Statement on HS2 Modelling and Appraisal

1. This note is in response to issues raised by the National Audit Office in its recent publication High Speed 2: A Review of Early Programme Preparation[1]. It describes the basis of the Department for Transport's methods for assessing this project and the mechanisms for ensuring that this methodology has been applied rigorously.

The methodology used to appraise High Speed 2

2. As the NAO report noted "the Department has broadly used the same methodology to analyse High Speed 2 (HS2) that it uses on other transport projects"[2]. This methodology is based on the Department for Transport's published transport appraisal guidance (WebTAG) and has been assembled and refined over the last decade or so[3]. It meets the requirements for Central Government appraisal as set out in the HM Treasury Green Book and gives the means to implement the Green Book's principles in transport projects[4].

3. The methodology has been assembled following systematic engagement with transport experts both in the UK and overseas. All proposed changes to the guidance, as it is developed, are subject to rigorous open consultation procedures so that the body of guidance at any point is based on high quality expert views and advice.

4. A recently completed review of international appraisal methods concluded that[5]:

- the English appraisal approach compares well with exemplars of best practice; and
- WebTAG is seen as "the leading model of open documentation" which is frequently used as a benchmark in other countries.

5. WebTAG provides a comprehensive and disciplined framework for consistent modelling and appraisal by providing key methods, assumptions, and values. However, it is important to note that WebTAG does not present a mechanical or rigid set of rules. This is inevitable and appropriate given the wide range of transport schemes that need to be assessed. Rather, it allows a flexible and proportionate approach where it can be justified, so that the methods used are fit-for-purpose in the context of the scheme being assessed but within a comprehensive and disciplined framework.

6. As would be expected for a scheme of the magnitude and complexity of HS2, its assessment presents challenges that push at the boundaries of existing transport appraisal methods. Where this is the case - for example, to understand the significant

[1] See http://www.nao.org.uk/report/high-speed-2-a-review-of-early-programme-preparation/
[2] See paragraph 2.12 *High Speed 2: A Review of Early Programme Preparation*
[3] See www.dft.gov.uk/webtag
[4] See https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-governent
[5] *International Comparisons of Transport Appraisal Practice: Overview Report* (ITS Leeds, unpublished)

impacts HS2 may have on the use of land around stations - new evidence has been identified, assembled and reviewed prior to its adoption.

7. One particular issue that merits attention is the approach to valuing travel time savings for business passengers. The approach that has been taken for HS2 is the same as that generally used in the appraisal of transport schemes in England, and is the dominant method applied throughout the World. The USA, Australia and the World Bank all adopt similar techniques to that which has been taken for HS2 and there are no significant alternatives to this approach which are commonly used elsewhere.

8. That said, as the report The Economic Case for HS2: Value for Money Statement notes "while the Department agrees it is a simplification to assume that travellers do not work on the train, there is currently insufficient robust evidence to address all of the uncertainties…and determine their combined effect"[6]. Consequently, in order to provide such evidence and help resolve such issues, the Department has commissioned independent advice to:

- Describe the different theoretical approaches to valuing business travel time savings;
- Identify issues with the practical application of these methods:
- Provide a comprehensive review of international evidence to identify the range of potential values of business travel time savings; and
- Explore opportunities for future research on this subject and consider a range of options for furthering our understanding in this area.

9. The Department plans to publish the findings from this research. The Department recognises the uncertainty around the valuation of business travel time savings and expects the next iteration of the economic case to carry out 'tipping point' analysis on the impact on the appraisal of different values of business travel time savings.

The application of the methodology to High Speed 2

10. A number of steps have been taken to ensure that the application of the appropriate methodology to the assessment of HS2 has been thorough and fit for purpose.

11. First, a carefully considered programme of work covering the analysis needed to support the case for HS2 was constructed and has been progressively implemented. This work programme is overseen by the Joint Analytical Group. The group consists of DfT and HS2 Ltd experts, is chaired by the DfT Chief Economist and reports to the DfT High Speed Rail Board.

[6] See http://assets.dft.gov.uk/publications/hs2-economic-case-value-for-money/hs2-economic-case-value-for-money.pdf

12. As noted above, given its scale and complexity, the appraisal of HS2 has identified new challenges that stretch conventional transport appraisal methods. This is to be expected and requires extensions of the methodology and/or new evidence. The Joint Analytical Group has taken responsibility for such consideration in the context of HS2.

13. Second, in developing its capability to provide authoritative input into the economic case, HS2 Ltd established an Independent Analytical Challenge Panel[7]. The panel provided a broad challenge function for HS2 Ltd's analytical work, alongside specific advice on the development of the computer software tools used to simulate the impact of HS2.

14. Third, the development of the HS2 business case has been subject to increasingly rigorous quality assurance processes. In the early stages of the programme, consultants made two errors in the cost-benefit analysis of the scheme. HS2 Ltd learnt from this by increasing its oversight of the work of the consultants, strengthening quality assurance processes and commissioning a line-by-line audit of its economic models.

15. Systems are now in place to ensure the HS2 Ltd economic modelling is checked, not just within the consultancies and by HS2 Ltd staff, but also by staff from other firms of consultants and independent model auditors. Since the summer of 2012, this has amounted to over 1000 days of effort.

16. HS2 Ltd's quality assurance procedures are compliant with the recommendations of the Macpherson Review of Quality Assurance of Government Models[8], and have been approved by DfT officials. The NAO has also noted its satisfaction that the audit process is "detailed and thorough"[9].

Further development of the methodology

17. As is usual with large and complex schemes, the analysis of HS2 is developing over time[10]. The next update to the economic case for is well underway and will be published later this year. Accordingly, this will embody a range of enhancements, including:

- A significant overhaul of the HS2 Ltd modelling suite, which will improve our understanding of long distance travel, the types of people that are making long distance trips and how they might respond to the introduction of HS2;

- The incorporation of changes stemming from updates to WebTAG, including improvements to rail passenger demand forecasting methods;

[7] See http://www.hs2.org.uk/about-hs2-ltd/external-challenge-groups
[8] See http://www.hm-treasury.gov.uk/psr_governance_quality_assurance.htm
[9] See para 2.15 *High Speed 2: A Review of Early Programme Preparation*
[10] Over the last financial year HS2 Ltd has implemented over 3,000 person days to develop and update the forecasting model which is used to estimate the demand and benefits of HS2, in line with the recommendations of the HS2 Ltd Analytical Challenge Panel.

- The addition of newly committed rail schemes in the analysis of the without-HS2 counterfactual, including those interventions announced in the High Level Output Specification 2012[11]; and

- Further improvements to our understanding and assessment of the impacts of HS2 on local and regional economies.

18. It will also benefit from the further quality assurance that has been carried out by leading modelling practitioners, including internal reviews, peer reviews, formal audit and independent expert advice.

Conclusion

19. On the basis of the above considerations, the appraisal and analysis that has been deployed in regard to HS2 is fit for purpose and well-based in best practice, both in the UK and internationally. The appropriate methodology has been applied rigorously, underpinned by a number of mechanisms to give this assurance.

20. At the same time, the Department is not complacent about the scale of the analytic challenges that a scheme of this kind entails. Steps have been taken further to increase and refine the evidence base underpinning the appraisal of the project. The results of this work will be made available, as they accrue. One reflection of this ongoing work will be the developments and enhancements to the update of the economic case which will be published later this year.

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[11] See https://www.gov.uk/government/publications/high-level-output-specification-2012