

The Environmental Audit Committee inquiry on environmental protection in Phase 1 of HS2: submission by Greengauge 21

Introduction

1. Greengauge 21 is a not-for-profit company established in 2006 to research and help develop the concept of high speed rail as a national economic priority. In 2008 we established a Public Interest Group which supported and funded a large part of Greengauge 21's work. This included *Fast Forward* (2009) which set out a strategy for a high speed rail network in Britain and a report on the carbon impacts of High Speed Two, published in 2012.
2. In 2012, we helped to establish the High-Speed Rail Industry Leaders Group to bring together industry expertise to help ensure that Britain's high speed rail network is delivered successfully to world class standards.
3. We appreciate that the Committee is focussing on a number of specific issues concerning environmental protection in Phase 1 of HS2. In this written submission we focus on three areas where we believe we can add value to the Committee's considerations:
 - a. Experience with HS1 (the Channel Tunnel Rail Link) in respect to environmental mitigation
 - b. A summary of Greengauge 21's findings on carbon impacts
 - c. The reasons why we believe the pattern of modal transfer – away from cars and short-haul aviation – is likely to be under-estimated in HS2 Ltd's current assessments and why this will lead to an adverse bias in the overall assessment of some of the environmental benefits that HS2 can deliver.
4. We hope this information will be of help to the Committee. We have not undertaken (or commissioned) any detailed assessment of the Environmental Statement or submitted a response to the Government's consultation about it.

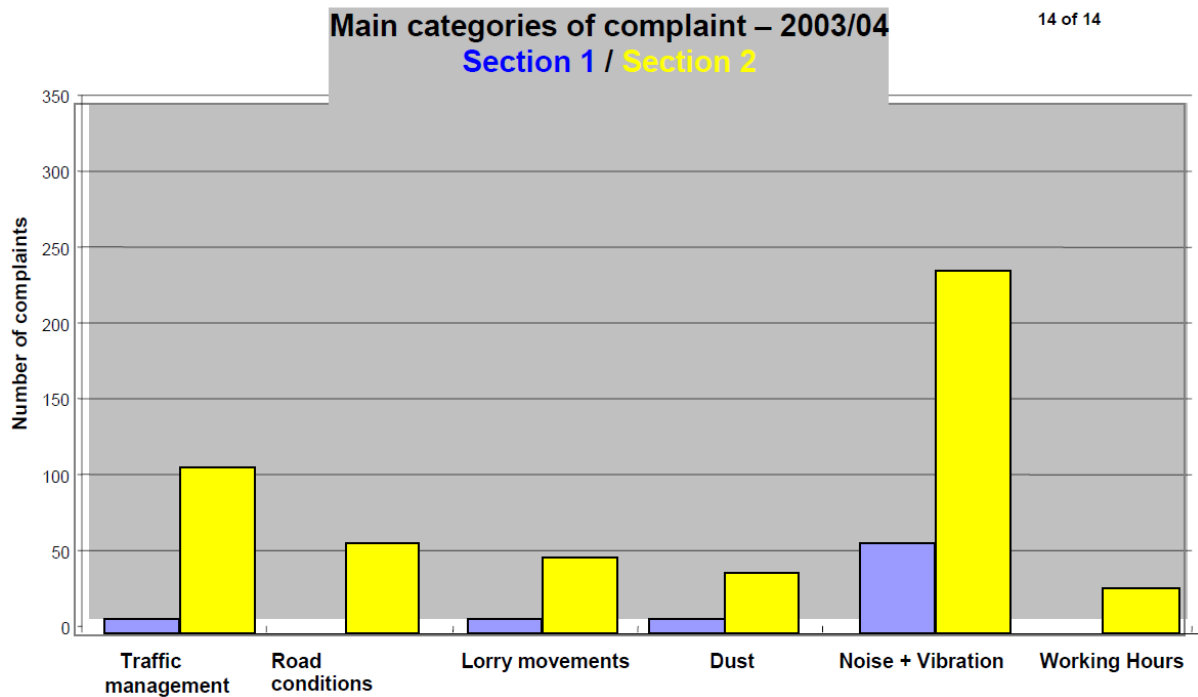
Experience with HS1

5. High Speed One (CTRL) was designed to high environmental standards, with 85% of the route in tunnel or within existing transport corridors. The environmental

standards adopted in the design were at the forefront of those commonly applied to major infrastructure projects and extended to aspects of noise and vibration, surface water and groundwater, air quality, contaminated land, agriculture, ecology and landscape design. An Environmental Statement was published in 1994, based on an assumed route and design, before detailed design and construction planning was undertaken.

6. The Development Agreement under which the project proceeded required certain Environmental Minimum Requirements (EMRs) to be met and these were incorporated into an integrated Environmental Design Management Process. This process ensured that the EMRs would be reflected through each design stage and onto construction. The process was regarded as being critical to obtaining detailed development consents from local and national planning and environmental authorities.
7. For the construction phase, the project Environmental Management System (EMS) was cascaded through a package of contract environmental requirements, under which contractors implemented their own EMS and took direct responsibility for environmental control on their sites. They were also required to have full time environmental site managers and support staff to undertake this work. A Code of Construction Practice was also developed in consultation with local authorities and other bodies. It set out a series of objectives and measures to protect the environment and limit disturbance from construction activities. Specific construction management plans were prepared: area management plans, plans for traffic, noise and vibration, dust, contaminated land and waste management, surface and groundwater; landscape, ecology and agriculture; historic interests; pollution incidents. A 24-hour help line ensured that most complaints addressed within a day. The whole process was also monitored by the Government appointed Complaints Commissioner who also adjudicated a small claims procedure for claims associated with construction nuisance. Following the successful precedents of the Channel Tunnel and the Channel Tunnel Rail Link, the Secretary of State for Transport also appointed a Complaints Commissioner for the Crossrail project.
8. An annual environmental report was produced during construction describing progress made by HS1 (CTRL) towards its environmental objectives. The report for example included accounts of post construction monitoring of habitats and species and the restoration of agricultural land temporarily used during construction.

9. The Annual Environment Report of 2003 provides, we believe, a good insight into the measures that were adopted for the first phase of the scheme and were being adopted for Phase 2 of HS1, the construction of which was then starting. This report also summarised the type of complaints received, copied below:



10. It can be seen that during construction in 2003/4, the greatest numbers of complaints related to noise and vibration (section 2 included a substantial length of tunnelling work under East London).

11. However, once the first section of HS1 across Kent was opened (on 28th September 2003) and high-speed trains started to operate over it, there were no complaints at all (made to Eurostar or to Kent County Council) of noise nuisance from the trains themselves running across Kent on the newly built line.

12. Kent County Council adopted a strategic role that supported the principle of the rail link and sought to maximise the economic benefits and minimise the environmental impacts. Mitigation details included habitat compensation and green bridges involving 230 hectares of woodland and 1.2 m trees, translocation of ancient woodland soils and 99% of surplus material being used in mitigation earthworks.

13. A Rail Link Countryside Initiative (RLCI) was also agreed during the Parliamentary hearings in addition to HS1/CTRL mitigation work. The RLCI was established as a charity with £2m legacy funds from the CTRL developers for projects within the wider rail corridor, available to groups or individuals to enhance and improve access to the landscape, ecology and heritage of the area affected by the development or operation of HS1. The fund could complement existing funding streams and by the closure of the fund in 2009, the RLCI had achieved a gearing of nearly 4 on the initial investment.

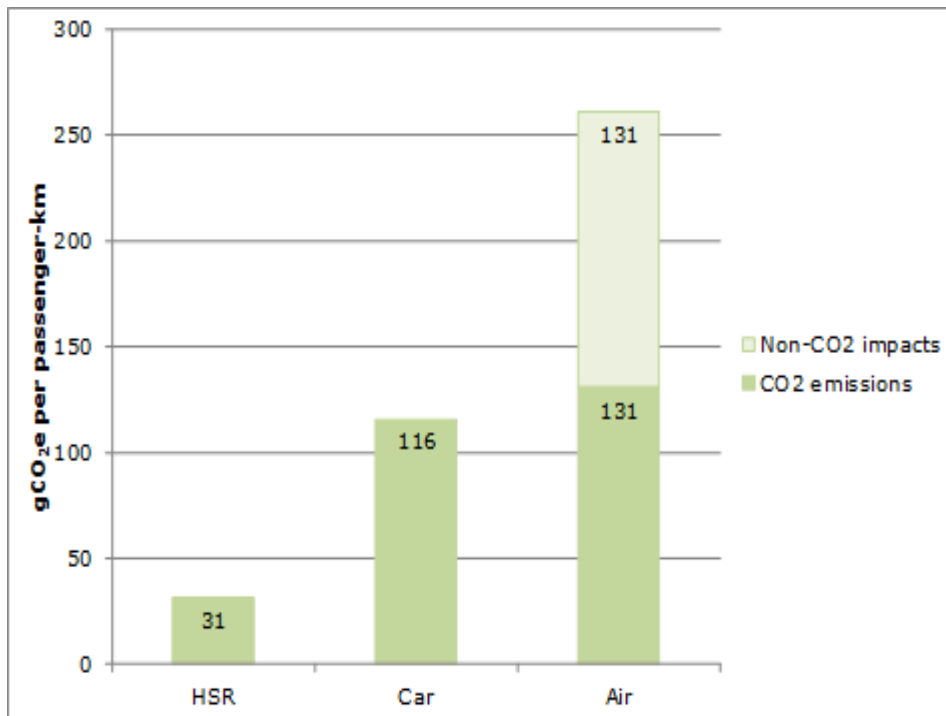
Summary of Greengauge 21 findings on Carbon Impacts

14. In 2012, Greengauge 21 published a report commissioned with the Campaign to Protect Rural England, the Royal Society for the Protection of Birds and the Campaign for Better Transport examining the impacts of HS2 on carbon emissions. Our conclusion, based on the then projected demand impacts and operational plans for HS2 was in summary¹:

“Government’s plans for high-speed rail can help meet carbon emissions targets. Research by Greengauge 21 shows that building the first phase of HS2 on its own delivers a saving in carbon of 0.6 million tonnes of CO₂ over sixty years. These savings could be quadrupled if Government puts in place a wider package of policies to capture the full carbon benefit of HS2. And the second phase of HS2 will quadruple the carbon savings again.”

15. The research showed that if HS2 was available for use today, the carbon emissions arising from making a trip by high-speed rail would be 73% lower than making the equivalent journey by car and 76% lower than flying. Over time, the carbon efficiency of all modes of transport will change, but high-speed rail will benefit from much reduced carbon emissions as electrical power generation is decarbonised.

¹ www.greengauge21.net/publications/the-carbon-impacts-of-hs2/



16. The report found that the main factors that could further improve the carbon case for HS2 were:

- a. Delivering electricity decarbonisation and reducing the top speed until electricity generation is sufficiently decarbonised
- b. Full use of capacity freed up on the existing rail network
- c. City centre rather than parkway stations
- d. Management and regulation of the strategic road network
- e. Sustainable land use planning policies to encourage use of public transport
- f. Air capacity regulation and management, and
- g. Timetabling margins and efficient driving techniques to reduce energy consumption

17. The update of HS2 Ltd's analysis of the project between 2011 and 2013 does not affect the intrinsic properties of the different modes as illustrated in the chart above, but it does impact on the overall carbon calculation. This is because the level of diversion from car and air travel modes to HS2 is, in the 2013 case, reduced from earlier estimates. The carbon calculations that we commissioned for our 2012 publication rely on HS2 Ltd modal demand estimates and if updated to the 2013 case would not be as favourable.

Underestimation of Modal Transfer

18. We believe that in relation to modal transfer, as in certain other key areas, the 2013 forecasts of demand prepared by HS2 Ltd are unduly cautious. They show very little transfer from other modes (i.e. car and short haul aviation with coach travel ignored completely). The mode transfer forecast is much lower than before, and we believe this is why the projected outcome in terms of carbon is no longer so promising.
19. Shown below is the change in where HS2 demand comes from in the January 2012 (used as the basis for the Greengauge 21 Carbon report) and the October 2013 economic cases (used as a basis for the Environmental Statement):

	Jan 2012 – full network 2037	Oct 2013 – full network 2036
Switching from classic rail	65%	69%
New trips	24%	26%
Shift from air	3%	1%
Shift from car	8%	4%
Total	100%	100%

20. As can be seen the modal transfer from car has been halved, and the transfer from air reduced by two thirds (roundly).
21. As a consequence the beneficial environmental effects of HS2 which can be set against its negative environmental impacts, we contend, are under-estimated. The reduction in numbers transferring from car travel and air travel in particular is too great in the HS2 Ltd calculations.
22. The evidence to which we would draw the Committee's attention in support of this point is contained in the October 2013 Strategic Case for HS2, published by DfT. This shows that, based on the evidence of the National Travel Survey (NTS), the proportion of trips made by rail for journeys over 25 miles increased over the 15 year period from 1995 from 8% to 14% (the majority of the remainder being accounted for by private car travel).² We would expect a continuation of this trend subject to

² <https://www.gov.uk/government/collections/national-travel-survey-statistics>

there being sufficient additional capacity provided on the rail network to accommodate it.

23. This change in modal split from road to rail is very significant, and may be contrasted with the 4% of HS2 demand that is now projected to arise by transfer of mode away from car. Of course the assessment in the NTS is a shift over time, whilst the mode split assumed for HS2 is an estimate of the level of change in mode choice in a given year (2036), given an option for motorists to switch to high-speed rail.
 24. Current demand modelling techniques do not reflect the likely effect of the additional capacity that HS2 brings, which should enable – at least in the key north-south corridors – a continuation of the established trend of the last 15 years which has seen such a dramatic increase in rail's share of long distance traffic. The assumptions used in the forecasts of HS2 demand assume the same annual growth rate in demand by each mode regardless of whether HS2 is built or not.
 25. In practice, we would expect that – in the absence of HS2, but with every available measure adopted to increase rail capacity on the existing main line (the West Coast) – the growth rate in rail and in the rail market share would ease back and then reach a limit. This limit would arise in the mid 2020s, although of course there is some uncertainty around such estimates. With the additional capacity provided by HS2, we would expect a stronger growth in rail and in rail market share. But the modal growth levels in the HS2 Ltd demand forecasts are assumed to be unaffected by the capacity on offer. As a consequence the assessment of beneficial environmental impacts arising from significantly less car (and short-haul aviation) use and significantly more use of the lower carbon rail mode is under-estimated. The effect of capacity enhancement is only assessed in terms of supposed reductions in levels of overcrowding, and not in terms of the ability for rail to accommodate additional demand.
 26. We understand the need for some simplifications in the modelling work but it is clear that this particular simplification is very likely to lead to an under-estimate of the impact of HS2 on mode share and therefore on the carbon reduction effects of the project when it is in operation.
-