



# HIGH SPEED TWO PHASE ONE INFORMATION PAPER

## E22: Control of noise from the operation of stationary systems

This paper explains the measures that will be put in place to control the effects of noise from the operation of stationary systems designed and installed as part of HS2 Phase One.

It will be of particular interest to those potentially affected by the Government's proposals for high speed rail.

This paper was prepared in relation to the promotion of the Bill for Phase One of the scheme which is now enacted. Although the contents were maintained and updated as considered appropriate during the passage of the Bill (including shortly prior to the enactment of the Bill in February 2017) the contents are now historic and are no longer maintained.

If you have any queries about this paper or about how it might apply to you, please contact the HS2 Helpdesk in the first instance.

**The Helpdesk can be reached at:**

**High Speed Two (HS2) Limited  
Two Snowhill, Snow Hill Queensway  
Birmingham, B4 6GA**

by email: [HS2enquiries@hs2.org.uk](mailto:HS2enquiries@hs2.org.uk)

or by phone: 08081 434 434 (lines are open 24 hours)

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# E22: Control of noise from the operation of stationary systems

## 1. Introduction

- 1.1. High Speed Two (HS2) is the Government's proposal for a new, high speed north-south railway. The proposal is being taken forward in two phases: Phase One will connect London with Birmingham and the West Midlands and Phase Two will extend the route to Manchester, Leeds and beyond.
- 1.2. HS2 Ltd is the non-departmental public body responsible for developing and promoting these proposals. The company works to a Development Agreement made with the Secretary of State for Transport.
- 1.3. In November 2013, HS2 Ltd deposited a hybrid Bill<sup>1</sup> with Parliament to seek powers for the construction and operation of Phase One of HS2 (sometimes referred to as 'the Proposed Scheme'). The Bill is the culmination of nearly six years of work, including an Environmental Impact Assessment (EIA), the results of which were reported in an Environmental Statement (ES) submitted alongside the Bill. The Secretary of State has also published draft Environmental Minimum Requirements (EMRs), which set out the environmental and sustainability commitments that will be observed in the construction of the Proposed Scheme.
- 1.4. The Bill is being promoted through Parliament by the Secretary of State for Transport (the 'Promoter'). The Secretary of State will also appoint a body responsible for delivering the Proposed Scheme under the powers granted by the Bill.
- 1.5. This body is known as the 'nominated undertaker'. There may well be more than one nominated undertaker – for example, HS2 Ltd could become the nominated undertaker for the main railway works, while Network Rail could become the nominated undertaker for works to an existing station such as Euston. But whoever they are, all nominated undertakers will be bound by the obligations contained in the Bill and the policies established in the EMRs.
- 1.6. These information papers have been produced to explain the commitments made in the Bill and the EMRs and how they will be applied to the design and construction of the Proposed Scheme. They also provide information about the Proposed Scheme itself, the powers contained in the Bill and how particular decisions about the project have been reached.

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<sup>1</sup>The High Speed Rail (London – West Midlands) Bill, hereafter 'the Bill'.

## 2. Overview

- 2.1. This Information Paper explains the measures that will be put in place to control the effects of noise from the operation of stationary systems designed and installed by the nominated undertaker as part of the Proposed Scheme. It does not cover rail-served or other installations provided by the nominated undertaker for other parties affected by the scheme and not intended for use by the HS2 operator as part of the operational HS2 system.
- 2.2. The term “stationary systems” is used to describe the following:
  - tunnel ventilation including:
    - mechanical ventilation at intervention shafts and tunnel portals; and
    - tunnel draught (pressure) relief shafts;
  - trackside equipment (particularly electrical equipment such as autotransformer feeder stations);
  - static equipment located at stations such as mechanical ventilation plant, chillers etc; and
  - static sources located within depots such as mechanical plant, pumps, carriage wash plant, wheel lathes and stationary trains.
- 2.3. The level and nature of sound produced by all of these systems and the ability to practicably control the sound emissions will vary significantly. Therefore, this paper is designed to ensure an appropriate level of consistency in the approach to be applied to the different sources, whilst ensuring a suitable level of flexibility to address different situations and circumstances.

## 3. Objectives

- 3.1. The nominated undertaker will design, construct, operate and maintain the stationary systems so that the rating level of the fixed installations in normal operation at the worst affected residential receptor, minus the background level, is not more than -5 dB, determined in accordance with BS4142:2014.
- 3.2. Where it is not reasonably practicable to achieve this objective, the nominated undertaker will develop and adopt robust procedures to ensure that sound from all stationary systems is reduced as far as is reasonably practicable.
- 3.3. In such cases, the nominated undertaker will design, construct, operate and maintain the stationary systems so that, under all reasonably foreseeable circumstances, the rating level of the stationary systems in normal operation at the worst affected residential receptor, minus the existing background level, is not more than +5 dB, determined in accordance with BS4142:2014.
- 3.4. The above steps will help to achieve the Government’s noise policy (as set out in the Noise Policy Statement for England), in so far as:

- the steps to be taken to control and reduce adverse effects of noise from stationary systems as far as is reasonably practicable is consistent with HS2 Ltd Sustainability Policy and supports the second aim of Government's noise policy, which is to minimise adverse effects on health and quality of life as far as is sustainable; and
  - specifying noise limits so as to not exceed a rating level of +5 dB above the background level will ensure that likely significant effects will be avoided. This will achieve the first aim of the Government's noise policy which is to avoid significant adverse effects on health and quality of life.
- 3.5. Special consideration will be given to the assessment of sound from stationary systems when the background level is low, namely where the background levels are less than 30 dB.
- 3.6. For non-residential receptors, the methodology set out in BS4142:2014 is not relevant and does not apply to such sources. However, the nominated undertaker will control sound from stationary systems at noise-sensitive non-residential receptors to avoid significant observed adverse effects on that receptor.

## 4. Control Measures

- 4.1. The objectives set out in this paper will apply to all stationary systems that affect any noise sensitive receptor.
- 4.2. The nominated undertaker will assess the sound from stationary systems at the nearest residential receptor based on the principles set out in BS4142:2014. This methodology requires an assessment of the sound produced by the stationary system under assessment against the background level.
- 4.3. The surveys used to define the background levels will need to be carried out at the time of the detailed design. This will ensure that the background level will be established using up-to-date and robust information. The nominated undertaker will undertake the following steps to control noise from the stationary systems:
- specify noise limits and incorporate acoustic requirements into contract documents such that they will apply to the design of all the stationary systems that are to be installed and operated as part of the Proposed Scheme;
  - determine the relevant background levels and establish these jointly with the relevant local authorities;
  - procure, install and commission stationary systems, including sound attenuation equipment that meets the specification requirements;
  - where it is not possible to achieve the lower design objective (noise rating to be 5dB below the background level), provide details to the relevant local authority (whose comments will be taken into account) of

the steps to be taken to ensure that, under all reasonably foreseeable circumstances, the design and procurement processes for stationary systems are adequate to achieve compliance with the design criteria; and

- before formal operation of the stationary system, complete a standard suite of acceptance tests as necessary to demonstrate that the operational sound levels achieve the design criteria.

## **5. More information**

- 5.1. More detail on the Bill and related documents can be found at: [www.gov.uk/HS2](http://www.gov.uk/HS2)