

## INDEPENDENT PHASE ONE PLANNING FORUM FOR HS2

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### PLANNING FORUM NOTE 14 | Operational Noise from the Railway and Altered Roads

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Demonstrating that noise from the operational railway and altered roads has been reduced ‘as far as reasonably practicable’ in parallel with seeking Schedule 17 approvals

#### Introduction and Purpose

1. The purpose of this Planning Forum Note is to provide a consistent route-wide approach to demonstrating that noise from the operational railway and altered roads has been reduced ‘as far as reasonably practicable’ in accordance with the HS2 Environmental Minimum Requirements. The approach will also provide a consistent basis for reporting to local authorities in the context of Schedule 17 requests for:
  25. Plans & Specifications approvals to noise mitigation earthworks and noise screens under paragraph 3 of Schedule 17 (‘Schedule 17(3) requests’); and later
  26. Bringing Into Use approvals under paragraph 9 of Schedule 17 (‘Schedule 17(9) requests’).
2. This paper should be read in conjunction with Planning Forum Note (PFN) 10.

#### Background and Requirements

3. HS2 Phase One Information Paper E20 explains ‘... *the commitments made in the Bill and the EMRs [Environmental Minimum Requirements] and how they will be applied to the design and construction of the Proposed Scheme.*’
4. Information Paper E20 therefore sets out the committed “*controls contained in the EMRs*” in relation to the intent of the EMR General Principles:

“1.1.3 ...*ensure that impacts which have been assessed in the ES will not be exceeded, unless any new impact or impacts in excess of those assessed in the ES ... would not be likely to be environmentally significant..*”

“1.1.5 *The nominated undertaker will in any event, and apart from the controls and obligations referred to in paragraph 1.1.3, use reasonable endeavours to adopt mitigation measures that will further reduce any adverse environmental impacts caused by Phase One of HS2, insofar as these mitigation measures do not add unreasonable costs to the project or unreasonable delays to the construction programme.*”
5. ‘Environmentally significant’ in paragraph 1.1.3 of the EMR General Principles is defined for operational noise in section 14.3.25 (p152-156) of the Phase One Scope and Methodology Report and addendum.
6. Information Paper E20 sets out the following overarching Objectives:

‘3.1 *The nominated undertaker will take all reasonable steps to design and construct altered roads, and to design, construct, operate and maintain the operational railway so that the*

*combined airborne noise from these sources, predicted in all reasonably foreseeable circumstances, does not exceed the lowest observed adverse effect levels set out in Table 1 of Appendix B [LOAEL and SOAEL values<sup>1</sup>].'*

*'3.2 Where it is not reasonably practicable to achieve this objective, the nominated undertaker will reduce airborne noise from the altered roads and the operational railway as far as is reasonably practicable.'*

7. Paragraph 9(4) of Schedule 17 to the Phase 1 HS2 Act requires that in considering requests to bring into use a scheduled work, *'the relevant planning authority must grant approval if it considers that there are no reasonably practicable measures which need to be taken for the purpose of mitigating the effect of the work or its operation on the local environment or local amenity'*.
8. The overriding objective therefore, both to satisfy the Environmental Minimum Requirements (Information Paper E20) and to facilitate Bringing Into Use approvals under Schedule 17(9), is to reduce noise from the operational railway and altered roads<sup>2</sup> *'as far as reasonably practicable'*.
9. Operational noise mitigation measures will also need to comply with relevant undertakings and assurances given by the Secretary of State. Local authorities should be mindful of the nominated undertaker's responsibility to comply with undertakings and assurances since they will have formed part of the consideration of the issues, and the conferring of the powers, by Parliament.
10. Information Paper E20 sets out the following mitigation hierarchy and overarching principles to ensure that the mitigation measures are "reasonable":  
*'4.2 The following measures to control airborne noise from altered roads and the operational railway will be considered in the following order by the nominated undertaker:*
  - *reduce noise generation at source;*
  - *reduce noise propagation through the design, specification, construction and maintenance of noise fence barriers and/or landscape earthworks; and*
  - *reduce the amount of noise entering eligible properties through the offer of noise insulation.'*  
*'4.3 To ensure that the measures to control airborne noise are reasonable, the nominated undertaker will take account of the set of shared UK principles that underpin the Government's sustainable development strategy.'*
11. While the above sets out the overarching principles, there are benefits that can be realised when HS2 contractors and qualifying local authorities are supported by more detailed guidance.
12. This paper provides such guidance, to help ensure the information to be provided in support of Schedule 17 submissions is presented in a consistent manner.

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<sup>1</sup> Lowest and Significant Observed Adverse Effect Levels (LOAEL and SOAEL).

<sup>2</sup> The measures to reduce noise as far as reasonably practicable will also be applied to both a) roads altered temporarily; and b) permanently altered roads also temporarily used by HS2 construction traffic. In these cases the test of 'reasonableness' of noise mitigation will give due consideration to the duration of any temporary noise adverse effects. Where a road is altered temporarily and it only carries HS2 construction traffic then this is subject to the controls set out in Information Paper E23.

13. There may be certain requests for approval that require further information, Annex 1 to PFN17 provides general guidance on the level and type of information which may be appropriate to Schedule 17 decisions. Through pre-application discussions planning authorities should identify to the nominated undertaker any additional information it considers is necessary to make a decision on the forthcoming application.

### **Approach to Operational Noise Mitigation Design**

Rolling stock, track and maintenance specifications / designs set the noise source levels that are the basis for designing noise mitigation.

14. The rolling stock and track is being procured and designed in parallel so reasonable worst case noise emission assumptions will be used to inform a sustainable design. These assumptions will be based on analytical and empirical evidence and will be shared with local authorities.

15. The main works civils assets and landscape earthworks will be prioritised to reduce noise as an integral part of the new railway before turning to noise (fence) barriers or other means to meet the requirements of Information Paper E20.

### **Approach to Schedule 17(3) Requests**

16. Schedule 17(3) applications cannot be delayed until the rolling stock and track design has been completed.

17. The Main Works Civil Contractors (MWCC) and Enabling Works Contractors (where relevant) will develop their designs and draft their Schedule 17(3) requests for noise mitigation earthworks and noise fence barrier designs in relation to the railway and altered roads in line with this Planning Forum Note. The designs submitted will seek to:

- Maximise the sustainable opportunity to replace noise fence barriers by landscape earthworks, taking into account all other HS2 commitments and balancing other relevant principles of the HS2 Design Vision.
- Provide a reasonable worst case estimate of noise fence barriers (locations, lengths and heights) required in addition to the landscape earthworks and mitigation integrated into the design. The Schedule 17(3) approval will therefore define a reasonable worst case envelope for noise screens (noise fence barriers) within which a final noise fence barrier design can be delivered and which is expected to be of a smaller scale (locations, lengths and heights) once the design of rolling stock and track is confirmed.
- Where the final track and rolling stock design or other relevant factor allows for previously approved noise fence barriers to be changed in location and/or height, revised Schedule 17(3) approvals will be sought as necessary.

18. Early Schedule 17(3) pre-application discussions between contractors and Local Planning Authorities are encouraged in order to identify and agree reasonably practicable measures to minimise noise, taking into account the approach to noise mitigation design and the criteria set out in paragraph 22 below.

Where reasonably practicable noise mitigation through the civil assets is not sufficient on its own to meet the project's noise commitments, site specific mitigation may also be considered (e.g. local track design by way of track absorption and / or other local rail system mitigation).

**Information to be provided with requests for Schedule 17 (3) approvals**

19. Paragraph 7.5.2 of the Planning Memorandum states that when submitting designs for approval under Schedule 17 the nominated undertaker:

*'shall, where reasonably necessary for the proper consideration of the design proposed, provide an indication or outline of the appropriate mitigation measures (if any) which it intends to submit subsequently under paragraphs 9 or 12 of the Planning Conditions Schedule. Where works for approval will have a mitigating effect in relation to the operational noise from the railway or new roads, the nominated undertaker will provide information to show, so far as is reasonably practicable at that stage in the design process, how the noise mitigation performs and the expected conditions. While not material to approvals under paragraph 2 or 3 this information will provide re-assurance in advance of the request for approval under paragraph 9 that the mitigation is appropriate, and will present an opportunity to raise concerns.'*

20. Planning Forum Note 10 states that the information contained in this report will generally include the following:

- a) A description of the works.
- b) Plans showing the location of the works, the surrounding environment and receptor positions.
- c) Details of the methodology used in predicting noise and vibration levels;
- d) Assumptions relating to the acoustic performance of rolling stock and track;
- e) Assumptions relating to the acoustic performance of the work, such as long term acoustic performance, transmission, sound absorption/reflection, sound diffraction; and
- f) Tables setting out the predicted levels of noise and vibration and tabulated predictions at all individual receptors<sup>3</sup> where the LOAEL is likely to be exceeded.

21. Any predicted levels of noise provided in line with item f) above, that could 'environmentally significant' as described in paragraphs 4 and 5 of this note will be identified.
22. The 'description of the works', to be included in this report will set out how the works reduce operational noise 'as far as reasonably practicable'.
23. The description will summarise the overarching strategy adopted to reduce noise and how the works covered by the Schedule 17 application feature in the strategy. The description will then list and describe the relevant noise mitigation works included in the application, supported by proportionate and qualitative consideration of costs and benefits in relation to all relevant acoustic and non-acoustic criteria. These criteria are (in no particular order and to be considered in combination):
  27. Value for Money: (a qualitative comparison of the health and environmental benefit<sup>4</sup> of the noise reduction provided compared to the long-life cost of the mitigation);
  28. Engineering and operational practicability: (for example the practicability of a tall noise fence barrier on the shoulder of a tall railway embankment);
  29. Impacts on other environmental disciplines; (for example the potential for materially worsened landscape and visual impacts associated with taller noise fence barriers or landscape earthworks, or other conflict with the principles of the HS2 Design Vision); and
30. Stakeholder engagement: (for example a stated preference for a noise barrier in the form of landscape earthworks rather than a fence, or reduced noise barrier heights to reduce visual impact).
24. The above information will be presented using the appended template (Appendix A).
25. The details of the methodology used in predicting noise will include information in response to the following commitment to the Local Authority Noise Consortium (LANC)<sup>5</sup>: *'Validation reports for the prediction models used shall be provided to all Local Authority Environmental Health Departments with a declaration of the numerical values of prediction model uncertainty being applied by the nominated undertaker.'*

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<sup>3</sup> Receptor locations will be those defined in the HS2 ES.

<sup>4</sup> In line with the commitment to the Local Authority Noise Consortium (LANC) "to apply the November 2015 release of Government's Transport Analysis Guidance Unit A3 when valuing the effect of noise change and consider this value when assessing the benefit of applying operational airborne noise control measures to the Proposed Scheme."

<sup>5</sup> As recorded in the Phase 1 undertakings and assurances register (refs. 1026).

26. The assumptions to be provided will include information in response to the commitment to the Local Authority Noise Consortium (LANC) to make predictions in '*all reasonably foreseeable circumstances*'. This will include consideration, as relevant to the design stage, of: '*potential for freight operation*' (not proposed); '*planned operational speeds; high speed train noise and vibration characteristics; planned operational rail traffic volumes and compositions; degradation to rolling stock and/or track over the maintenance cycle of the railway; and prediction model uncertainty*'.

#### **Information to be provided with Schedule 17(9) requests**

27. When seeking Bringing Into Use requests under Schedule 17(9), a new or updated report using the template in Appendix A will be provided to the Local Planning Authority in order to assist it in determining whether there are any reasonably practicable measures which need to be taken for the purposes of mitigating the effect of the work or its operation on the local environment or local amenity and thus whether Bringing Into Use approval ought to be granted.
28. The report will contain updates to the information reported at the earlier Plans and Specifications stage, for example final track and rolling stock specifications.

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### Appendix A Reporting Template for Schedule 17(3) and 17(9) Requests

#### 1. Introduction

This section of the report will describe the purpose of the report, provide an introduction to the HS2 works which the report covers, the scope of the report and aim of the study, together with a general structure of the report.

#### 2. Policy, requirements and standards

This section will summarise the relevant requirements and standards, including the HS2 Act, Environmental Minimum Requirements, Environmental Statement and Undertakings & Assurances.

#### 3. Description of the works

The description of the works will set out how the works reduce operational noise 'as far as reasonably practicable'. The description will summarise the overarching strategy adopted to reduce noise and how the works covered by the relevant Schedule 17 application feature in the strategy.

The description will include the relevant noise mitigation included in the Schedule 17 application supported by proportionate and qualitative consideration of costs and benefits in relation to all relevant acoustic and non-acoustic criteria including:

- **Value for Money:** a qualitative comparison of the health and environmental benefit<sup>6</sup> of the noise reduction provided compared to the long-life cost of the mitigation;
- **Engineering and operational practicability:** (eg. practicability of a tall noise fence barrier on the shoulder of a tall railway embankment; the effect of a speed restriction on the business case; and compatibility with the HS2 Design Vision);
- **Impacts on other environmental disciplines;** (eg. the potential for materially worsened landscape and visual impacts associated with taller noise fence barriers or landscape earthworks); and
- **Stakeholder engagement:** (eg. a stated preference for a noise barrier in the form of landscape earthworks rather than a fence, or reduced noise barrier heights to reduce visual impact). A summary of any stakeholder engagement should include a brief evaluation of the responses received and reasons for selecting a particular noise mitigation option. The nature of the engagement activity will be determined on a case by case basis.

Plans will be included at a suitable scale showing the location of the HS2 works and proposed mitigation, the surrounding environment and receptor positions.

<sup>6</sup> In line with the commitment to the Local Authority Noise Consortium (LANC) *“to apply the November 2015 release of Government’s Transport Analysis Guidance Unit A3 when valuing the effect of noise change and consider this value when assessing the benefit of applying operational airborne noise control measures to the Proposed Scheme.”*



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### **4. Methodology**

This section will include:

- a description of the calculation methods used;
- the noise mapping software used with relevant software settings;
- reference all data sources relied on (e.g. design drawings or documents including calculation method validation reports); and
- a declaration of the numerical values of prediction model uncertainty being applied

### **5. Assumptions**

This section will include, as relevant to the design stage, information in response to the commitment to LANC to make predictions in “all reasonably foreseeable circumstances” as follows:

- Potential for freight operation (not proposed);
- Planned operational speeds;
- High speed train noise characteristics (the noise source terms);
- Planned operational rail traffic volumes, timetable and compositions;
- Degradation to rolling stock and/or track over the maintenance cycle of the railway;
- Prediction model uncertainty; and
- Other Assumptions (eg. assumptions on the acoustic performance of the work, such as the insertion loss, long term acoustic performance, transmission, sound absorption/reflection, sound diffraction).

### **6. Results**

This section will comprise tables setting out the predicted levels of noise and tabulated predictions at all individual receptors where the LOAEL is likely to be exceeded.

### **7. Conclusion**

A statement that all reasonable steps have been taken to minimise the combined airborne noise from the railway/ road, predicted in all reasonably foreseeable circumstances.

A statement as to whether the combined airborne noise from the railway/ road does or does not exceed the lowest observed adverse effect levels set out in Table 1 of Appendix B of Information Paper E20.

**HS2 Planning Forum Note**  
**Approved by Planning Forum on 22.07.2021**

A statement that where it has not been reasonably practicable to achieve this objective, the report shows how airborne noise has been reduced as far as is reasonably practicable.