Rail First

Introduction

There is growing concern in Scotland about the impact of aviation. Residents under flight paths complain about the noise and air pollution problems from the increasing number of flights using the country's airports. Environmental groups point to the climate change impacts. Even the benefits to the economy have recently been called into question (1).

This report assesses the potential of a fast, affordable rail service to stabilise, or even reduce, the number of flights at Scotland's three busiest airports – Glasgow, Edinburgh and Aberdeen. It hasn't looked at Prestwick where there is a lot of freight traffic. But certainly a high-speed rail service serving Glasgow would have the potential to reduce passenger flights at Prestwick.

Chapter 1 summarises the problems caused by aviation

- **Noise** has reached critical levels in some communities

- **Air pollution** around airports is made worse by large numbers of aircraft

- Aviation is the fastest growing contributor in the UK to **climate change**

- The growth in short-haul, budget flights has resulted in airports becoming a drain on **the economy** as more Scottish people take their holidays abroad

Chapter 2 outlines the destinations served by the three airports

- **36%** of flights using **Glasgow Airport** are to and from London Airports

  - **66%** are to and from mainland UK including London

- **33%** of flights using **Edinburgh Airport** are to and from London Airports

  - **59%** are to and from mainland UK including London

- **16%** of flights using **Aberdeen Airport** are to and from London Airports

  - **59%** are to and from mainland UK including London

- **Very few** flights from Scotland are to destinations outside Europe

Chapter 3 assesses the potential for rail to replace some of the flights

- *"The Committee is also in no doubt that high-speed rail can encourage modal shift from domestic aviation to rail, and this would have significant environmental benefits".*
  Transport, Infrastructure and Climate Change Committee, 2009

- **2hr 15/45min:** London – Edinburgh/Glasgow on high-speed rail

- **Before** the TGV service between Paris and Marseille, rail held only **22%** of the air-rail market. **Within four years** of the introduction, the market share held by rail rose to **65%**.

On the back page are the conclusions and recommendations

<u>**Chapter 1**</u>

The Problems Caused by Aviation

Noise

Although individual aircraft have become a lot quieter over the past 30 years, this has been off-set by the huge increase in the number of planes using Scotland's busiest airports. It is the sheer number and the frequency of flights which are causing the real problem for residents living under the flight paths in places like Yoker, Cramond and Dyce. The problem has become particularly acute in recent years with the explosion in budget flights. Any expansion of these airports will simply increase the problem.

Air Pollution

Air pollution is a problem around most airports. At large airports such as Heathrow air pollution levels are threatening to exceed the EU legal limits. This is not the case at the Scottish airports but, nevertheless, there are persistent complaints from residents close to the airports about a thin dirty film covering their window sills or cars. It can be difficult to separate out the air pollution caused by aircraft with that coming from other sources but it is beyond question that aircraft contribute to high levels of air pollution.

Climate Change

Aviation is the fastest-growing contributor to climate change in the UK. It currently accounts for 6% of emissions -13% if radiative forcing is included. (radiative forcing includes any gas which disturbs the radiation balance at the top of the atmosphere, where much flying takes place). Over the coming years, if aviation expands at the rate predicted in the Air Transport White Paper (published in 2003 and covering the whole of the UK), emissions from aviation will be rising at a time when the rest of industry will be required to make cuts. Both Scotland and the UK as a whole will struggle to meet their emissions targets unless aviation is curbed.

The oft-quoted figure that aviation only accounts for 2% of worldwide emissions is both correct and misleading. 2% is the worldwide *average* (excluding radiative forcing). However, to simply use the average figure is misleading. Only a small proportion of flying takes place in the poor world. It is largely an activity of the rich world. The onus, therefore, should be on rich countries to reduce the amount of flying they do. The poor countries are taking a double-hit. Not only do most of their inhabitants rarely or ever fly, it is people in these countries – particularly the poorest people amongst them – who will be hit first and most acutely by the impact of climate change.

It is argued that Emissions Trading will sort out emissions from planes. Through trading, airlines will be able to buy permits to emit from other less polluting industries. But, as it stands, the European Emissions Trading Scheme is so weak that it is doubtful if it can make any significant impact on overall emissions.

Economic

Most of the growth at Scotland's airports is justified on economic grounds: that it is important for business and will create jobs. But the picture is more complex than is usually admitted. Business trips just account for 25% of all trips at UK airports (only Heathrow is significantly higher). None of Scotland's airports would need to expand just to cater for business trips. The expansion is being driven by the predicted growth in low-cost, short-haul flights. The irony is that these are the very flights which are damaging Scotland's economy. The recent AirportWatch Scotland Report by Gerry McCartney found that Glasgow Airport alone is currently costing the Scottish economy £1.3 billion, largely as a result of the tourism deficit - that is the difference between what Scottish people spend abroad and visitors spend in Scotland **(1).** The report found that the deficit will only get worse if, despite the recession, leisure trips on low-cost flights continue to grow. There needs to be a much more open and honest debate about how much and what type of flying actually benefits the Scottish economy and whether investment in high-speed rail would be of more benefit to Scotland's businesses, especially its many small businesses. The debate also needs to consider whether investment in less polluting, more sustainable industries would bring greater long-term benefits to the economy.

Chapter 2

The Destinations Served by the Three Airports

Glasgow

20th February 2009

103 scheduled arrivals

36% from London's Airports

66% from mainland UK airports including London

107 scheduled departures

36% to London Airports

66% to mainland UK airports including London

In Summary, To and From:

The Scottish Highlands and Islands:	**26 per day**
Ireland:	**18 per day**
London Airports:	**74 per day**
The rest of the UK:	**58 per day**
Outside the UK:	**33 per day** (31 to Europe)

Reflections:

Glasgow Airport largely serves UK and Irish destinations. The number of flights to Europe is not high. And, on the day we looked at, just two beyond Europe. Connections to most destinations outside the UK will take place at one of the London airports, principally Heathrow (30 flights a day, nearly as much as the rest of Europe put together), possibly Birmingham (14 flights), Manchester (13 flight) or Amsterdam (8 – the top European destination). It is argued that people going to get a connecting flight will be reluctant to use the train for the first leg of their journey. Some will, but the experience of France is that many people will use a fast train service that takes them to catch a connecting flight.

The large number of flights to London, Birmingham and Manchester suggests there is real scope for many of these trips to switch to a fast, affordable rail service. This is explored in more detail under the rail section. It suggests that it would be perfectly viable to actually reduce the number of flights using Glasgow Airport without curtailing people's desire to travel if a viable rail alternative was put in place.

Less flights would significantly improve the quality of life for people in communities under the flight path such as Yoker, Drumchapel, Clydebank, Linwood and the parts of Paisley by reducing the noise. It would also cut CO_2 emissions and act as a clear signal that the Scottish Government was serious about tackling climate change.

The flights in detail

Scottish Highlands and Islands

	Departures	Arrivals
Barra	1	1
Benbecula	2	2
Campbeltown	2	2
Islay	2	2
Kirkwall	1	1
Stornaway	3	3
Sumburgh (Shetland)	1	1
Tiree	1	1
Total	**13**	**13**

Ireland

	Departures	Arrivals
Belfast	6	6
Dublin	2	2
Knock	1	1
Total	**9**	**9**

London Airports

	Departures	Arrivals
Gatwick	7	7
Heathrow	15	15
London City	5	5
London Luton	5	5
Stansted	5	5
Total	**37**	**37**

The Rest of the UK

	Departures	Arrivals
Aberdeen	0	1
Birmingham	7	7
Bristol	3	3
Cardiff	1	1
East Midlands	3	3
Exeter	1	1
Isle of Man	1	1
Leeds/Bradford	2	2
Manchester	7	6
Southampton	4	4
Total	**30**	**29**

Outside the UK

	Departures	Arrivals
Alicante	2	2
Amsterdam	4	4
Berlin	1	1
Copenhagen	1	1
Dubai	1	1
Newark (New York)	1	1
Newquay & Plymouth	1	0
Paris CDG	3 (2 via Cardiff)	3
Tenerife	2	4
Total	**16**	**17**

Edinburgh

20th February 2009

149 Scheduled Arrivals

33% are from London Airports

58% are from mainland UK including London

149 Scheduled Departures

34% are to London Airports

60% are to mainland UK including London

In Summary, To and From:

The Scottish Highlands and Islands: **23 per day**

Ireland: **29 per day**

London Airports: **100 per day**

The rest of the UK: **80 per day**

Outside the UK: **66 per day** (62 to Europe)

Reflections:

Edinburgh is a more international airport than Glasgow. It has about double the number of flights to destinations outside the UK. But, even so, the only non-UK destinations to reach double figures are Paris and Amsterdam (both with 10 flight per day). Brussels is the next busiest with 8 a day. Although a busier and more international airport than Glasgow, the pattern of flights is not dissimilar. There are 36 flights per day serving Heathrow, 16 serving Manchester and 14 serving Birmingham. These are destinations which would be easily accessible by a fast, affordable rail alternative.

As in the case of Glasgow, a fast rail service should make it possible to cut flights numbers, thereby reducing noise and emissions. At both airports of course the Scottish and UK governments are predicting a significant increase in passenger numbers and even believe new runways may be required by 2030. These predictions were made without taking account of the recession and, crucially, without factoring in the way in which a fast, affordable rail service would attract people off the planes.

What is required now is a new assessment of passenger demand at Edinburgh and Glasgow taking full account of the competition of a high-speed rail service, linked into improved local and regional rail services within Scotland.

The flights in detail

Scottish Highlands and Islands

	Departures	Arrivals
Inverness	2	1
Kirkwall	3	3
Skavsta (Shetland)	1	1
Stornoway	3 (1 via Inverness)	3
Sumburgh (Shetland)	2	2
Wick	1	1
Total	**12**	**11**

Ireland

	Departures	Arrivals
Belfast	6	6
Cork	2	1
Dublin	4	5
Galway	1	1
Shannon	1	1
Total	**14**	**14**

London Airports

	Departures	Arrivals
Gatwick	10	10
Heathrow	18	18
London City	14	12
London Luton	4	4
Stansted	5	5
Total	**51**	**49**

The Rest of the UK

	Departures	Arrivals
Birmingham	7	7
Bournemouth	2	2
Bristol	3	3
Cardiff	4	4
East Midlands	3	3
Exeter	2	2
Isle of Man	1	1
Jersey	1	1
Leeds/Bradford	2	2
Manchester	8	8
Norwich	2	2
Southampton	5	5
Total	**40**	**40**

Outside the UK

	Departures	Arrivals
Amsterdam	5	5
Berlin	1	1
Billund (Denmark)	1	1
Bratislava	1	1
Bremen	1	1
Brussels	3	3
Copenhagen	2	2
Frankfurt	2	2
Geneva	1	1
Krakow	1	1
Madrid	1	1
Malaga	1	1
Milan	1	1
Munich	1	1
New York JFK	1	1
Newark (New York)	1	1
Niederrehein	1	1
Paris	5	5
Poznan	1	1
Tenerife	1	1
Zurich	1	1
Total	**33**	**33**

Miscellaneous: Round Trip: 2

Aberdeen

20th February 2009

100 Scheduled Arivals

16% from London

59% from mainland UK including London

100 Schedule Departures

16% are to London

59% to mainland UK including London

In Summary, To and From:

The Scottish Highlands and Islands: **57 per day**

Ireland: **4 per day**

London Airports: **32 per day**

The rest of the UK: **74 per day**

Outside the UK: **33 per day (all to Europe)**

Reflections:

Aberdeen serves similar but also different destinations to Edinburgh and Glasgow. It has over 40 flights a day to and from Shetland, reflecting the city's close connection with the oil industry. It also has a number of flights to destinations on the east coast of England (8 per day serving each of Teesside and Humberside, with 10 a day serving Norwich). But it also has 12 per day to Manchester and 6 per day to Birmingham. However, it has far fewer flights to London than Edinburgh or Glasgow. Outside Europe, the main areas served are Amsterdam (8 per day), Paris (6 per day) and Scandinavia (12 per day).

The extension of the runway at Aberdeen is justified on the grounds that the area wants to attract international flights, including transatlantic flights. That would be a huge step for an airport that so far has largely attracted flights from other small airports in the UK. There must be a question as to whether the market exists in the North East for many long-haul flights from bigger airports.

Chapter 3 looks at the impact a fast rail service could have on flights using Aberdeen Airport. The market would be unlikely to justify a high-speed rail link north of Glasgow and Edinburgh. However, faster rail services to link in with high-speed rail would have the potential to provide a viable alternative to a number of the destinations currently served by air from Aberdeen. This is explored more fully in the next chapter.

The flights in detail

Scottish Highlands and Islands

	Departures	Arrivals
Kirkwall	3	3
Scatsta (Shetland)	12	12
Stavanger	6	6
Stornoway	1	1
Sumburgh	3	4
Wick	4	3
Total	**29**	**29**

Ireland

	Departures	Arrivals
Belfast	1	1
Dublin	1	1
Total	**2**	**2**

London Airports

	Departures	Arrivals
Gatwick	3	3
Heathrow	12	12
London Luton	1	1
Total	**16**	**16**

The Rest of the UK

	Departures	Arrivals
Birmingham	3	3
Bristol	3	3
Durham Teesside	4	4
East Midlands	2	2
Exeter via Leeds	0	1
Humberside	4	4
Leeds/Bradford	4	3
Manchester	6	6
Newcastle	5	2
Norwich	5	5
Southampton (3 via Newcastle)	4	1
Total	**37**	**34**

Outside the UK

	Departures	Arrivals
Amsterdam	4	4
Bergen	3	3
Copenhagen	2	2
Esbjerg	1	1
Groningen	1	1
Oslo	2	1
Paris CDG	3	3
Tenerife	1	1
Total	**17**	**16**

The Potential of Rail

High-Speed Rail = Modal Switch

The picture is consistent. Where fast, affordable rail services have been introduced there has been a significant switch from planes to the trains. Here are just a few examples:

- Eurostar is now capturing over 70% of the market between London and Paris; and over 60% between London and Brussels.

- The air service between Paris and Brussels has ceased since the train journey was reduced to about an hour.

- Rail held only 22% of the combined Paris-Marseille air-rail market before TGV Mediterranean went into service (2001), but in four years that market share rose to 65% and in 2006 it was 69% and EasyJet abandoned its Paris-Marseille flights.

Distance and time are key factors which influence the mode of travel a person chooses to make the journey.

Distance

under 150km - car or traditional rail are the preferred modes;

150 - 400km - high speed rail wins out over air, but car still has around 70% of the market;

400 - 1200km - there is competition between high speed rail and air, with the fiercest competition at distances of between 400 and 800km;

over 1200km - general preference for air **(2)**.

Time

Traditionally, the tipping point has been three hours, but this threshold has recently been increased to between four and four-and-a-half hours for business travel. The French railway, SNCF, has found that on journeys of less than four-and-a-half hours, where their trains compete with airlines, their share of the market is over 50%. This is backed up by other European rail companies, which are capturing more than 60% of the business market from airlines on four hour journeys**.** Part of the reason for this is the reduced check-in times for train travel and the fact that it can provide a lot more productive time when work can be done when travelling.

The Spanish Experience

Year on year the number of flights between Madrid and Barcelona grew so that it became one of the busiest routes in the world. But all that is now changing with the arrival of the Ave S103, the new high-speed train which carves its way through the Spanish countryside at speeds of nearly 220mph. The Ave S103 forms the centrepiece of plans to make Spain a model for the rest of Europe, and the world leader in high-speed trains by 2010. Spain's aim is to have 10,000km (6,200 miles) of high-speed track in Spain by 2020, meaning that 90% of the population will be no more than 30 miles from a station through which the train passes. The Barcelona line is to be extended to Perpignan in France, making the Catalan capital just four-and-a-half hours from Paris. Work to link Madrid and Lisbon is under way.

How Fast Rail Could Work for Scotland

Journey Times		
	Edinburgh	**Glasgow**
London	2¼ hours	2¾
Manchester	2	2½
Birmingham	2	2½
Newcastle	¾	1¼
Leeds	1½	2
Liverpool	2½	3
Leicester	1¾	2¼
Cardiff	4¼	4¾
Bristol	3½	4
Southampton	4¼	4¾
Paris	4½	5
Amsterdam	5½	6

The journey times are taken from the High Speed North Scheme (3). There are a number of different high-speed rail schemes on the table. And more may come on-stream – for example making use of the Waverley Line to England. The purpose of this report, however, is not to discuss them in detail but merely to show that fast rail could be a viable alternative to many short-haul flights serving Scotland's main airports. The High Speed North scheme envisages direct high-speed rail services to all the above destinations, with the exception of Cardiff and Southampton where a change would be required. It proposes bringing the high-speed line to Scotland via the east coast – the reason why journey times to Glasgow are a little longer.

The above times would make rail a real alternative to flying from Glasgow and Edinburgh.

What about Aberdeen? The High Speed North Scheme proposes the re-establishment of the abandoned direct Edinburgh-Perth route via Glenfarg, and the Strathmore route via Forfar to Aberdeen. With such a route, Aberdeen-Edinburgh timings could be halved (to just over an hour), and there would be savings of almost 1 hour for Inverness and ½ an hour for Dundee.

For Aberdeen, therefore, it would be realistic to add about 1½ hours to the timings.

Importance of a Co-ordinated Approach

High-speed rail on its own is not a panacea. It would need to be seamlessly linked into the conventional rail, bus and ferry networks. High-speed rail needs to be *additional* to the existing network. There is a strong equity and environmental case *against replacing* local rail and bus networks with high-speed international services as it is local journeys which people make most of the time and it is local services on which the poorest people in Scotland are almost exclusively dependent.

Economic and Environmental Benefits of Rail

Economic

Investment in fast rail links would bring significant economic benefits. The WS Atkins 2006 **(4)** report found that high-speed links from London, via Heathrow, to Birmingham and Leeds would cost £31bn but would bring benefits of £63bn over a 60 year period. A high-speed link to Scotland would be expected to generate even higher benefits.

Employment

Investment in high-speed rail would be expected to create tens of thousands of jobs across the country. Jobs would be created in four areas. There would be the rail jobs in operating the new services; construction jobs in building new rail lines; jobs in revived UK train manufacturing; and those jobs that resulted from the stimulus that the rail investment would bring to the wider economy.

Environmental

A fast rail service which substituted for a significant number of flights would result in real environmental benefits. For residents under the flight paths, it would mean an improvement in noise levels. Air pollution levels around the airports would probably fall. And climate change emissions would not rise so fast. High-speed rail emits between 8 and 11 times less CO_2 than air. This could fall further if it was powered by renewable sources of energy.

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Conclusions and Recommendations

Conclusions

1. A big majority of flights at Glasgow, Edinburgh and Aberdeen airports are short-haul.

2. A high-speed rail system, linked into an improved rail network in the UK, would cut most journey times on existing routes to less than 3½ - 4½ hours – the sort of journey time that makes rail first choice for many.

3. The experience of European countries shows that many people will choose a fast rail service for the first leg of their journey to connect them to a flight.

4. Rail has the potential to stabilize, and possibly reduce, the number of flights using Scotland's three main airports.

4. Rail would bring many wider economic, employment, social and environmental benefits.

5. Although not covered in this report, rail fares would need to be much more in line with the lower fares charged in many European countries for trains to compete.

Recommendations

1. Forecasts of the number of passengers predicted to use Scotland's airports over the next 20 years should be revised in the light of the fact that many trips could switch to rail.

2. Plans for new runways at Edinburgh and Glasgow airports should be dropped and plans should be put in place to scale back the current number of flights using the airports; instead resources should go into improving the rail network including a high-speed rail link.

3. There is a strong economic case to reduce the number of flights using Scotland's main airports and to switch resources to invest in sustainable industries, including rail.

References:
(1). *The economics of airport expansion: a briefing paper on the economic case for the Glasgow Airport Master Plan*, Gerry McCartney, published by AirportWatch Scotland, 2008
(2). Milan Janic in *Towards Sustainable Aviation*, published by Earthscan (2003)
(3). *High Speed North*, published by 2M (2008)
(4). *High Speed Rail Report*, WS Atkins (2008)