WRITTEN SUBMISSION FROM EUROSTAR – 31 OCTOBER 2008

Introduction

- Eurostar welcomes the opportunity to respond to the Transport, Infrastructure and Climate Change Committee's inquiry on the potential benefits of high-speed rail services.

- Eurostar is the high-speed train service linking St Pancras International, Ebbsfleet International, Ashford International, Paris, Brussels, Lille, Calais, Disneyland Resort Paris, Avignon and the French Alps. Eurostar is the only high-speed rail operator in the UK.

- Eurostar also offers through fares to the Continent with First Great Western, National Express East Anglia, First Capital Connect, Virgin Trains, National Express East Coast, East Midlands Trains, London Midland, Chiltern Railways and Hull Trains.

- In formulating our response, we have selected only those questions to which we are able to offer considered and evidence-based answers. We have therefore only responded to questions 1 and 4.

- We look forward to engaging with the Committee in the future to explore the benefits offered by high-speed rail to UK travellers.

Eurostar response: What do you think could be the potential economic and environmental benefits from the development of a high-speed rail link network?

- The Eddington Transport Study, published in 2006, noted that the performance of the UK's transport networks will be "a crucial enabler of sustained productivity and competitiveness" in the future. The CBI has noted that transport is one of its three future competitiveness issues for the UK.

- Eurostar agrees with the analysis that fast, effective, efficient transport links between the UK's major towns and cities will be a vital factor in our future national prosperity. We believe that high-speed rail has a number of features that could be of economic benefit to the UK.

- Faster transport links between cities will boost regional business activity in the regions. They will help spread the economic halo effect around London and the south-east to areas in the Midlands and North.

- Improved business growth in regional cities will speed regeneration in run-down areas, and promote leisure travel to such destinations.

> **Case study:** Eurostar has played a part in the economic benefits that high-speed rail has brought to Lille in northern France. During the 1980s, post-manufacturing dislocation resulted in high unemployment and economic depression in the city. Since the introduction of high-speed rail in the 1990s, however, Lille has been transformed into a crossroads within Europe's high-speed rail network, becoming France's third most powerful financial, commercial and industrial centre.

- A recent study by Steer Davies Gleave concluded that the wider economic benefits of a high-speed rail line from London to Birmingham could have a GDP impact of around £5.2 billion across a 60 year period. Time and cost savings could amount to as much as £4 billion.

- Eurostar would expect similar economic benefits to accrue to cities in Scotland, should a high-speed line be extended to Glasgow or Edinburgh.

- Eurostar firmly believes that high-speed rail offers compelling environmental benefits which deserve greater consideration. Independent research, commissioned by Eurostar and conducted by Paul Watkiss Associates and AEA Technology Environment, determined that a return journey by Eurostar between London and Paris or Brussels generates just one-tenth of the CO2 of the same journey by air. The comparison is conservative and would be significantly greater if the effects of "radiative forcing" (which describes the increased impact of greenhouse gases released at altitude) were factored in.

- Eurotar believes that the work by Watkiss/AEA is the most detailed comparison of modes ever undertaken. It is based on actual load factors, exact distances of rail and air routes, actual aircraft and engine types in use on different routes, and the mix of electricity sources used by Eurostar trains. For example, the research showed that each passenger on a return flight between London Heathrow and Paris Charles de Gaulle generates 122 kilograms of CO2, compared with just 11 kilograms for a traveller on a London-Paris return journey by train. A round trip between London Heathrow and Brussels airport generates 160 kilograms of CO2 per passenger, against only 18 kilograms of CO2 for a return journey by rail.

- Eurostar refutes the Government's suggestion in the 2007 White Paper on rail, that "the argument that rail high-speed rail travel is a 'green option' does not stand up to close inspection." This conclusion was reached on the basis of incorrect assumptions in a report published by the Rail Safety & Standards Board (RSSB). The RSSB assumed a load factor for Eurostar of 30%, whereas in actual fact Eurostar load factors are more than double this. It also considered a route between Ashford and London, which we do not operate in isolation. At best the original RSSB report was wrong by a factor of 3 and at worst by a factor of 9. In response to Eurostar submissions, the RSSB has subsequently amended its research. Further information is provided in Appendix A.

- The White Paper also fails to take into account that future generations of high-speed trains would be significantly more efficient than current Eurostars; and that electrically powered trains are effectively 'future-proofed' because they are able to switch to even lower carbon sources of electricity, as these become available under the Government's energy plans. This is unlike aircraft and road vehicles, which are likely to remain largely wedded to fossil fuels for the foreseeable future. The next generation of high-speed trains are likely to be 30% more energy efficient than the current fleets used by operators such as Eurostar.

- Eurostar believes the inherent environmental advantages offered by high-speed rail will be amplified if the UK develops a more extensive high-speed rail network. Since the opening of High Speed 1 in November 2007, we have seen significant modal shift from air to rail, as travellers learn about the speed and ease of high-speed rail travel. In the nine months between January and September 2008, compared with the same period in the previous year, Eurostar has seen very significant growth in travellers from Scotland, for example Edinburgh (42%), Glasgow (33%), Aberdeen (57%), Inverness (54%) and Perth (40%). The average growth for the whole of Scotland is 43%. In England, examples include Newcastle (116%), Durham (126%), Leeds (89%), York (112%), Carlisle (109.29%), Greater Manchester (57%) and the West Midlands (54%). These figures show clearly that where there is investment in, and access to, high-speed rail, then travellers switch.

- Eurostar believes that these trends will be further accentuated as supply chains become increasingly "green." Our experience has shown that business travellers are already switching to a less carbon intensive form of travel. More and more businesses, large and small, are having to report their CO2 emissions, and are consequently looking to reduce their environmental impacts. Switching from plane to train offers huge savings in the emissions generated by business travel.

Eurostar response: What would be the most appropriate technology and type of train required for use in the UK?

- Eurostar train technology is currently 17 years old, and as highlighted above is no longer the optimum technology when developing energy assumptions for the potential of domestic high-speed rail in the UK.

- There has been much discussion about the potential introduction of MagLev trains onto a future UK rail network. Eurostar believes this would be a hugely expensive and highly impractical way of improving journey times on the national network, for the following reasons:

- MagLev trains are unable to use conventional railway lines. As such, an entirely new network, raised on stilts, would need to be constructed. In addition there would be the requirements for completely new rolling stock and new stations to accommodate the trains. In contrast, high-speed trains are compatible with much of the existing rail infrastructure in the UK, allowing trains to continue operating off high speed lines to cities not directly connected.

- Because of the need for completely new MagLev railway lines, a new MagLev service could not be phased into the existing network. It could only be used once the entire line had been completed.

- MagLev trains use more energy than conventional or high-speed trains.

- It is interesting to note that no country in the world has built a network of MagLev services; rather, they tend to be used for quite short, point-to-point, distances.

- An alternative to the MagLev, which improves on Eurostar's existing technology, deserves consideration. The new automotrice à grande vitesse (AGV) – which translates as 'high-speed self-propelled carriage' - from Alstom is the first very high-speed train project to be developed following the publication of the European TSI (Technical Specifications for Interoperability) standards. The AGV™, capable of operating on all the networks in Western Europe from the outset, is also the product of the experience acquired by Alstom in the domain of high-speed trains outside Europe.

- Instead of having separate power cars at either end of the train, as current TGVs do, the AGV has distributed traction with motors under the floors of the passenger carriages. The space saved through not having a power car enables the AGV to provide more seats.

- Alstom offers the AGV in a range of configurations, with capacities ranging from 280 to 460 passenger places. This will complement the current offer of TGV high-speed trains capable of transporting between 500 and 1200 passengers. The maximum speed of AGVs in commercial service is designed to be 360 km/h (220 mph); the AGV weighs less than its rivals, which reduces its power consumption, and it consumes 30% less energy than previous TGV designs.

- Eurostar believes the AGV should be considered carefully for future use in the UK. It should, however, also be remembered that the electrification of the network, the efficiency of the transmission and distribution infrastructure, and the move to renewable sources of energy generation are, in terms of CO2 efficiency, more important than the trains themselves.

Appendix A

The following is the text of a letter sent by Eurostar CEO Richard Brown in February 2008 to a number of stakeholders, following the publication by RSSB of a revised research report, the original version of which was used by the Government as a basis for the Rail White Paper, published in July 2007.

Revision of RSSB report on CO2 emissions from high-speed rail

I am writing to draw your attention to an important revision of the "Traction Energy Metrics" report (T618), published by the Rail Safety & Standards Board (available at www.rssb.co.uk/pdf/reports/research/T618_traction-energy-metrics_final.pdf).

The revised report, published in January 2008, updates the original version that was used as a basis for what Eurostar believes were incorrect comparisons and conclusions about the environmental benefits of high-speed rail in the 'Delivering a Sustainable Railway' White Paper, published by the Department for Transport in July 2007.

Eurostar believes that the data contained in the revised report could have materially altered the conclusions of the White Paper, which were sceptical over the environmental benefits of high-speed rail. Thus Eurostar is pleased that in the subsequent 'Towards a Sustainable Transport System' White Paper, published by the Department in October 2007, the Government now appears to be taking a more positive view of high-speed rail's potential to tackle long-term transport capacity problems, particularly in the Manchester-Birmingham-London corridor.

A key assumption in the RSSB's original T618 report was the use of an average load factor for Eurostar of 30%. In addition, the report also assumed the use of an electricity supply for a service operating between Ashford and London, which does not reflect the actual mix of sources that Eurostar uses on the full routes on which it operates. The resulting calculations led to a comparison that is reproduced in Fig 11.1 on page 113 of the rail White Paper, which portrays Eurostar's carbon dioxide emissions to be about 100g CO2 per passenger km.

In fact, Eurostar's average load factor in 2007 was more than 60% - twice as good as assumed. And taking into account the main routes that Eurostar actually operates between London and Paris / Brussels, Eurostar's emissions work out at between 11g CO2 and 35g CO2 per passenger km (depending on the route and whether UK grid average emissions or supplier specific emissions for the UK are used). These emissions figures now appear in section 7.2 of the revised report.

Thus the comparison of Eurostar's carbon emissions relative to other modes, contained in the rail White Paper, was exaggerated by a factor of between at best three and at worst nine. The White Paper also failed to acknowledge that Eurostar expects to reduce its CO2 emissions by a further 25% per passenger journey by 2012.

The findings of the original T618 report further appear to be the basis for the conclusions in paragraphs 6.15 and 6.31 of the rail White Paper which state, inter alia, that "the argument that high-speed rail travel is a 'green option' does not stand up to a close inspection".

The new version of T618 omits Eurostar from its revised CO2 emissions comparison table (Figure 42, page 51), now that different assumptions have been applied. However, the comparison table in the White Paper (Fig 11.1) on the Department for Transport's website remains unchanged to date, as do the conclusions about high-speed rail.

Eurostar is therefore pleased that the more recent transport White Paper does appear more open-minded about high-speed rail as an option that could deliver against the Government's five policy goals including: providing more reliable journeys, tackling climate change and improving quality of life.

In considering the case for extending high-speed rail in the UK, it should further be noted that Eurostar trains are relatively inefficient at 0.055kWh/seat-km compared to other modern high-speed trains, such as the TGV-Reseau 2N at 0.04kWh/seat-km. The rail White Paper also failed to reflect the improvement in emissions performance that would be offered by a future generation of high-speed rolling stock in the UK.

Subsequent to the rail and transport White Papers, in a parliamentary statement on UK Energy Policy in January 2008, the Secretary of State for Business John Hutton MP said that "by 2050 our electricity will need to be largely low-carbon".

Given this target and the switch to new nuclear and renewable power sources that will be necessary over the coming two decades as existing nuclear power plants are replaced, the rail White Paper's conclusions on the 'green' potential of high-speed rail seem greatly to have underestimated its future potential to reduce the UK's transport-related CO2 emissions through the use of lower carbon electricity sources.

Europe's high-speed rail network is expanding rapidly and the UK's first high-speed line, High Speed 1, is already proving successful in attracting significant passenger growth. Serious capacity constraints will face Britain's rail network over the next 10 to 15 years, and I am optimistic that government thinking is moving forward. Given high-speed rail's potential significantly to aid competitiveness and productivity, reduce CO2 emissions and enable modal switch, and improve quality of life, I feel it is important to bring the RSSB's revised report and its material alterations to your attention.