



# The case against a Second Forth Road Bridge

## 1. INTRODUCTION

The haste with which some politicians and the roads lobby are pressing for a Second Forth Road Bridge reflects a short-sighted approach to Scottish transport. First Minister Jack McConnell and Transport Minister Tavish Scott have both backed the concept of a second bridge at Queensferry, without substantive published evidence that the existing bridge will need replacing in the foreseeable future.

### **A decision at this point would be premature.**

Some of the most vocal proponents of a new Forth crossing want to see this built even if the existing bridge has a long-term working lifespan. At a time when the devastating effects of climate change are becoming ever more apparent, to push for a more than doubling of road capacity across the Forth is environmental irresponsibility. A Second Forth Road Bridge was deemed unacceptable in the mid-1990s – nothing has changed except that there is now no doubt about the need to take action to tackle climate change.

An interim technical report to Tavish Scott on augmenting or replacing damaged cables on the existing Bridge is not due until the end of May 2007. Yet there is a danger that in the run-up to the Scottish Parliament elections an in-principle decision to build another bridge may be pushed through without adequate consideration of the alternatives.

**The pressure for a second bridge results primarily from concerns about structural damage which *may* result in restrictions on Heavy Goods Vehicles from 2013 at the earliest,<sup>1</sup> and about growing traffic congestion on the bridge. But a Second Forth Road Bridge is neither the only nor the best solution to these problems.**

## 2. TWO NEW FORTH CROSSINGS ALREADY DUE IN 2007-8!

Lobbyists for a Second Forth Road Bridge have lost sight of the fact that two new strategic Forth crossings will open during the course of 2007 and 2008:

- In Scotland's biggest rail reconstruction project of modern times, the Stirling-Alloa-Kincardine Railway will be reopened for freight later this year. The new 21km railway will allow coal trains to Longannet power station to be diverted away from the Forth Rail Bridge, freeing up capacity for more passenger trains between Fife and Edinburgh/Glasgow.
- In late 2008 the A876 Upper Forth Crossing (the second Kincardine Road Bridge) will open for traffic. This will provide another road alternative to the Forth Road Bridge for passenger and freight traffic heading from Fife towards the large concentrations of population, industry and international transport links in west central Scotland – *see Figure 1 overleaf.*

These projects represent a public investment of nearly £190m in improved cross-Forth links, and yet there has been no attempt to consider them as part of an alternative to a second road crossing at Queensferry.

There is also commercial interest in developing a cross-Forth commuter ferry service between Kirkcaldy and Leith, another sustainable investment which could help the Executive to avoid wasting up to £1 billion at a traffic-generating Second Forth Road Bridge.

### 3. THE DAMAGE TO THE BRIDGE....

Inspection of the existing bridge's cables in 2004/05 found evidence of corrosion and 86 wire breaks in 4% of the bridge.<sup>2</sup> In response, engineering consultants are undertaking a major study (due to report in 2008) into the possibility of replacing/augmenting cables. Augmentation of cables need not necessarily require closure of the bridge during repair, and has been successful elsewhere, including the case of the 25 de Abril Bridge spanning the Tagus in Portugal in 1998<sup>3</sup>.

Engineers will also be undertaking a dehumidification project as a corrosion prevention measure between April 2007 and September 2009. However, its success will not be established until 2011.<sup>4</sup> Dehumidification systems are being used on several recently-built suspension bridges around the world, including in Japan and Sweden.

### 4. ...AND WHAT CAUSED IT

As for the cause of the damage to the bridge, the Forth Estuary Transport Authority (FETA) has clearly identified the problem:

*"The traffic loading on the bridge is now significantly higher than expected by the engineers who designed the structure in the 1950's. This has been due to the increasing weight and number of heavy goods vehicles on UK roads."*<sup>5</sup>

When the bridge opened in 1964 the maximum permissible Heavy Goods Vehicle weight was 24

tonnes – but it is now 44 tonnes. The combination of an increased number and weight of HGVs has led to a significantly increased loading on the bridge, resulting in a need for additional regular maintenance and increased strengthening works.

In its 2005 Local Transport Strategy, FETA indicated that it intended to introduce road user charging, as opposed to bridge tolls, under powers granted by the Transport (Scotland) Act 2001.<sup>6</sup> This would have involved a more sensible charging regime for HGVs based on the weight and height of vehicles – and therefore potentially minimising further damage to the bridge – but the proposal was thrown out by the Scottish Executive under political pressure.

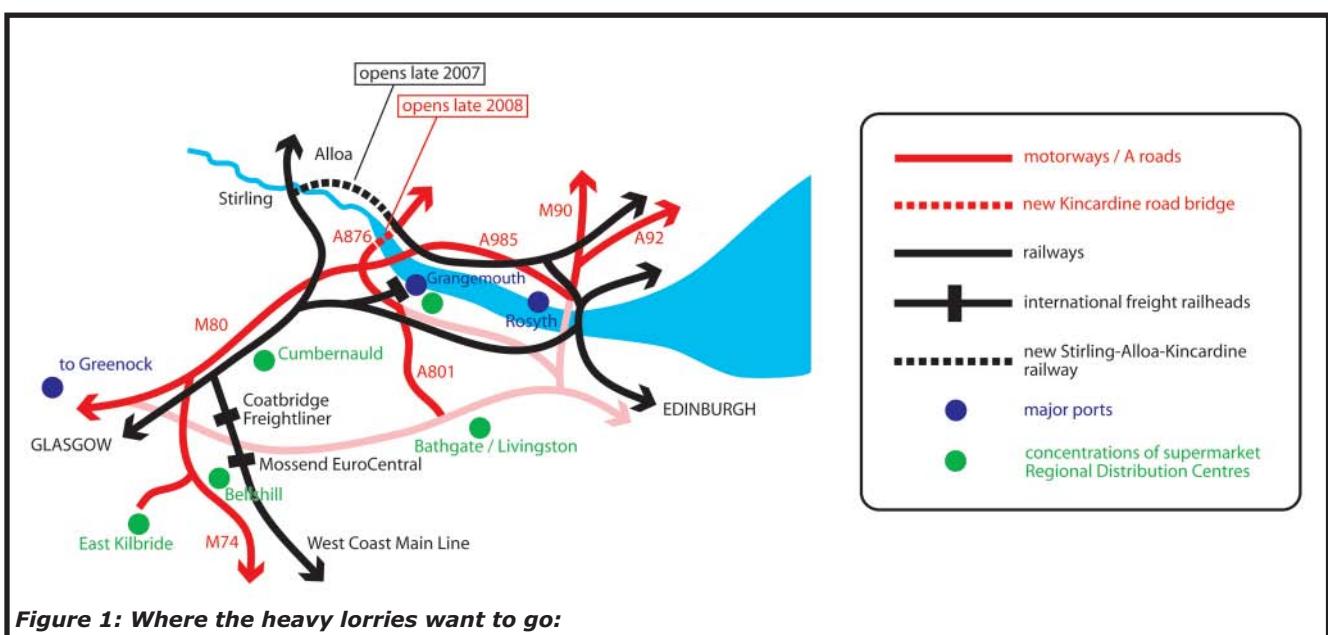
**It is astonishing that up to £1 billion plus of public expenditure on a second bridge is being heavily promoted without first investigating how the HGV problem could be substantially reduced through:**

- **better bridge traffic management,**
- **use of current and soon-to-be available alternative Forth road crossings, and**
- **switching of freight from road to rail.**

### 5. CONGESTION ON THE BRIDGE - AND WHAT CAUSES IT

The Forth Road Bridge was originally designed with a notional capacity of 11 million vehicles per annum, but currently copes with approximately 24 million vehicles per annum.

The vast difference in traffic levels is mirrored in nationwide (and worldwide) trends in growth of



**Figure 1: Where the heavy lorries want to go:**

For heavy lorry traffic between Fife and the large concentrations of population, industry and international transport links in West Central Scotland, the logical strategic routing will be via the Kincardine road bridges from 2008.

Establishing a new intermodal railhead in the Rosyth/Dunfermline bridgehead area would allow containerised and other freight to switch from road to rail, taking advantage of the re-opening of the Stirling-Alloa-Kincardine railway in late 2007.

road traffic, reflecting (i) increased affluence, (ii) the reduction (in real terms) of the cost of purchasing and running a car, (iii) the widespread extension and upgrading of the trunk road network, and (iv) the failure of the market to take account of the negative social and environmental impacts of growing road traffic.

However there are a number of other local and regional factors which have further encouraged the growth of bridge traffic. These could and should have been influenced by policy interventions:

- HGV toll levels have remained unchanged since 1986 even though there has been a doubling of the retail price index during that period. HGVs pay only £2.00 to cross the Forth Bridge, yet pay £15.30 on the Severn Bridge, and £18.30 on the Humber Bridge (each way).
- HGVs up to 44 tonnes (the main cause of structural damage to the bridge) pay a toll of only £2.00 (or just £1.30 for the 66% of HGVs which benefit from frequent user discounts), compared to £1.00 for cars – yet it is well established that HGVs are vastly more damaging than cars.
- Too many cars crossing the bridge convey just a driver and fresh air – this is not good traffic management, and there should be incentives for multi-occupancy to help reduce congestion.
- Competing rail services have suffered from lack of investment – it is only within the last three years that platforms in many Fife stations have been extended to accommodate 6-coach trains, and there are still problems with overcrowding, as well as high fares. Over the past 20 years, rail fares have increased by around 50% in real terms while road tolls have barely risen.
- Rail services from Perth to Edinburgh have failed to improve significantly over the last forty years, a period when there has been massive improvement in road infrastructure (the M90 motorway) and associated car journey times. In 1964 there were 9 trains a day from Perth to Edinburgh, the fastest taking 1 hour 25 minutes<sup>7</sup> – in 2007 there are 11 trains a day, the fastest taking 1 hour 11 minutes.<sup>8</sup>
- There is just *one* train a day from Fife (Kirkcaldy) to West Lothian and Glasgow, both destinations with growing employment and leisure attraction to Fife car users.

## 6. THE NEGATIVE IMPACTS OF A SECOND BRIDGE

Advocates of a second Forth Road Bridge seem to recognise only short-term benefits, disregarding the wide range of financial, economic, social and environmental costs which would result from a new road crossing at Queensferry, including:

### **Draining funds away from sustainable transport**

A second crossing would cost up to £1 billion.<sup>9</sup> This would eat into available funding for more sustainable alternatives to a second bridge – such as (i) speeding up the Perth-Edinburgh rail journey time, (ii) re-opening the Kirkcaldy-Leven/Methil railway, and (iii) in the longer term introducing Alloa-Dunfermline-Edinburgh passenger train services over the new Stirling-Alloa-Kincardine railway.

### **Generating yet more road traffic**

Building a second Forth Road Bridge would generate further road traffic growth in Fife, West Lothian and Edinburgh – with additional urban road congestion impacting on air quality, road safety and economic development.

The SACTRA 1994 study specifically identified estuary crossings as especially sensitive in terms of their traffic generation impacts, while the SESTRAN Integrated Transport Corridor Study has already found that a second crossing would increase traffic levels. It found that if a new bridge could be opened by 2016 then all new capacity provided by the new bridge would be taken up by traffic growth by 2031.

### **Conflicting with government climate change targets**

The Scottish Executive has a target to stabilise 2021 road traffic at 2001 levels, and is committed to Scotland making an equitable contribution to the UK Government's climate change targets. Major new road building projects are simply not compatible with these policy objectives.

### **Encouraging yet more road-based suburban sprawl**

A second bridge would encourage more road-based peripheral housing development, which will be increasingly unsustainable in the emerging era of climate change and peaking of global oil production. Fife would become even more of a dormitory suburb for Edinburgh than it already is.

## 7. WHAT SHOULD BE DONE - RECOMMENDATIONS

It makes no sense to press ahead with a second bridge when there has been no attempt to conduct a thorough multi-modal study of *all* the practical options to improve cross-Forth transport. The range of sustainable options potentially available to tackle the two main problems on the existing bridge is wide:

### 7.1 Cut the heavy load on the bridge

- Higher and more selective tolls for HGVs, so that the heaviest and most damaging vehicles pay correspondingly high prices, and are therefore encouraged to use alternative routes or rail services.
- Traffic management measures such as queuing or sequencing to avoid too many of the heaviest HGVs being on the bridge at the same time.
- Encourage alternative lorry routing via the A985 and Kincardine Bridges for vehicles heading towards West Central Scotland and parts of West Lothian, and if necessary undertake selective road improvements such as a Rosyth bypass.
- Establish a new intermodal railhead in the Rosyth/Dunfermline bridgehead area, allowing containerised and other freight to switch from road to rail, taking advantage of the new Stirling-Alloa-Kincardine railway.

### 7.2 Cut congestion on the bridge

- Improve general traffic management on the bridge, in line with the 2005 FETA proposals, such as variable car charges of up to £4 at the peak, and 50% discounts for multi-occupant cars.<sup>10</sup>
- Build on recent improvements to bus-based alternatives such as Ferry Toll interchange, and establish a new commuter ferry service from Fife to Edinburgh.

- Improve rail services, including faster trains between Perth and Edinburgh (as advocated in Network Rail's Scotland Route Utilisation Strategy draft), re-opening the Kirkcaldy-Leven/Methil line, and the construction of an Edinburgh airport station on the Fife-Edinburgh railway.
- Through targeted incentivisation, encourage business and industrial development in Fife, reducing the growth in commuter traffic from Fife to Edinburgh.

## 8. CONCLUSION

It would be simply poor governance for the Scottish Executive to be forced into a decision to build a new Forth Road Bridge before all the relevant facts are known.

If it has already been decided to build a Second Forth Road Bridge on the basis of 'emerging findings' from the current engineering study of the bridge cables, then these need to be published so that a transparent and informed debate can take place.

The people of Scotland are entitled to know all the options and alternatives before a decision is taken to press ahead with spending up to £1 billion of their money on the country's biggest transport infrastructure scheme for decades.

If conclusive evidence demonstrates that it is not feasible to keep the existing bridge open to traffic, a replacement crossing would be acceptable, but only with more effective traffic management and enhanced capacity for public transport.

An additional – *rather than replacement* – crossing would be an unmitigated disaster. It would be environmentally, socially and economically damaging, and of no benefit to Edinburgh, Fife or Scotland.

## 9. REFERENCES

- <sup>1</sup> FETA (2006) *Response to the Scottish Parliament's Public Petitions Committee - Petitions PE942 and PE943*
- <sup>2</sup> Scottish Executive (2006) *Flint and Neill Partnership Technical Audit of the Main Cable Inspection and Assessment of the Forth Road Bridge: Final Report*
- <sup>3</sup> FETA (2006) *Response to the Scottish Parliament's Public Petitions Committee - Petitions PE942 and PE943*
- <sup>4</sup> FETA (2006) *Response to the Scottish Parliament's Public Petitions Committee - Petitions PE942 and PE943*
- <sup>5</sup> <[www.feta.gov.uk](http://www.feta.gov.uk)>
- <sup>6</sup> <[www.feta.gov.uk/webpages/pdfs/local\\_transport\\_strategy.pdf](http://www.feta.gov.uk/webpages/pdfs/local_transport_strategy.pdf)>
- <sup>7</sup> British Railways Scotland timetable 9<sup>th</sup> Sept 1963 to 14<sup>th</sup> June 1964
- <sup>8</sup> First ScotRail timetable 10<sup>th</sup> Dec 2006 to 19<sup>th</sup> May 2007
- <sup>9</sup> The FETA Local Transport Strategy (2005) preferred package of measures out a total cost of £1039.9m, the majority of which was for the construction of a second bridge.
- <sup>10</sup> SPICe (2005) *The Forth Road Bridge*

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