railfuture A RAIL MANIFESTO FOR THE 21st CENTURY

BACKGROUND

Railfuture is a national voluntary organisation campaigning for improved rail services and promotion of the contribution rail can make to sustainable transport. We show here why we think politicians and policy makers should support sustained investment in the rail network and its expansion.

With future oil and gas reserves falling, energy costs rising and environmental concerns growing, Britain faces an energy crisis in addition to rising sea levels and climate change issues. As we become increasingly dependent on energy imported from volatile areas, security of supply is also a growing concern.

Clearly, sustainability will become a benchmark in all aspects of our daily lives, including transport, and since rail is an energy efficient and low carbon mode it will play an increasingly important role in transport provision as a solution to these problems.

We know from experience of high oil prices, which peaked at $147 a barrel in July 2008, that a significant modal switch to rail and away from air and road is inevitable since both are more sensitive to energy prices. Oil prices are still around $80 a barrel – even though there is less demand because of the recession – and well over the $72 optimistically predicted by the Department for Transport for 2025. Meanwhile, rail traffic continues to grow faster than road traffic and has done so for some years.

RAILWAYS IN PERSPECTIVE

Taken together, the total route mileage of all railways in Britain accounts for barely 4% (about 16,000km) of our land transport infrastructure, while roads account for nearly 96% (392,000km). It is hardly surprising that most journeys are by road. However, our railways carry over 7% of passenger km and nearly 12% of freight tonne km. It follows therefore that more people and goods are carried per route km of railways than roads. (Source: DfT)

RAILWAYS AND THE ECONOMY

According to the DfT, 63% of rail journeys are commuting to work or education with business trips accounting for a further 16%. Some 80% of rail trips are therefore essential to the economy and a high proportion of the remainder benefit the social wellbeing of the nation and the British tourist industry.

Rail transport also assists social inclusion and regeneration, providing access to jobs without the need for a car. Reopened routes to towns such as Bathgate have resulted in significant falls in unemployment and more recent reopenings to Ebbw Vale and Alloa have seen up to four times more passengers than were predicted.

VALUE FOR MONEY

A 2007 study by Credo Group for Invensys concluded that, pound for pound, investment in modern railway signalling and rolling stock **procured more capacity than any other transport investment, including motorway widening**. The study also found that for every 100 direct jobs created by rail investment, a further 140 indirect jobs are created, compared to only 48 indirect jobs from the same investment in roads. (Source: Invensys Group)

Similarly, a study by Network Rail and Nottinghamshire County Council showed that for an investment of just £69m in improvements to the Midland main line, journey time savings of 10 minutes could be achieved from London to Sheffield and Nottingham. This should be compared with the same time saving predicted to result from conversion to hard shoulder running on the parallel M1 motorway, which is estimated to cost **£1,500million**. (Source: Nottinghamshire County Council)

ENERGY EFFICIENCY

As the need for energy conservation intensifies, our dependency on rail transport will grow significantly. At this point we could quote numerous examples to demonstrate rail's superior energy efficiency, but just three examples will suffice.

Most comparisons of energy efficiency assume average load factors, but this can be very misleading as it fails to show the potential efficiency when full loads are carried, which is the only way to compare different modes accurately. Average loads can also vary. For example, the number of aviation passengers have recently been falling, while rail passengers have been increasing to the point where overcrowding is now endemic on a wide range of services. Thus statistics published by the DfT that assumed average load

factors for the car to be 35%, 35% for local rail, 40% for inter city rail, 70% for air and 90% for a "Mega Bus" will now be out of date.

Even so, most of the rail examples in the DfT study compare favourably with the other modes, particularly when the difference in speed between the long distance Mega Bus and the high speed train is taken into account. However, to demonstrate maximum efficiency when fully loaded, we have recalibrated the DfT statistics to show CO_2 emissions per seat for inter-city journeys.

Example 1 Urban transport It is unfortunate that the DfT statistics omit to mention light rail since the true rail equivalent of a bus is a tram, not heavy rail, which generally caters for a different market. Tram Power Ltd has provided figures to compare their City class tram with a typical bus. This tram has demonstrated its ability to cover 1km per kilowatt hour of electricity. Although electrified rail systems can readily use carbon-free energy generated from renewable sources, we have used the current power generation mix in the comparison shown below:

MODE	kg CO_2 per vehicle km	kg CO_2 per passenger km
Double deck bus	0.82	0.008
City class tram	0.47	0.0024

(Source: Tram Power Ltd)

In both cases we have assumed a full load includes standing passengers. Tram Power's unique LR55 track system can also cut tramway construction costs to comparable European levels.

Example 2 Inter-city In common with most studies of this kind, the DfT has assumed a journey between London and Edinburgh comparing rail with car, coach and air. Based on the DfT's published figures recalibrated to show CO_2 per seat we find:

MODE	kg CO_2 per seat
Air	170
Car	49
Coach	30
Rail (Inter City 225)	25

(Source: DfT and *Railwatch* 10/09)

Allowance should be made for the fact that, although their emissions are similar, the train would be travelling nearly twice as fast as the coach. Furthermore, the rail figure would reduce by about a further 15% if regenerative braking was used, as would be the case with all new electric rolling stock.

Example 3 Freight According to the Royal Commission on Environmental Pollution, road freight uses over four times more energy per tonne km than rail freight on average. When Eddie Stobart switched transport of Tesco goods from road to rail, it was found that where a round trip by road consumed 11,147 litres of fuel, the same round trip by rail reduced this to 3,185 litres, a saving of over 71%.

ELECTRIFICATION

The benefits of electrification can be summarised as follows:

- Electric trains are lighter than diesel trains and do not carry their fuel, reducing fire risk.
- Being lighter, electric trains use less energy and cause less track wear.
- Electric trains have better acceleration and can shorten journey times.
- Electric trains are quieter, more reliable, require less maintenance and have lower whole life costs than diesel trains.
- Electric trains are less polluting than diesel. Typical CO_2 emissions per vehicle mile for diesel are 2,100g and 1,664g for electric trains even with the current generation mix. However, carbon emissions from electric trains will reduce still further as the proportion of power generated from renewable sources increases. (Source: Network Rail)
- Electric trains can make better use of regenerative braking, returning up to 20% of energy to the grid.

RENEWABLE ENERGY

In parallel with railway electrification, our economy should focus strongly on the development and manufacture of renewable energy technologies and energy conservation. Rail

transport will be at the heart of this economy. Investment in renewable energy will enable Britain to be less reliant on imported energy, ensure security of supply to a vital part of our transport sector and help meet carbon targets.

ROAD CONGESTION

The road lobby is again pressing for funding to be switched from the rail budget to roads on the basis that since most journeys are by road most investment should go into roads.

However, as noted above, roads already account for nearly 96% of our transport infrastructure and it is therefore not surprising that most journeys are by road, since most road journeys are short distance (the average car journey is little more than six miles long), and for most of these a suitable rail alternative does not exist. For many decades most investment went into expansion of the road network while the rail network was cut back and badly neglected, hence the need for large scale investment in it now. Moreover, a recent study for the Campaign for Better Transport found most public opinion agrees that investment in public transport is a higher priority than road building.

Many mistakes resulting from the *Roads to Prosperity* policy have been learned and it is now widely acknowledged that building more road capacity is largely self-defeating because of induced traffic. A renowned transport consultant once described road building to ease congestion as like trying to dig a trench in a bog. This was later confirmed by the 1994 SACTRA (Standing Advisory Group on Trunk Road Assessment) report.

Significantly, the road lobby fails to acknowledge the contribution rail makes to relieving road congestion on busy corridors. It has been estimated that transferring just 10% of road freight to rail would save £1billion of congestion costs per year (Source: Network Rail). A high proportion of rail travellers have access to a car and could easily switch to the roads. Two examples that clearly show how a good rail service can relieve road congestion cost effectively are shown here.

Example 1 Croydon Tramlink was carrying over 20 million passengers a year within two years of opening, over 20% of whom had previously travelled by car, and unemployment in New Addington was reported to have fallen by about 35%. (Source: Croydon Tramlink)

Example 2 When the direct Norwich to Cambridge rail service was provided with sponsorship from the Strategic Rail Authority, it carried over half a million passengers in its first year and a survey by the operator, First Group, found some 44% had previously driven. It now carries 800,000 a year. (Source: SRA)

HEALTH and SAFETY

Rail is now acknowledged as the safest form of transport for comparable journeys and rail travellers are known to walk and cycle far more than motorists, with obvious health benefits.

LAND USE

in terms of people moved per hour, railways can match the capacity of roads within a smaller space. Building roads to increase capacity requires greater land take than new or reopened rail routes.

The most cost-effective way to reduce carbon and congestion is through good transport, and spatial planning to reduce the need to travel. Planning errors of the past that were designed to exploit use of the car need to be reversed. New developments should be concentrated in, or as near as possible to town centres where access can best be provided by public transport. A carbon tax should be applied to out of town retail parks and other developments that generate car traffic.

THE WAY AHEAD

Having shown how a modern electrified rail network should be at the heart of future transport policy, we can now identify Railfuture's priorities for investment as follows:

Funding A transport budget common to both road and rail projects to eliminate situations such as occurred during the Multi Modal Studies, where funding for road schemes was available but not for rail schemes. Road and rail should be seen as essential parts of a whole and not in isolation or competition.

Appraisal Further reform of NATA (New Approach to Appraisal) to remove bias toward road schemes by elimination of road fuel tax revenue and small time savings for motorists.

Electrification A rolling programme of railway electrification, which should continue until completion of the recommendations contained in the Network Rail electrification study.

Renewable energy Large-scale investment in renewable energy production as a national priority.

New trains Rolling stock production continued beyond current contracts to address urgent overcrowding issues and to avoid cost increases resulting from interruption to production lines.

Replacement of ageing trains such as the universally disliked Pacers should proceed now and not wait for cascades following electrification which could never cover the entire network in any case.

Signalling Investment in signalling to increase capacity. Equipping the East Coast, West Coast and the soon-to-be-electrified Great Western main lines with ERTMS (European Train Management System) level 2 would further enhance safety, increase capacity and remove the Health and Safety Executive objections to 225kph running on these routes.

Infrastructure Enhancements to increase capacity by progressive elimination of bottlenecks with grade separated junctions, reopened routes, longer platforms for longer trains, and new stations.

Tracks will need to be restored where routes were singled or reduced to two tracks instead of four. Key routes such as the East-West (Oxford-Cambridge) line should be reopened. Level crossings should be progressively eliminated but this should be jointly funded with the road budget.

Freight Loading gauge clearance and longer freight loops on key routes will be required as well as many new rail-served terminals. Diversionary routes for freight should be developed.

Integration Competition Commission rules will need to be changed to encourage better integration with other modes, particularly with bus services.

Urban transport More light rail systems to improve urban transport and the environment are needed.

Stations Accessibility needs to be improved. Safe routes for cyclists and pedestrians should be developed. Stations should be better signposted and car parking expanded where maximum modal switch from the car can be achieved.

Level playing field Inconsistent taxation anomalies should be eliminated. For example, the aviation industry enjoys zero rated VAT whilst the rail industry pays VAT at the standard rate on all but fares income. Rail pays fuel duty while aviation fuel remains tax free. Local authorities are required to fund 25% of light rail costs but only 10% of road schemes. **Rail should be exempted from the Community Infrastructure Levy and Industrial Buildings Tax**, particularly since Network Rail is a not for profit company investing profits in enhancements to the rail network.

Fares Current fares policy seems designed to alienate the rail industry from its customers. Despite recent changes, fares remain far too complicated. Confusing anomalies abound and inconsistent restrictions on the use of off-peak tickets add to confusion. Many such restrictions are unacceptable.

The practice of disallowing refunds of the fare already paid should a passenger board the wrong train for any reason is an outrage and should cease. Fares should relate more to distance rather than what the market will bear, and anytime walk-on fares are frequently too expensive. In view of the large sums paid back to government through taxation and revenue-sharing agreements etc, above-inflation fare increases can no longer be justified.

Urgent reform of fares policy is needed. We suggest a simpler system with coded tickets which clearly indicate anytime peak, shoulder-peak, off-peak and advance-purchase fares with **ALL tickets available as singles at half the price of current equivalent return fares.** This would enable passengers to mix and match fares as appropriate for individual legs of a journey.

New routes Detailed planning for these to address capacity issues should proceed. Since the best way to maximise capacity on the existing network for more freight and regional passenger services is to get long distance high speed trains out of the way, it would make sense to plan new routes for high speed operation. However, in view of the relative closeness of large conurbations in Britain, there would be little benefit derived from engineering for very high speeds up to 400kph which would be hugely expensive and weaken the environmental case for high speed rail.

The money saved by engineering for more modest operating speeds up to 300/320kph would be better spent on building more new routes. **However, priority must be given to electrification, expansion and modernisation of the existing network.**

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