, gearbox, axles, steering, brakes from the truck industry, of which there are millions around the world. We build about two and a half thousand buses a year in Britain but we build about a hundred thousand trucks a year so we can piggy back on that, makes it much more acceptable. Essentially that's what we've done for the tram. We've identified mass produced components, put them together, and this is the clever bit, we've done the interfaces, so that we can have a vehicle which has bus like costs but tram like qualities.

Q157 Paul Rowen: What is the running cost of your tram?

Lewis Lesley: The energy cost is about a quarter. Obviously you still have to have a driver. It depends on your acceleration, braking, top speed, how many trams you need and therefore how many drivers you need. But if we can save ten percent I'll be very surprised on those costs but the maintenance costs, the vehicle, mostly, is fixed for life. After ten years of running we've taken out the brake blocks and the disc brakes and they had one millimetre wear on them. They should last for thirty years without any difficulty. We don't have to keep turning the wheels, they can be independently turned so the wheel life is twice as long as conventional trams, etc, etc. And I had someone last Wednesday looking at the tram who was most impressed at the way we'd approached it. And thought originally it was a bit of a Mickey Mouse project and how can amateur academics know anything about trams, but I had to point out that we did have a professional vehicle design house translating the academic calculations into a vehicle that would run and which would pass the European safety standards, the roll over test, the HMRI test, the crash worthiness test, pass all of those.

Paul Rowen: I'm surprised that somebody like Bombardier or Alstom aren't biting your hand off and getting the design off you.

Lewis Lesley: We did offer them the licence to build the tram but their view was why would they want to sell a tram at a million pounds when they can sell them at two million pounds.

Paul Rowen: Meaning they can make more money.

Lewis Lesley: That's what they say. They'd certainly have a bigger turnover but our view is by reducing the costs we'd have a bigger turnover by having a bigger market. Galway's eighty-five thousand people. There are lots of towns in Britain with eighty-five thousand people. That's the market we're aiming at.

Q158 Paul Rowen: And this relationship that you've got with the private sector whereby you're not buying the land, how is that operated?

Lewis Lesley: We try, as far as possible, to use highway alignments or old railway lines or some combination of the two. Clearly they are already in the public domain and you said “How come you can do all this without costing anything to the public sector?” Well there is a marginal cost to the public sector of sharing roads, of modification to the roads and if we lay our track in a high street, for example, the city

council might say “Well, we really ought to repave the high street to go with it.” And we'll say, “Yes, that's fine, we'll be happy to do that simultaneously but we'd expect you to share the cost,” because it's not necessary for a tram to have a repaved high street. But obviously from a civic design purpose it would be. And the other side where we'd expect the public sector to have an input is on the approval design side, because clearly we'd want to do a track design, we want them to look at it to make sure it doesn't obstruct any of their fixtures. We need to have traffic management plans, change the traffic signal settings so that the tram's got pre-emption clear run. So there are some costs to the public sector but not as big as doing the whole project themselves.

Q159 Baroness Hanham: Who maintains, or, once you've delivered the project, who then manages it? Do you stay in charge as management and the technology advisers and the maintenance?

Lewis Lesley: It would depend on the local business community because, by and large, we've tried to use the local business community to push them forward, whether they set up their own operating company or bring in a separate operating company, but by and large the operating company would maintain the infrastructure.

Q160 Baroness Hanham: Right, so you would just hand over and stand back?

Lewis Lesley: We might have shares in the operating company, just to keep our interest and show that we're not walking away and leaving them to their own devices.

Q161 Paul Rowen: So for Galway is that model that you're planning to operate?

Lewis Lesley: Indeed it is, yes.

Q162 Paul Rowen: And you mentioned your model for being able to predict numbers and so on. How does that differ from the current system used by the Department for Transport?

Lewis Lesley: I think it must be very similar because passengers are based upon number of people who can ride on the system. We all have the same basis number, population in the catchment area, their propensity to make journeys, how many journeys you make, trip length distribution, present modal split, we do a generalised cost comparison so we can do an inversion curve between tram, bus, car, other. We can vary the bus and tram fare, vary the bus, taxi fare and in one other project we looked at, if we set the tram fare at zero, we get our maximum number of passengers, six million a year. But obviously it's not commercial. At one pound per passenger trip it was, five million passengers so that's five million revenue. For two pounds it was four and a half million passengers, nine million revenue and at three pounds it was four million passengers, twelve million revenue. Now obviously it becomes a very sensitive marketing issue at where you actually set your fares, because you need to base it on local conditions. And no doubt we have bulk discounts and advance purchases to reduce the costs. But in terms of giving a return for the investment, clearly the fare is a critical factor and we would not necessarily have to go for maximum number of passengers but we need to go for maximum revenue. And if you like we're in the same ballpark as the low cost airlines. We're looking for maximum

yield on our sales, so some people would pay virtually nothing for their trip and other people would pay, if they turn up at short notice, maybe three pounds for a trip which other people pay a pound for. And we're going to use mobile phones as our principle ticket machine because in this country it's one and three quarter mobile phones per head now. It's an incredible figure and it's used for so many other things. It also has an implication for us that we get our cash up front a bit like the low cost airlines, we don't have to invest in ticket machines which get vandalised, etc. So there are lots of positive benefits from doing that.

Q163 Paul Rowen: So in Galway, with eighty-five thousand people, what's your break even number of passengers that you need a year?

Lewis Lesley: Four million a year.

Paul Rowen: Four million?

Lewis Lesley: Four million, yes. And we're predicting eight and a bit million.

Paul Rowen: And it opens in two thousand ...

Lewis Lesley: That's what we're aiming for, opening in 2012.

Paul Rowen: That's very interesting. Well thanks very much for that Lewis.

Lewis Lesley: It was a pleasure.

Paul Rowen: That's been a very interesting exposure I think and I'll be very interested to see how Galway does when it's open.

Lewis Lesley: Thank you chairman.