Cross-Party Group on Sustainable Transport

10 May 2023, 18:00, Committee Room 2, Scottish Parliament

Topic: Rail decarbonisation

Held as a hybrid meeting in person and online

Minutes

Present

MSPs

Graham Simpson MSP (Convener, chairing)

Mark Ruskell MSP (Vice-Convener)

John Mason MSP (Vice-Convener)

Sue Webber MSP

Alex Rowley MSP

Invited guests

Guest speaker: David Clarke (Technical Director at Railway Industry Association)

Guest speaker: Lee Pounder (Regional Director at SPL Powerlines UK)

Non-MSP Group Members

In person

Paul Tetlaw (Transform Scotland)

Robert Samson (Transport Focus)

Colin Howden (Transform Scotland)

Graeme Clark (Siemens Mobility)

Chris Day (Transform Scotland)

Mike Connelly (Connelly Comms Ltd)

David Steele (Gibson's Engineering Ltd)

Allison Cosgrove (Railfuture Scotland)

Gus Russell (Tweed Valley Railway Campaign, minuting)

Tom Flanagan (Transform Scotland)

Lawrence Marshall (Capital Rail Action Group)

Iain McDonald (Light Rail UK)

Andy Williams (56 Degrees North)

Sara Collier (CPT Scotland)

Jack Sinclair (56 Degrees North)

Josh Hill (Office of Graham Simpson MSP)

Online

David Giles (Scottish Association for Public Transport)

Allan Comrie (SPT)

David Murray-Smith (Scottish Association for Public Transport)

Alastair Dalton (The Scotsman)

Simon Watkins

Ken Haig (Levenmouth Rail Campaign)

Craig Laws (Enterprise Holdings)

Dave du Feu (Spokes)

Mike Lunan (Friends of the Far North Line)

Gary Brown (ScotRail)

Mark James (personal capacity)

Laura Hyde-White (Transform Scotland)

Colin Donaldson (Arcadis)

Craig McGarrie (Intelligent Health)

David Prescott (Allan Rail Ltd)

Scott Prentice (ScotRail)

Annette White (SPL Powerlines UK)

Peter Ovenstone (Heritage Railway Association)

Gillian Rae (SPT)

Aaron McHale (personal capacity)

Meirion Thomas (Railway Industry Association)

Apologies

Sarah Boyack MSP (Vice-Convener)

Mercedes Villalba MSP

Jenny Milne (Scottish Rural and Islands Transport Community)

Keith Irving (Cycling Scotland)

Ian Budd (Friends of the Far North Line)

Jane Ann Liston (StARLink (St Andrews Rail Link) campaign)

Alastair McInroy (Technology Scotland)

Vic MacKinlay (Light Rail UK)

Maïna Coroller-Larifla (Sustrans)

Caroline Thompson-Noble (Community Rail Network)

Welcome and introductions

The Convener, Graham Simpson MSP, welcomed the in-person and online attendees and confirmed that the group is conducting a short inquiry into the decarbonisation of transport and that the current meeting was looking at the rail sector.

New membership application

The Convener informed the group that three applications had been received for membership:

- Tweed Valley Railway Campaign – represented by Gus Russell who explained that the campaign seeks to restore a rail link between the Borders Railway and East Coast Mainline through the Scottish Borders, being part of the solution for more sustainable transport and decarbonisation. He noted that, crucially, it will encourage businesses to invest and people to stay in the Scottish Borders.
- Scottish Rural and Islands Transport Community – not represented
- Age Scotland – not represented

There being no objections, all three applicants were admitted to membership of the group.

Speakers: David Clarke and Lee Pounder

David Clarke, Technical Director at Railway Industry Association (RIA), and Lee Pounder, Regional Director at SPL Powerlines UK, gave a joint presentation.

David explained that rail generates about £3bn of economic activity in Scotland, supports 56,000 jobs which produces about £1bn in tax revenue and stated that RIA's three 'asks' are for (1) a rolling programme of cost-effective electrification; (2) fleet orders of low-carbon rolling stock; and (3) clients not to disadvantage low carbon solutions even if they may, currently, be more expensive than existing solutions. RIA Scotland have four, complementary 'asks' namely: Decarbonisation, developing skills, innovation and efficient delivery.

He listed some key metrics on the role of rail in meeting net zero by 2045 and highlighted the 2035 target for the decarbonisation of passenger railways, adding that there is a good plan in place: the Rail Services Decarbonisation Action Plan (DAP). Yet, efficient and cost-effective delivery of the DAP is key. It requires 1400 single track kilometres (STK) of electrification in 12 years (c. 120km p.a.), a rate which has been achieved in the past, but not in a continuous way. David stated that the Scottish Government have recognised, and are seeking to break, this boom and bust cycle but have not fully achieved that, yet. Decarbonisation will require both a ramp up and then a continuous programme thereafter — this would allow skills to be acquired, developed and retained. This approach had been implemented in Germany at a lower cost and would create a professional delivery team, allowing continuous improvement and a production line approach.

Lee then explained some of the wider benefits of a rolling programme of rail electrification, including retaining skilled green jobs, increasing social mobility, and stimulating growth of education, employment, recreation and trade in Scotland and beyond. He outlined some challenges including electrification's need for significant up-front investment and the inefficiency and high cost of boom and bust cycles.

On the question of the right pace for delivery, Lee noted that we need to start now otherwise we will lose skills and resources to outside of Scotland.

Lee discussed the role of rolling stock investment in decarbonisation and made comments on the current position of DAP Phase 1 delivery before summarising the 'asks':

- Work with the supply chain to design a programme that balances funding challenges and builds a sustainable resource pool (by prioritising carbon reduction and economic benefits).
- Build on CAP Phase 1 and prioritise electrification between the 'seven cities' where demand and economic benefits are greatest.

- Introduce wider power supply interventions, including integration with renewable energy sources.
- Integrate with Transport Scotland's rolling-stock strategy.
- Commit to new technologies for more remote and rural parts of the network.

Q&A

The Convener opened the meeting to questions.

Alison Cosgrove (Railfuture Scotland) – asked for elaboration on the use of hydrogen and batteries for the Kyle, Far North and West Highland lines given the apparent lack of optimism over electrification of these lines.

David said the lack of an intention to electrify certain sections opened the possibility of placing early fleet orders for hydrogen trains or other technology. Trains tend to be leased and privately financed so they afford the ability to finance them over a longer period. The optimum time for replacement is when the trains are life-expired so the age is a key consideration. Transport Scotland is already looking at a comprehensive rolling stock programme.

David Giles (SAPT) – referring to Ian Warmsley's article in the May issue of *Modern Railways* on the 32km to Newquay in Cornwall, he noted that, with a 50 mph maximum speed, hydrogen trains would be 15 times more expensive than using simple trolley wiring, especially over first 25 years.

David noted that low carbon stock is not limited to hydrogen. He noted that hydrogen is energy intensive to make and difficult to store. Although the Scottish Government's DAP suggests hydrogen as the preferred solution, his own view is that there are other technologies to consider as part of the whole railway system. Trolley wire could be a solution but one would need to look at all the options, which the supply chain can simulate, in order to make an informed decision.

Lee added that prioritising the industrial as well as the economic benefits may appear negative to some but, in so doing, it allows other technologies to be considered. Battery and hydrogen technology is constantly improving as is overhead line technology. By prioritising the lines for electrification it allows a simultaneous view of other technologies for efficient delivery of decarbonisation on more rural routes.

Tom Flanagan (Transform Scotland) – the benefits of a continuous programme, as in Germany, may understate the benefits as it does not capture the agglomeration benefits of an efficient transport system. The investment will produce other outputs and transport makes labour markets more efficient. It can expand to the travel-to-work area. Manchester's tram system has shown this. He asked if there has been an evaluation

and quantification of the benefits of electrifying the Glasgow-Edinburgh line. This would include additional benefits such as additional journeys made and additional efficiency of the system.

David responded that he was unaware of any such study but, taking the 2010 – 2019 period, it would be possible to look at accrued benefits. Rail users are experiencing a much better service. He noted that there are now seven electrified routes connecting Edinburgh and Glasgow. The settlements along the route derive the agglomeration benefits.

Lee was also unaware of such a study and noted that new stations being built creates new infrastructure and has an agglomeration effect. The last study in Scotland was on the Borders Railway which has been hugely successful.

David agreed, noting that Borders Railway had been a challenging business case. The ministerial approval had proven well-founded as patronage has wildly exceeded the business case assumptions.

Robert Samson (Transport Focus) – asked how a continuous electrification programme fits with Transport Scotland's current enhancement pipeline approach which has consecutive projects rather than a continuous, 10-year guarantee of electrification.

David said that Transport Scotland recognise the benefits of a continuous 'rolling programme' and are working on a programme business case over 10 years which would include many individual projects. Producing a business case for the totality of all the projects is important. Electrification has a high up-front cost and rolling cost also needs investment. The challenge for government is how to spread the cost and how the industry can help the government and Network Rail to deliver efficiently.

Considering all the options of how to invest in rolling stock, instead of electrification in some areas, is important and gives a possible trade-off.

Lee noted that, until now, there has been 5-year control period funding. A 10-year period would be new for Transport Scotland. With a rolling programme, there is no need for a full funding authority (AFC) for the whole amount. For example 50 STK could be electrified per year allowing the Government to drip-feed the funding, offering a tangible benefit of adopting a rolling programme.

David noted that by committing over 10 years, the detail emerges soon for shorter term projects while the longer period allows a greater opportunity for new technology to develop over the 10-year period. The key is to deliver the overall programme in bite-size chunks.

Dave du Feu (Spokes) – drawing a comparison with cycling infrastructure investment being carried out at the same time as carrying out other work, and avoiding more expensive retrospective changes, he asked if it was feasible to carry out other network improvements at the same time as electrification, such as laying double track.

The Convener noted that, in East Kilbride, double track work was not being carried out despite a growing population which means needing to do so at a later stage would likely cost more, in the long run.

Lee noted that although it was not always the case, in practice, where possible, renewal work is also carried out at the same time as an 'enhancement' project.

Dave said that historically, electrification has taken place when the diesel rolling stock is life expired. This forces tough decisions, given the cost. If one route is electrified this could delay any electrification of another.

Aaron McHale (individual) – Fife Circle decarbonisation would use battery trains because wiring is difficult in tunnels and over the Forth Bridge. What challenges are there to decarbonising the Fife Circle? Might third rail power be better?

Lee explained that there is a strategy for Fife. The current design is for partial (discontinuous) electrification which involves buying more trains which are part battery / part pantograph (overhead wires), such as the Azuma trains. Longer term could be electrification of the whole network but the level of intervention required, and clearance, needs closer examination. Funding for Fife is, therefore, undetermined as this needs to be assessed. A design is being looked at and looking to help Transport Scotland and Network Rail come up with a strong business case. With regards to the Forth Bridge, SPL Powerlines is looking at this for innovative solutions but third rail electrification is not, currently, under consideration.

Mark Ruskell MSP – questioned how decarbonisation of rail per passenger mile per pound invested compares with buses and where government should target its investment. He also questioned how supply chain opportunities, such as train procurement, design and build work, would lead to investment and employment and where that would happen.

David replied that this is not an either/or situation but about integrated transport opportunities. For example, Manchester is creating a totally integrated solution with trains, trams, buses and active travel which are all complementary. Rail is very good at long distance, high speed distance, e.g. high density into major cities and at freight.

On skills, Lee stated that 75% of journeys are in the Central Belt which is where the supply chain has focused. As this broadens to Aberdeen and Fife, for example, this generates opportunities for others to enter. There is an SME Working Group and a Rail Working Group, where SMEs are invited in and given transparency of the opportunities and how to become integrated.

David noted that rolling stock is not only about manufacture but, as with aviation, most of the value is about the life-cycle of maintenance which will tend to be local. If 60% of the Scottish fleet is to be replaced, a factory built only for production would face a major challenge in the absence of orders from abroad. There is currently an oversupply in the UK of train factories in light of likely orders. Focus should be placed on where the lifecycle value is located and try to ensure that it is in Scotland.

Ken Haig, Levenmouth Rail Campaign – questioned if electrification offers an opportunity for active travel routes to be built at the same time.

Lee responded that, for Levenmouth, this was happening; this allows intermodal (or end-to-end) journeys.

David added that public transport has to be a partnership with local government and between 'big' transport and local transport.

Paul Tetlaw, Transform Scotland – asked about traction power enhancement and whether Borders Line and Fife Circle funding for partial electrification and battery/electric trains being placed at the same time. He also asked if Levenmouth electrification will be carried out at the same time as double-tracking.

Lee explained that, in Scotland, there is a huge positive because investment is already being made in traction power enhancement around the network. On existing sections, cabinets are being built to draw power from the grid. New infrastructure has been built to provide sufficient step-up power to convert it to the 25kV level required for the rail network.

Feeder stations have been committed at Levenmouth and work has started. Whether overhead wires are to be installed is an open question because there is, currently, no integrated programme for rolling stock procurement.

Fife Circle differs from Borders Rail and Levenmouth because, for the Fife Circle, there is a potential route to use BMAUs using the current Azuma rolling stock for inter-city travel. There is no rolling stock to go to a branch line such as Levenmouth or Borders Rail.

Lawrence Marshall, Capital Rail Action Group – noted that 25kV overhead electrification is the most efficient way to decarbonise, especially for freight, and questioned why it would be efficient to extend it north. He questioned if, given that diesel trains on the Far North Line or West Highland Line had, relatively, limited emissions it was worth the investment in electrification.

He also asked if, rather than focusing on rolling stock to achieve decarbonisation, it would be better to focus on electrification.

David accepted that 25kV is the most efficient way to run an intensively-used railway but that electrification is expensive and, if currently running diesel trains, operators need to consider rolling stock replacement. For non-intensive routes, electrification is very expensive and something of a 'luxury'. There are rolling-stock-only solutions without electrification, such as hydrogen and other solutions. He accepted that the residual carbon of a few trains in remote areas may have a modest impact but noted that it was not a 'good look'.

He noted that discontinuous electrification allows passengers to have a decarbonise service sooner but this technology would not be suitable for freight. He noted that,

nonetheless, a freight train powered by diesel takes 76 diesel lorries off the roads so it still offers a lower carbon solution. Over time, the gaps would be electrified, according to Scottish Government intentions. With limited finance, a Government is faced with choosing between the ideal engineering solution of installing 25kV electrification on only some routes or decarbonising multiple routes to get the greatest decarbonisation benefits as soon as possible. He said the Scottish Government is trying to maximise the decarbonisation benefits as early as possible. He noted that there is a cumulative effect. Carbon saved permanently and early will have a greater cumulative effect in carbon reduction. That is where most of the passengers and most of the freight is transported.

Date for subsequent meetings and close of meeting

The Convener thanked the presenters and closed the meeting at 19:04.

The next meeting on 30 May on decarbonisation of buses is to be confirmed by Transform Scotland in the next couple of days.

The meeting on decarbonisation of ferries is scheduled for 20 June.

There will be a call for evidence. A report will follow which will include a set of recommendations.

Minutes

Draft minutes prepared by Gus Russell (Tweed Valley Railway Campaign, on behalf of Transform Scotland) on 12.05.22.