

# A new high speed rail link for britain engineering essay



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Recently travel by rail has increased with many lines struggling to cope with the demand. The West Coast mainline which can be seen as one of the most important rail lines in Britain will reach capacity by 2020 according to the Transport Politic and has also seen investments of around £13 billion already (www. thetransportpolitic. com, 2009). One of the popular modes of travelling long distance within Britain is short haul flights; however air travel is neither efficient in terms of energy nor is it environmentally friendly. As the U. K has pledged to lower carbon emissions by 80% by the year 2050 (www. treehugger. com, 2009) Britain needs more sustainable forms of transport.

With the need to increase capacity on the rail lines, especially from London to the North, along with the environmental and sustainability factors the question that arises is, would it be more beneficial to upgrade the existing link between the north and London or to implement a new high speed rail link?

An Atkins report commissioned by the Dft alternatives to the high speed rail titled 'High Speed 2 Strategic Alternatives Study' (www. dft. gov. uk, 2010) outlines rail upgrades as an alternative. Firstly trains could be lengthened to allow for more passenger, however this does not tackle any reduction on journey times and station platforms may not be able to accommodate longer trains. Secondly an investment on the infrastructure to enhance the capacity of the West Coast Mainline would cost around £3. 6 billion (www. dft. gov. uk, 2010). This would see the operation of an extra four to five trains per hour reducing journey times to Birmingham and Manchester by 12 minutes and 6. 5 minutes respectively (www. dft. gov. uk, 2010). This alternative would not

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have many adverse effects on the environment as it does not affect the Chiltern Area of Natural Beauty, where the high speed network would, it would however be disruptive to passengers. The third alternative detailed in the report would be to invest on the Chiltern line along with the previous alternative which would allow three trains per hour to the West Midlands on the Chiltern line at a cost of £12.5 billion without reduction on journey times and an adverse environmental effect on the Chiltern AONB. Adding onto this would be the fourth alternative with further work on the Chiltern Line between London and the West Midlands to improve journey times at a cost of £15.1 billion (www.dft.gov.uk, 2010). This could see a single stop service to the West Midlands in 64 minutes (www.dft.gov.uk, 2010). This would have the same environmental effects on the Chiltern AONB and also be disruptive to passengers. The last alternative would be to include further work on the infrastructure on the Chiltern Line to take it up as far as Stratford as an alternative to the northern stretch on the West Coast Main Line. This would cost approximately £19.6 billion (www.dft.gov.uk, 2010), but may prove to be challenging, and result in a small frequency on services, without any certain demand for these services. This alternative would be the most environmentally damaging not only for just the Chiltern AONB and would cause disruption to passengers.

All the alternatives in upgrades to the existing network seem to be costly, have an adverse effect on the environment and disruption to services already in place which outweigh the benefits in terms capacity generated and reduction of journey times. For many of the alternatives there is no

impact on the journey times, which would be seen as defeating the objective of upgrading the existing network.

A publication by the Institution of Civil Engineers titled 'unblocking the potential of rail' states that " Flights currently account for 93% of business trips between Scotland and London. Research shows passengers will only consider changing from air to rail if the journey time is under three hours - only possible on land with a high speed rail route." (www. ice. org. uk, 2010).

Over the years Britain has seen to fall behind its European neighbours in developing high speed rail networks. France, Germany, Italy and Spain have all developed high speed rail networks. In particular Spain have in place a high speed rail network between Madrid and Barcelona which reaches speeds of 220mph, which allows the journey of 410 miles to be completed in 2 and a half hours (www. treehugger. com, 2010). Spain is a good example as they have a similar route from Madrid to Seville where more than 80% of travellers on that route prefer to travel by train (www. treehugger. com, 2010). The article 'Spain's high speed service challenges the airlines' on www. treehugger. com, 2010 also describes the services as " In terms of comfort and convenience the operators are not skimping either. Each train features a conference room, upgraded cooling and air conditioning, internet access and a restaurant car - and passengers are refunded their entire fare if the train is more than 5 minutes late (www. treehugger. com, 2010).

However since 2009 the government have set up a new organisation. High speed 2 Ltd (HS2 Ltd) which is outlying proposals and reports on a new north-south high speed rail network. Recently the transport secretary

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published the report for new high speed rail network which could see work start around 2017 at the earliest (BBC News, 2010)

Figures from The Transport Politic show that the project would cost £34 billion and include 1500 miles of track, accommodating a total of 34 tunnels and 138 bridges. Whilst 8 new stations would be built and the procurement of 73 high speed trains. If put in place the new north-south link would see an annual ridership of 43.7 journeys. (www.thetransportpolitic.com, 2009). Figure 1 in the appendix shows the proposed line and reduction in journey times.

The transport secretary Lord Adonis in a speech about the high speed rail stated " additional transport capacity would be needed from the 2020s between our major cities, starting with London to the west midlands, Britain's two largest conurbations . . . high speed rail could be the most efficient and sustainable way to provide more capacity between these conurbations. (www.dft.gov.uk, 2010). Lord Adonis summarised the development as an initial high speed network linking London to Birmingham then onto Manchester, the East Midlands, Sheffield and Leeds with high speed trains through to Liverpool, Newcastle, Glasgow and Edinburgh, which would result in a 'Y' shaped network capable of carrying trains up to 250mph.

Figures 2-4 in the appendix show some comparisons of high speed rail compared to classic rail.

The benefits of high speed rail as described by Lord Adonis on the DfT website (www.dft.gov.uk, 2010) are an increase of rail capacity by a third on the West Coast Mainline, not only because of the track but also due to the <https://assignbuster.com/a-new-high-speed-rail-link-for-britain-engineering-essay/>

length of high speed trains and the adapted stations along with segregation from other rail traffic. The speech also describes the upgrade of existing rail lines yielding less than half the extra capacity for more money and disruption than it would do to implement a high speed network. A new high speed network could see pressure on capacity on the West Coast Mainline released for other services on the network. In terms of saving time on journeys, the time between London and the West Midlands would be between 30 to 50 minutes depending on the station used, whereas places such as Manchester, Leeds and Sheffield would be brought to within 75 minutes of London and places further north such as Edinburgh and Glasgow to around three and a half hours. High speed trains are stated as "a sustainable way forward" (www.dft.gov.uk, 2010) by Lord Adonis, going on to say that they emit less carbon than other modes such as car or airplane per passenger mile, with the low impact of a new high speed rail network on local areas than that of a new motorway. Weighing up the benefits to the costs, HS2 assessed that the project will yield £2 for every £1 spent with the first part of the line up to the West Midlands costing between £15 and £17 billion.

Along with these benefits, other factors must be taken into consideration. The high speed trains are said to reach 400km/h or 250mph, which would make them the fastest trains in the world, we however need to observe the fact that a train travelling at 360km/h requires 50% more energy than that of a train travelling at 300km/h (www.cpre.org.uk, 2010), going faster could be a cost to the environment. On the topic of environment the high speed network will, similarly to many of the alternatives, cut through the Chiltern

AONB where extensive tunnelling will be required as high speed trains need to travel in straight a line as possible.

High speed trains will generate a new form of travel, where freed up traffic via existing rail and air travel may be taken up by new demand which could in turn add to carbon emission. For high speed rail to be part of a sustainable future, policies should be produced to keep demand and traffic down on other modes such as increasing air fares and making it more expensive to travel by car.

In conclusion high speed rail travel looks more attractive compared to an upgrade of the existing network. Many of the alternative upgrades mentioned have little effect for a big price. The cost of the fifth alternative up grade matches that of the cost of a new high speed line from London to the West Midlands, where you would have significantly reduced journey times and no disruption to existing services.

Environmentally both upgrading and building a new high speed line have adverse effects. For the same amount of effect on the environment you could have a new faster rail network, which could be a small price to pay for a network with greater outcomes and a project which would contribute to the economy and create jobs. In terms of carbon emissions and efficiency figure 5 in the appendix shows high speed rail is the most efficient in terms of passenger km carried by unit of energy than other forms.

However it should be taken into consideration the past in terms of development of rail lines. Where plans to upgrade existing lines have been postponed by Lord Adonis due to lack of finances and what may be a  
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coincidence of the government introducing these plans just before a major election.

On the lines of finance the project cost a substantial amount, especially with the current debt of the country. This cost may be passed on as increased rail fares, fares which currently some of the population regard as expensive. The new and improved service may not be attractive to some unless it is heavily subsidised.

Overall a new high speed rail link from London to the North would be beneficial, looking at our European neighbours we can see that high speed rail can be a success and the plans tick all the boxes in terms of journey time reduction and being able to compete with other modes such as short haul air travel and helping in the reduction on carbon emissions. High speed rail can be an improvement if it does not drag funds and infrastructure investment away from other areas and is affordable to use.