

## **NOISE!**

High Speed 2 Ltd were asked, under Freedom of Information legislation, to provide detailed data relating to the noise that HS2 trains would generate, and their response(s) are shown below.

Noise assessment is a black art, but by any measure, there is no doubt that these trains are **very noisy**, that noise increases in proportion to speed, and that it is very difficult to assess the exact impact – until the line is in and people can no longer open their windows, or sit out in the garden.

In the HS2 response, there is, I believe a key flaw, in that the published bypass noise level at a speed of 350 km/hr, at a 25 metre distance is **95 db**, i.e. each time a train goes by, whereas their assessment figure is ‘averaged’ down to **81 db**.

To put this into perspective, look at the noise levels below:

Large capacity motorcycle	<b>80 – 92 db</b>
Petrol Lawnmower	<b>88 – 94 db</b>
Air compressor	<b>90 – 95 db</b>

I have one of each of these, and they are **NOISY!**

The flaw in averaging is that if this calculation is based on averaging over time (the exact methodology is not revealed but the calculation states hours between 6:00 and 24:00 hours) imagine me sitting at the bottom of your garden revving my lawnmower up every few minutes – because that is what we the noise profile is likely to be.

To add insult to injury, the perceived impact of noise is relative to the existing noise level in the environment – simply put, if you live next to the M40 - already at an above-average ambient noise level, the impact of an increase to **95 db** is relatively low.

By comparison, but subject to more research, it would be safe to assume that the noise level in the Chilterns is less than **40 db**, - you know as well as I do how quiet it is here, so the impact of **95 db** every few minutes would be simply devastating.

A final thought; Health and Safety regulations mean that if people are exposed to noise levels of between **80 – 85 db** in the workplace, employees can demand suitable ear protection, and noise levels in excess of **87 db are not permitted.**

Does this mean that if we designated the Chilterns as a workplace instead of an AONB we would be protected?



3<sup>rd</sup> Floor  
55 Victoria Street  
London SW1H 0EU  
Tel: 020 7944 4908

Mr Colin Allen  
Via Email: [allens.co@btinternet.com](mailto:allens.co@btinternet.com)

28 May 2010

## REQUEST FOR INFORMATION

### FOI REQUEST FOI10/032

Dear Mr Allen

I am writing regarding your request for information received on 23rd April 2010.

You requested the following information:

**Measurements of the noise generated by trains are normally measured in accordance with ISO 3095:2005, this involves measuring the train Pass-by noise in decibels at 25 metres from the centreline of the track.**

- 1. How many decibels, measured at 25 metres from the centreline of the track, have you assumed for HS2 proposed rolling stock at 360kph and how many for 400 kph? Is this the information given to Booz and Co?**
- 2. How many metres from the centreline of the track have Booz and Co drawn their 73dbLAeq line, is this for 360kph?**
- 3. Do you have a County by County, or town by town, breakdown of the 21,300 dwellings experiencing 'a noticeable increase in rail noise'. How many of these are in Brackley?**

The information you requested is environmental information as defined in section 2(1) of the Environmental Information Regulations 2004 (EIR). Section 2(1) is set out in full in the annex to this letter.

**With respect to question 1 above**, as all calculations have been based on a maximum speed of 350kph, HS2 Ltd does not hold the information you requested. However, the assumed pass-by noise level at 350kph at 25m is 95dB LAeq,TP. This figure is derived from a number of measured noise levels at 25m from actual trains.



However, our noise assessment has been based on the day time 'average' noise level ( $L_{Aeq,18hr}$ ). The day time 'average' noise level assumed at 350kph is approximately 81 dB(A) at 25m.

These figures were based on published steel wheeled train measurements and the TSI (European Technical Specifications for Interoperability). Booz and Co and Temple Group used this published data in conjunction with the track alignment (from which speeds at different points could be ascertained) and the project specification which were provided by HS2 Ltd.

**With respect to question 2 above**, a 73dB  $L_{Aeq,18hr}$  line has not been drawn and, as indicated above, a maximum speed of 350kph has been assumed, therefore HS2 Ltd does not hold the requested information. However, I attach an explanatory note on the noise methodology used in the Appraisal of Sustainability.

**With respect to question 3 above**, A town by town breakdown has not been generated at this stage therefore HS2 Ltd does not hold the requested information.

A copy of the published HS2 report and its supporting documents are available via the HS2 website at: [www.hs2.org.uk](http://www.hs2.org.uk).

If you do not have access to the Internet at home, you may be able to use facilities at your local public library, or you can request a paper copy by contacting me.

If you are unhappy with the way we have handled your request or with the decisions made in relation to your request, you may complain in writing to HS2 Ltd at the above address. Please also see attached details of HS2 Ltd's complaints procedure and your right to complain to the Information Commissioner.

Please remember to quote the reference number above in any future communications.

Yours sincerely

A handwritten signature in blue ink, appearing to read 'Elizabeth Shiffner', written in a cursive style.

Elizabeth Shiffner  
HS2 Corporate Services  
[Elizabeth.shiffner@hs2.gsi.gov.uk](mailto:Elizabeth.shiffner@hs2.gsi.gov.uk)



## **ANNEX**

### **Environmental Information Regulations 2004**

#### **Part I – Interpretation**

2(1) In these Regulations –

"environmental information" has the same meaning as in Article 2(1) of the Directive, namely any information in written, visual, aural, electronic or any other material form on -

(a) the state of the elements of the environment, such as air and atmosphere, water, soil, land, landscape and natural sites including wetlands, coastal and marine areas, biological diversity and its components, including genetically modified organisms, and the interaction among these elements;

(b) factors, such as substances, energy, noise, radiation or waste, including radioactive waste, emissions, discharges and other releases into the environment, affecting or likely to affect the elements of the environment referred to in (a);

(c) measures (including administrative measures), such as policies, legislation, plans, programmes, environmental agreements, and activities affecting or likely to affect the elements and factors referred to in (a) and (b) as well as measures or activities designed to protect those elements;

(d) reports on the implementation of environmental legislation;

(e) cost-benefit and other economic analyses and assumptions used within the framework of the measures and activities referred to in (c); and

(f) the state of human health and safety, including the contamination of the food chain, where relevant, conditions of human life, cultural sites and built structures inasmuch as they are or may be affected by the state of the elements of the environment referred to in (a) or, through those elements, by any of the matters referred to in (b) and (c);



## Explanatory Note - Noise

HS2 Ltd commissioned an appraisal of sustainability (AoS) of a high speed line between London and the West Midlands. The AoS is a necessarily high level study of the potential environmental impacts of the HS2 scheme, designed to allow comparison of different routes as well as give an indication of where mitigation of impacts may be needed. The appraisal is ongoing, as work continues on possible further mitigation. The new Government may wish additional work to be undertaken. The full AoS will be published in advance of public consultation.

A non technical summary (NTS) of this work was published in March 2010. It identified potential noise impacts for HS2 Ltd's recommended route which are set out below.

Predicted potential noise impacts	No. of dwellings impacted	
	Engineered Route Column 1	With additional mitigation Column 2
High HS2 noise levels (over 73 dbl)	350	50
Noticeable increase in railway noise (over 50dbl +3dbl)	21,300	9,700

For this appraisal, an industry recognised computer software<sup>1</sup> was used which included the following information:

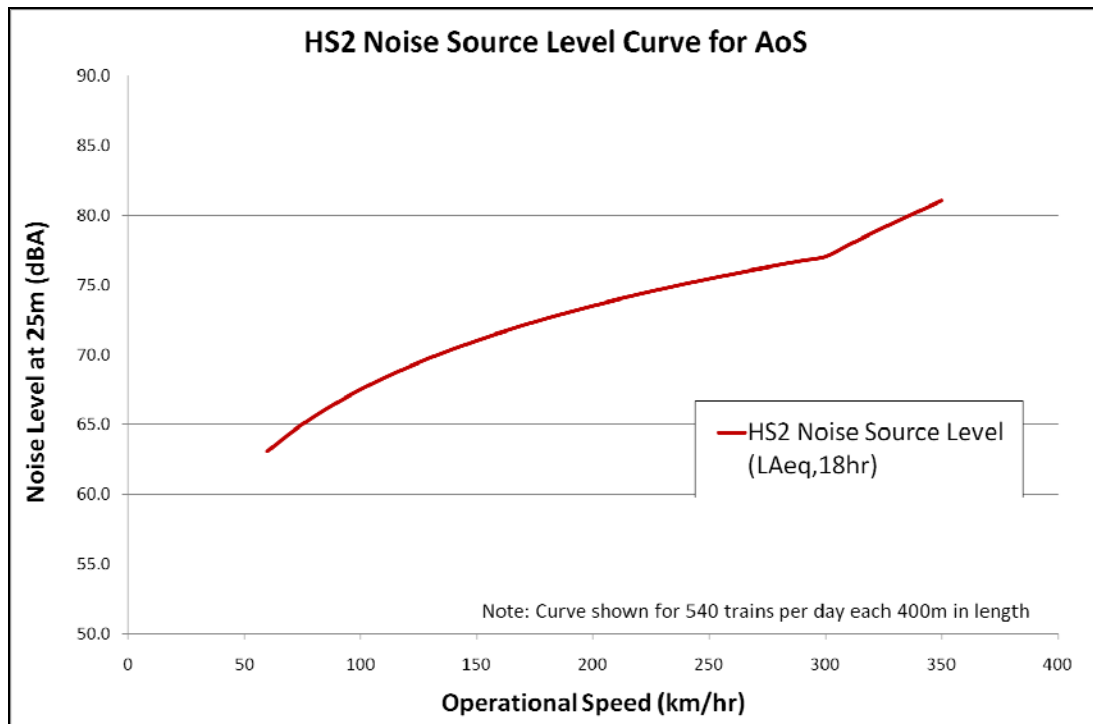
- Noise levels of high speed trains. This was based on the noise levels of currently operated high speed trains<sup>2</sup> and the current noise level requirements for new trains from European Specifications<sup>3</sup>;
- Information from HS2 Ltd's project specification on number, length and frequency of the proposed HS2 service;

<sup>1</sup> CadnaA (Computer Aided Noise Abatement) software version 3.72.129 (64bit) - DataKustik GmbH using the normal UK method for prediction of railway noise and adopting the international standard method for calculating how sound travels in built up areas where appropriate.

<sup>2</sup> Gautier, P.-E., Létourneaux, F., & Poisson, F. (2007). High Speed Trains External Noise: A Review of Measurements and Source Models for the TGV Case up to 360km/h. SNCF, Innovation and Research Department, France.

<sup>3</sup> Official Journal Of The European Communities (2002) Commission Decision 30 May 2002 Concerning the Technical Specification for Interoperability Relating to the Rolling Stock Subsystem of the Trans-European High-Speed Rail System Referred to in Article 6(1) of Directive 96/48/EC.

- HS2 Ltd's assumption on the speed of the trains on different sections of the route; and
- Existing rail noise levels based on Government noise maps.
- The proposed HS2 alignment, including proposed embankments, cuttings, tunnels and viaducts and the surrounding landscape.



The assumed HS2 noise source level for the model can be seen in the above figure. This graph presents the daytime 'average' noise level<sup>4</sup> at a distance of 25m from the centreline for train speeds between 60 and 350km/hr.

The model was first used to predict levels of noise ('average' noise for a typical day operation) at dwellings within 3km of the centreline of the proposed engineered route – see column 1.

To understand the potential improvements in reducing the noise impacts which are likely to be realised with the final scheme design a mitigation scenario was developed based on two assumptions - firstly, that future trains will be quieter than current trains and secondly, that noise barriers will be used to protect groups of dwellings in areas potentially experiencing higher noise impacts. The model was then rerun and the results are presented in Column 2.

<sup>4</sup> The daytime 'average' noise level ( $L_{Aeq,18h}$ ) is the A-weighted equivalent continuous sound pressure level over the 18 hour daytime period (06:00 to 24:00 hrs). The A-weighted level (dBA) is the logarithmic scale of sound pressure which takes into account the increased sensitivity of the human ear at some frequencies.



## **Limitations to this high level appraisal**

This approach gives general and indicative rather than specific results;-

- Given this is a strategic appraisal, no site noise measurements have been included in the appraisal. In this appraisal, the change in noise is the change in the railway noise environment based on average noise levels from the Government noise maps. As a result, local impacts may be over or under estimated.
- Shielding effects of buildings have been included in the model as a standardised value and further work is required to understand local effects.
- Numbers of potential properties affected were estimated using current ordnance survey data which is based on groups of one or more addresses.

All of these limitations would be addressed in future in the production of the Environmental Impact Assessment (EIA) on the final route. We would expect work to start on the EIA once the Government had made a decision on whether to proceed and the route following public consultation and when further engineering design is complete.

May 2010