



## Scottish Association for Public Transport

# SCOTTISH TRANSPORT MATTERS

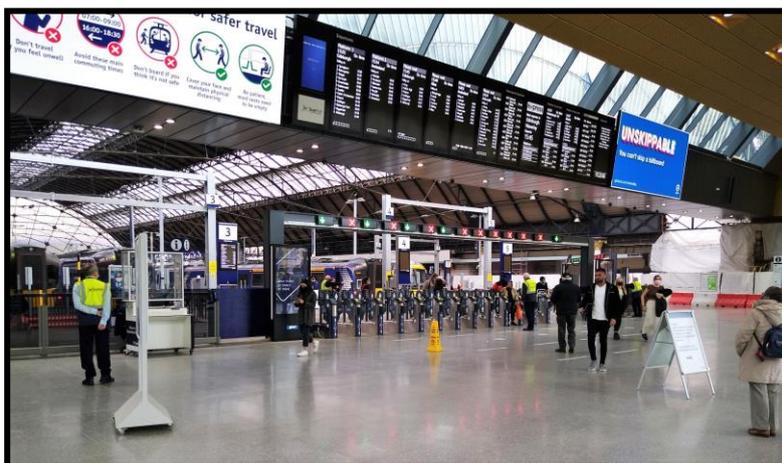
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*Rail use remains at only 20% of pre-pandemic level (see Section 1 overleaf) as can be seen by this view of a quiet Glasgow Queen St at 15.15 on Tuesday 11<sup>th</sup> May.*

*The story of Queen St station from 1842 to its rebuilding is told in an excellent new book "Glasgow Queen Street: A Railway Station Renaissance" by SAPT committee member Dr. Ann Glen MBE.*

*Transport Scotland Rail Director Bill Reeve will outline Scottish rail developments at the SAPT AGM on 17<sup>th</sup> September (see below).*



**AGM: Friday 17<sup>th</sup> September 2021**

**Guest Speaker: Bill Reeve, Rail Director, Transport Scotland**

- Rail Recovery Prospects
- Decarbonisation Strategy
- Implications of government ownership of ScotRail
- Public Transport Integration Prospects

The committee has decided to hold the AGM virtually over Zoom, as there is still a degree of anxiety about travel and social distancing. Details will be given in the next issue of *Scottish Transport Matters*. It is important that any change to your email address is returned with your membership renewal form so that a zoom meeting invitation can be sent to you. For members without computer or smartphone, a summary of the proceedings will be issued after the AGM.

The latest figures from Transport Scotland for the period 19 - 25 April 2021 (compared with 29<sup>th</sup> March-4<sup>th</sup> April in brackets) show a recent slight rise in bus and rail journeys, but still far below pre-pandemic levels.

19 – 25 April 2021	(29 <sup>th</sup> March – 4 <sup>th</sup> April)
• Concessionary bus journeys down by 55%	(-65%)
• Rail journeys down by 80%	(-85%)
• Ferry journeys down by 75%	(-75%)
• Air journeys down by 80%	(-80%)
• Car journeys down by 20%	(-25%)

**Transport Research:** The Covid-19 pandemic may have long-term repercussions for use of public transport in Scotland, a study by Edinburgh Napier University suggests. A survey of around 1000 Scottish residents by the university's **Transport Research Institute (TRI)** found far fewer members of the public anticipate using buses, trains and planes after the country emerges from lockdown.

*The Impact of Covid-19 on travel behaviour, transport, lifestyles and location choices in Scotland* (TRI April 2021) reports that 45% of respondents expected to walk more, 29% expected to cycle more and 25% expected to drive their car more in the post-Covid future than they did before.

In contrast, 42% anticipated using planes less, 36% using buses less and 34% using trains less. The most common reasons given for using public transport less in the future were the possibility of getting infections from other passengers, lack of cleanliness/hygiene on board and overcrowding.

**ScotRail:** Social distancing rules seriously reduce the capacity of trains. ScotRail estimates that the 176-seat capacity of a 3-car Class 334 electric train reduces to 86 passengers with 1 metre social distancing, but only 25 passengers with 2 metre social distancing. A 2-car Class 156 with 137 seats could accommodate only 71 passengers with 1 metre spacing, and only 20 passengers with 2 metre distancing. So relaxation of government health guidelines as vaccination levels rise is critical to making public transport viable. In England the government is predicted to scrap social distancing rules from June 21st 2021, though other precautions such as masks are likely to continue. ScotRail recovery will depend on Scottish Government rules as well as public attitudes. Special funding measures cover ScotRail services until September 2021. Beyond then, the level of extra financial support will depend on the speed of recovery of passenger traffic and revenue. Rail timetables have been reduced on many lines to control costs, particularly on Central Belt commuter routes. A longer-term reduction in timetables is expected. The RMT union has exacerbated the situation by calling strikes on Sundays in pursuit of pay rises for ScotRail conductors, at a time when rail usage and revenue has plunged.

**Bus:** The Scottish Government is making available up to £61.4 million of additional funding to cover bus operations over the period 1 April-27 June 2021. This funding covers the gap between additional operational costs due to COVID-19 and the loss of fare revenue due to physical distancing and reduced demand. Service reductions are expected once this funding expires.

**Ferries:** Capacity on short-distance routes where motorists can remain in their vehicles is less affected by social distancing, though travel by non-islanders is still discouraged. On other routes passenger numbers are limited. Breakdown of CalMac's *Loch Seaforth* has had a knock-on effect on the rest of the CalMac network making it even more difficult for islanders and visitors to travel.

**Air:** Business travel is likely to continue to be affected by greater use of Zoom, Microsoft Teams etc. Pressure to restore international travel will open the floodgates to overseas holidays despite aviation being the conduit for spreading the coronavirus worldwide.

A major increase in public transport use will be needed if the Scottish Government's carbon neutral target is to be met. The government's climate change plan has set a target to cut car travel by 20% by 2030. The Climate Change Act 2019 commits Scotland to net-zero emission of greenhouse gases by 2045. But there's a big difference between ambition and action. The government needs a clear path for how to reach its targets, taking into account the issues below.

**Low-carbon Transport and Future Power Generation and Distribution:** Reaching the 2045 net zero carbon target depends on electrification of road and rail transport as well as replacing natural gas domestic heating. Transport accounted for 37% of total greenhouse gases in Scotland in 2017. But how much renewable energy will be needed to replace hydrocarbon fuel?

*Scottish Transport Statistics* estimates that the traffic on Scotland's roads consumed just over 3 million tonnes of petrol and diesel in 2017. This is equivalent to about 74 Gigawatts of electrical power. A huge increase in electricity generation and distribution networks will be necessary, from the generation of power through to upgrades and new substations that will be necessary to support countrywide roadside charging stations, hydrogen production stations, and upgraded house distribution boards, fast chargers and grid connections. This needs effective planning over the decades that it will take. There is no single organisation with the expertise, responsibility or funding to oversee all this. Co-ordination of power and transport developments will be essential.

**Rail:** Electric trains and trams are the most efficient and long-established use of electric power for transport. Decarbonisation of Scottish railways has made good progress with EGIP completed and the East Kilbride line now being wired. Hitachi is developing batteries to power Class 385 trains beyond the wires. The potential of hydrogen to power some Scottish railways is covered in Section 4. Edinburgh Trams are being extended to Newhaven, with further extensions proposed. Glasgow Metro, first suggested by SAPT, is now being planned by Glasgow City and neighbouring councils.

**Cars and Buses** produce 40% of transport emissions. Sales of electric and hybrid cars rose to 10.7% in 2020. But the percentage of SUVs is increasing leading to an overall increase in emissions. If this trend continues more electric SUVs with heavy batteries will increase electric power consumption.

The need to recharge electric cars will introduce a "range anxiety" factor. New electric or H<sub>2</sub> buses connecting at multi-modal mobility hubs with electric trains will make public transport a more attractive and more energy-efficient travel alternative for longer journeys. Government subsidy for the bus industry should focus on supporting a strategic integrated network of routes.

**Road haulage:** There is currently no realistic alternative to derv for commercial vehicles which account for 25% of transport emissions. The only proven zero-carbon alternative for long distance goods is railfreight powered by renewable electricity. Infrastructure investment should increase track capacity for freight trains on trunk lines in Scotland, and also on Anglo-Scottish routes. Tax on derv will have to rise to tip the economic balance towards railfreight.

**Aviation** produces 15% of transport emissions. Cutting rail journeys to 3 hours on HS2 could reduce domestic air travel by 50% on the main routes from the Central Belt to London.

Alternative fuels for aviation are a greater challenge. Biofuels are expensive and affect food production. Hydrogen takes four times the volume of jet fuel and is more expensive. Batteries are heavy and limited to short flights. One future potential is carbon-neutral fuel produced by hydrogenating carbon dioxide, a chemical process that extracts CO<sub>2</sub> from the atmosphere using renewable energy and water to produce fuel. The much higher cost of synthetic fuel would need governments to agree a carbon surcharge on kerosene to make synthetic fuel competitive.

**Shipping** also accounts for 15% of transport emissions. The Scottish Government has no control over international shipping, but Scotland has the largest UK ferry network. CalMac already runs some small hybrid ferries with battery power on short routes. A large hydrogen-powered ferry is being built for Scandinavian routes from 2027, using a massive 23-MW fuel cell. Green hydrogen produced using electricity from windfarms could power replacement ferries to the Western and Northern Isles and Firth of Clyde in the next decade once this technology has been proven.

**The Scottish Government's Strategic Transport Projects Review aims to achieve net zero carbon. The first phase of the review is analysed in Section 3 below but there is a long way to go.**

Consultants Jacobs and Aecom on behalf of the Scottish Government have analysed 2,800 suggested transport projects across Scotland. The objective of this Strategic Transport Projects Review (STPR2) is to prioritise projects that can deliver on the Scottish Government's stated policy objectives of reducing inequalities, tackling climate change, delivering inclusive economic growth, and improving health and wellbeing. STPR2 is aiming to develop a programme of interventions that works towards a reduction in car kilometres of 20% by 2030.

But the pandemic has disrupted the ability to make reliable predictions for the future based on past evidence. So instead of producing a list of transport projects, as in the first STPR in 2008, STPR2 Phase 1 defines short-term investment priorities grouped in themes, summarised below:

- Support smart and sustainable travel: Active freeways (walking/cycling), expansion of 20 mph zones, influencing travel choices (improving information)
- Create smart sustainable towns/villages (reallocating road space for active travel, and mobility hubs)
- Improve rural/ island accessibility (Demand responsive transport and mobility as a service)
- Transform cities: reallocate road space for active travel, enhance major stations, introduce Glasgow Metro, and Edinburgh "Mass Transit"
- Enhance public transport: bus lanes, better bus & rail integration with ferries, better rail station access
- Low carbon transport: investment in alternative fuel systems for road vehicles, and rail decarbonisation
- Freight: Improving facilities for road hauliers, and investing in infrastructure to encourage rail freight
- Investing in the strategic road network including access to Argyll & Bute, road speed management plan
- Investing in ferries and terminals

The second phase of STPR2 is expected later in 2021, once post-covid travel trends have stabilised.

STPR2 priorities are consistent with the government's net zero target. But most of the recommendations are quite general, unlike the 2008 STPR which included specific projects, so future allocation of funding could be skewed away from "green" projects by items like "investing in the strategic road network" which could need unlimited funds.

SAPT's comments to the Scottish Government highlight the need to focus on decarbonisation transport projects that make the most efficient use of electrical power. Further expansion of the Edinburgh Tram network, as envisaged by Edinburgh City Council, will provide zero-emission city transport that also improves the city by cutting road traffic (photo of Newhaven tram extension on right). Glasgow Metro and a Light Rail system for the Aberdeen area would transform city travel and environment.

Further rail electrification projects like the current East Kilbride scheme are very welcome but these need to be linked with bus/rail integration to boost the use of energy efficient electric trains connecting with battery or hydrogen feeder buses. More mobility hubs and bus/rail interchanges (as at Lanark, right) are needed.

STPR2 will not achieve the Scottish Government's targets for reducing car kilometres and greenhouse gas emissions unless bus and rail transport is fully integrated to attract a higher share of car journeys. The next issue of *Scottish Transport Matters* will contain SAPT proposals for this.



*Trams are the most energy-efficient zero emission city transport. The photo above shows track laying on Leith Walk on the Edinburgh Tram extension to Newhaven.*

*New Light Rail lines for Edinburgh, Glasgow and Aberdeen should be included in STPR2.*

*Photo: Trams to Newhaven newsletter 21/3/21*



*More bus/rail interchanges as at Lanark will make it easier to make seamless low carbon journeys by battery or hydrogen bus connecting with electric trains.*

*Photo: J.McCormick*

In December 2020 Scottish Enterprise and Transport Scotland, together with the Hydrogen Accelerator group at the University of St Andrews, announced the appointment of Arcola Energy to lead a consortium of companies tasked with delivery of Scotland's first hydrogen-powered train for showcasing at the COP 26 environmental summit in Glasgow in November 2021. The industrial consortium led by Arcola Energy also includes Arup, Abbot Risk Consulting and AEGIS. Following demonstration in the autumn, the train is intended to serve as a development platform for Scottish industry and play a part in drawing more Scottish engineering companies into rail or hydrogen-related work. The project is also intended to encourage relevant research in Scotland through the establishment of new collaborative links between the academic community, Scottish industry and organisations in the rail sector.

As has been reported extensively in the technical press and media, a former ScotRail Class 314 electric multiple unit is now being converted to a hydrogen fuel-cell/battery electric unit by Arcola staff at the workshops of the Bo'ness and Kinneil heritage railway. Movement of the unit in December 2020 by road from Glasgow followed a period of about one year in storage at ScotRail's Yoker depot.

My involvement in the Class 314 project began very early this year when I was contacted by Dr Ben Todd who is CEO at Arcola. He expressed interest in reports that I had completed for SAPT last year outlining some computer simulation work on the potential for hydrogen-powered trains on secondary routes in Scotland and asked whether I would be interested in establishing a link. Preliminary discussions were very fruitful and two of my colleagues at the James Watt School of Engineering at the University of Glasgow are now also involved in the collaborative work with one of Arcola's senior systems engineers. The work has already led to plans for a project for a final year MEng student and we also hope to establish a PhD project in this field.

Hydrogen fuel-cell stacks are characterised by a sluggish response to demanded power-level changes and their efficiency depends on the operating condition. Powertrain control strategies may therefore involve fuel-cell stack operation with slow rates of change that capture power demand, with fast dynamic changes and peak loads being supplied by a battery pack. The battery pack recharges through regenerative braking or from available power from the fuel-cell stack. Optimal sizes of powertrain components such as the fuel-cell stack and battery pack, depend on route characteristics, with relatively flat routes and operation at constant speed favouring large fuel-cells, while routes with prolonged and steep gradients or larger accelerations require larger batteries.

In terms of the plans for rail de-carbonisation in Scotland announced by Transport Scotland last year, routes where zero-emission self-powered trains are likely to be required include the West Highland lines, sections of the Far North and Kyle of Lochalsh lines and the route from Girvan to Stranraer. Some of these involve a combination of significant distances with prolonged steep gradients and present real difficulties in terms of component sizing. Accommodating all the necessary components such as the hydrogen storage tanks, fuel-cell stack, battery pack, traction motors and the associated power electronic converters without exceeding axle loading limitations or reducing available passenger accommodation is difficult. Two of the earlier reports for SAPT were concerned specifically with fuel-cell and battery sizing issues for operation on the West Highland lines but did not attempt serious analysis of space limitations. The collaborative work with Arcola Energy has so far been focused on comparing different computer simulation methods and on predictions of performance of the hydrogen-powered unit train on the Bo'ness to Manuel route for various different loading conditions and fuel-cell stack and battery-pack sizes. Being able to see photographs of the progress being made with the conversion work at the Bo'ness workshops gives new life to these computer-based modelling activities and gives new urgency to plans for future development of research activities in this field.

*David Murray-Smith is Emeritus Professor of Electronics & Electrical Engineering at Glasgow University*

### Scottish Election 2021

Results from the Scottish election are not expected to lead to any dramatic changes in transport policy, with the SNP returning the largest number of MSPs but, as before, without an overall majority. It is possible that the influence of the Green Party may be greater than in the previous parliament. SAPT will push for adoption of a fully integrated public transport policy making efficient use of renewable energy for electric trains and buses.

### Research and Statistics

Though the Scottish Government has a commitment to a 20% cut on road traffic levels by 2030 the latest web-based *Scottish Transport Statistics* show an 8% rise in road vehicle kilometres to 48.7 billion in the 5 years to 2019. Emissions from transport were the major source of Scotland's total carbon emissions in 2018 with road transport accounting for 65% of total emissions. Pre-covid, bus passenger trips in Scotland continued to fall with ScotRail rail passenger trips, after years of strong growth showing a slight fall to 95m (entirely attributable to the impact of Covid in the financial year which runs to 1 April). Bus data is based on the 2019 calendar year. Falls will be much larger for the 20/21 financial year with considerable doubts about the rate of Covid recovery in and beyond 21/22. Car traffic has had a lesser fall and is showing signs of faster recovery unless this can be altered by the content of the revised National Transport Strategy and related STPR (see section 3), reinforced by a new funding/pricing strategy including road pricing and integrated public transport services and ticketing.

New car registrations in January were 40% lower than in January 2020. Petrol car registrations were down 62% and diesel down 51%. Pure battery electric vehicles rose 54.4% but only have a 6.9% share of the market (S 5Feb). The car industry has had the worst February sales in over 60 years (S5Mar) All new Fords will be electric from 2030 (LTT817 19Feb p5)

A report from the John Muir Trust shows that scenery-based tourism in Scotland supports more than 200,000 jobs in Scotland but that increased road traffic and footfall in some areas has had a damaging environmental toll including damage to walking routes with increasing footfall. Visitors are starting to exceed infrastructure capacity – worsened by expectations of more visitors from the UK this summer due to international restrictions. Local authority spending cuts have had adverse impacts only partly offset by the Scottish Government doubling the Rural Tourism Infrastructure Fund. The principle of 'leave no trace' has often not been observed. More emphasis should be placed on 'slow tourism and multiple night stays' rather than fleeting visits. However, no mention is made of an enhanced role for well-connected bus, rail and ferry transport (H11Mar).

Surveys by the Universities of Strathclyde and Manchester have found that only 9% of those working from home want to return to their offices for 4 or 5 days per week. However, health has been adversely affected by working from home.

### AVIATION

Edinburgh Airport had fewer than 3.5M passengers in 2020, the lowest numbers since 1995 and well below the almost 15M carried in 2019 (S 5Feb). British Airways report a loss of £6.8bn in 2020 compared to a profit just under £2bn in 2019 (S 27Feb). A further £1bn has been lost in 1Q21. Net borrowings at IAG (owners of BA) stand at over £10bn. BA are operating only a quarter of normal services.

Loganair expects a significant amount of business to stay on-line after Covid (H18Feb). Scottish Government has provided funds to restore flights to Wick from Aberdeen and Edinburgh (S 6Feb).

A 25 year £55M plan, attacked by the Greens, has been announced for Inverness Airport. Passengers are expected to rise from just under 1M a year to 2.1M by 2045. The terminal will be relocated close to a proposed new station on the Inverness-Aberdeen rail line (H13Feb)

### FERRIES & SHIPPING

Leith is being suggested as Scotland's first greenport with associated tax reliefs, simplified customs and other government aid (EN23Jan). Following a 70% reduction in business and a small level of government aid, Pentland Ferries have made some economies but still operate. Western Ferries have cut Clyde crossings from Gourock from 90 a day to 30 (H2Jan).

A report by Holyrood's Rural Economy and Connectivity Committee 'finds catastrophic failures' in delays and rising costs related to late delivery of the two new ferries being built by Fergusons for the Cal Mac Arran and Uig/Lochmaddy/Tarbert routes (S27Jan).

## **BUS, TRAM, DRT (Demand Responsive Transport) & TAXI**

£40.5M of funding to help replace 215 diesel buses in Scotland with electric is being provided by the Scottish Government. Most will be built in the Alexander Dennis bus plant in Falkirk (H23Mar)

McGill's is investing £17.5M in 35 electric buses with 23 single deckers to operate on the Johnstone Glasgow route and 12 double deckers for Dundee (H20Feb)

Edinburgh's City Mobility Plan includes a city bus network review by 2023, a new north-south tram route open by 2030 and other plans to cut motorised road traffic and improve air quality (EN12Feb) The Plan also aims to cut the number of buses crossing the city centre. A report by Jacobs and Steer to the City Council also suggests options for tram extension to Granton, options for city centre trams and options for routes into south-east Edinburgh (EN 12Feb; LTT817 19 Feb p15). Aberdeen City Council is to lead a bid for £150 to £200M Scottish Government funding for a bus rapid transit network with routes from the city centre to Aberdeen Airport, Bridge of Don, Westhill and Portlethen (LTT817 19Feb p14).

'Mass transit' routes for Edinburgh and Glasgow feature in Transport Scotland's 20 major project priorities included in the new National Transport Strategy and related Strategic Projects Review due to be finalised this autumn. A cross-Forth light rail transit extension into south Fife is also mentioned as well as use of parts of the Edinburgh South Suburban railway (still used for rail freight and passenger diversions) to give better connections to the west, Edinburgh Airport and Business Development Zone (EN4Feb) Glasgow plans include a metro system extending into immediate surrounding areas fully integrated with bus and heavy rail networks (EN,S and H 4Feb) There has been subsequent criticism of the confusion caused by references to mass transit, tram, light rail, metro and bus rapid transit – also criticism of the use of parts of the former Edinburgh South Suburban railway for trams due to the rising value of this route for rail freight, emergency passenger train diversions and potential cross-city regional passenger services improving access to Edinburgh Airport and the adjacent Business Development zone.

Stagecoach anticipates that government support for local bus services will be 'in place longer than previously anticipated' due to extended Covid restrictions (H27Mar). National Express suspended its scheduled UK coach network due to low demand, tighter restrictions and inadequate government support (EN 18 Dec & 8Jan) Scottish Government has announced up to £61.4m of further support for bus services during Covid recovery from 1 April to 29 June. Total government support for Scottish bus services in 20/21 financial year is expected to be £144.5m (this is exclusive of compensation for free bus travel and other support bus support from local government). Bus trips in Scotland fell by 3% in 2019 to 366M and are now down 12%: in the five years to end of 2019 (LTT819 19 March p5)

Moray Council is seeking £4m from the Scottish Government for an electric demand responsive bus service as part of the Moray Growth Deal. The project proposes a fleet of vehicles to provide on-demand service between 4am and midnight Mondays to Saturdays and between 7am and 10pm on Sundays (LTT818 5 March p10).

Councils in south-east Scotland are collaborating on a regional bid to Transport Scotland's Bus Partnership Fund (LTT818 5 March p10).

A further £60M of additional funding has been approved by the Scottish Government to help bus operators maintain services during the pandemic (S9Mar). Taxi drivers complain of poor levels of government support compared to the bus sector (EN 18Jan).

Free bus travel for those under 19 has moved closer due to this being a Green Party condition allowing the Scottish Budget to gain approval (S 22Jan).

Fire attacks on buses in Scotland have been rising since 2015 with 200 incidents in Scotland, notably in Glasgow, North Lanarkshire, Edinburgh and the Highlands (S2Jan).

The Supreme Court has ruled that Uber drivers must be regarded as workers under employment law (H20Feb) The pilot Stagecoach automated bus trial in west Edinburgh may be delayed.

## RAIL

Transport Secretary has announced that ScotRail will be taken into public ownership from March 2022 and run by an arm's length company pending further decisions on the rail network (with infrastructure presently in the hands of Network Rail and under review at UK level) (EN & H18Mar). Rail passenger support to compensate for passenger income lost due to Covid has risen sharply. A UK report on how best to replace current franchising and take forward the rail network is still awaited (though N Ireland trains are run separately by the devolved government there). Scottish Labour is also calling for the Caledonian Sleeper to be nationalised (S20Mar).

Another bridge fault on the rail line south of Stonehaven has been repaired with the line to Aberdeen reopening on 22 Feb (H18Feb). This event was additional to the even more serious event in 2020 also south of Stonehaven at Carmont when a high-speed train was derailed by a landslip and then hit a bridge parapet with 2 staff and 1 passenger killed. The report on this accident urges use of drones or helicopters to check earthworks for possible failures. Another change would be better arrangements to inform drivers to run at lower speeds where there is concern about landslips or other events affecting infrastructure (H18Mar)

Legal consent has been given to HS2 extension to Crewe. Work should start in 2024. Other extensions remain under review (LTT817 19Feb p13).

STPR includes proposals to upgrade the Nithsdale route to give improved clearances for container freight December 2023 has been confirmed as the reopening date for the Thornton-Levenmouth line with through services to Edinburgh

Mott MacDonald has gained a £900,000 contract to take forward designs to transform Edinburgh Waverley station (EN20Feb)

Both Reston and East Linton stations on the Edinburgh – Berwick main line are expected to reopen in 2024 though train service plans for these have yet to be announced.

One effect of fewer trains caused by the Covid pandemic has been a substantial improvement in passenger train punctuality with trains 'on time' up from 87% in 2019 to 94% in early 2021 (S26Feb)

Under the Emergency Services agreement Transport Scotland paid Abellio £475m for the period 1 March to September 2020. This is twice the amount paid for the same period in 2019. A further agreement has been negotiated running to 31 March 2021 with financial details published after this date (LTT817 19Feb p17)

Rail passenger trips in Scotland remain around 10% of normal though 80% of ScotRail trains are still operating. Revenue has collapsed by 95% with compensatory funding from the Scottish Government which will have to be reviewed (H14Jan)

Scottish and UK ministers have signed a £452m 'Borderlands Growth Deal' including work to assess a Borders rail extension to Carlisle, a Mountain Biking Innovation Centre and a new role for the former Chapelcross nuclear power station (H18Mar).

The Union Connectivity Interim Report in March urges better air links between England and northern Scotland but also changes in HS2 planning to give shorter rail trip times from the Scottish Central Belt to London and other cities south of the Border. Profs. D Oakervee and G Masterton (Chair of Future Infrastructure at Edinburgh University) are to study the feasibility of a fixed link from Scotland to N Ireland including costs and timescales. This could include some road and rail improvements through Galloway. Further study of future freight movement within the UK is a priority issue. The Advisory Panel includes Prof David Begg. A final report will be issued in summer 2021 (LTT819 19March p13).

In a survey of rail passenger growth from 2009 to 2019 within and between regions, growth between Scotland and North West England tops the list at 80%, based on ORR data. This is twice the national average. Rail passenger growth between London and Scotland rose by 55% (LTT819 19 March p21)

183 Hitachi-built LNER and GWR Class 800 trains had to be temporarily withdrawn for inspection from May 8<sup>th</sup> due to cracks developing in the suspension system and lifting points under some of the carriages. ScotRail's Class 385 electric trains on Central Belt routes use similar aluminium technology and are being inspected, which is leading to shortened formations on some services.