

Control of construction noise and vibration

This factsheet outlines the objectives which are expected to be adopted and the measures that are expected to be put in place to control the effects of noise and vibration that might otherwise arise from the construction of the Proposed Scheme.

1. Introduction

- 1.1.1. High Speed Two (HS2) is the Government's proposal for a new, high speed north-south railway. The proposal is being taken forward in phases. Phase One will connect London with Birmingham and the West Midlands. Phase 2a will extend the route to Crewe. The Western Leg of Phase 2b comprises an extension of the network to Manchester and a connection to the West Coast Main Line at Golborne, and is referred to as the Western Leg hybrid Bill. The Eastern Leg of Phase 2b currently comprises an extension of the network from the West Midlands through the East Midlands to Leeds.
- 1.1.2. 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.
- 1.1.3. The construction and operation of Phase One of HS2 is authorised by the High Speed Rail (London – West Midlands) Act (2017). In July 2017, the Government introduced a hybrid Bill to Parliament to seek powers for the construction and operation of Phase 2a.
- 1.1.4. In February 2020, the Government announced its intention to draw up an Integrated Rail Plan. This will recommend a way forward on scoping, phasing and sequencing the delivery of HS2 Phase 2b, Northern Powerhouse Rail, Midlands Rail Hub and other proposed rail investments across the north. At the same time, the Government asked HS2 Ltd to prepare the Western Leg hybrid Bill, provided it does not prejudice any recommendations or decisions that will be taken in this plan, which will be published by the end of the year.
- 1.1.5. It is intended to deposit a Western Leg hybrid Bill seeking powers to construct and operate this phase in Parliament in early 2022 or sooner if possible (the Proposed Scheme). The work to produce the Bill will include an Environmental Impact Assessment (EIA), the results of which will then be reported in an Environmental Statement (ES). The ES would be submitted alongside the Bill when it is introduced to Parliament. As was the case with Phase One and Phase 2a, when the Bill is introduced to Parliament the Secretary of State will also publish draft Environmental Minimum Requirements (EMRs). The EMRs will set out the environmental and sustainability commitments that will be observed in the construction of the Proposed Scheme.
- 1.1.6. A series of information papers were produced for the Phase One and Phase 2a hybrid Bills, explaining the commitments made in those Bills and EMRs. It is the Secretary of State's intention to follow a similar process for the Western Leg Bill. These information papers will be used to provide information about the Proposed Scheme itself, the powers contained in the Bill and how decisions on

the Proposed Scheme have been reached. It is currently proposed that these information papers for the Western Leg of Phase 2b will be published at the time the Bill is introduced in Parliament.

- 1.1.7. The Secretary of State for Transport will be 'the Promoter' of the Western Leg Bill. The Promoter will also eventually appoint a body responsible for delivering the Proposed Scheme under the powers to be granted by the Bill. This body will be known as the 'nominated undertaker'. There may well be more than one nominated undertaker. However, any and all nominated undertakers will be bound by the obligations contained in the Bill, the policies established in the Western Leg EMRs and any commitments provided in the Western Leg information papers.
- 1.1.8. These Western Leg factsheets have been produced to provide information on the emerging proposals for measures to manage the design process for the Proposed Scheme and to control impacts which may arise from the construction and operation of the Proposed Scheme. These measures may then be applied to the Western Leg as commitments made through the eventual Bill, EMRs or information papers.

2. Overview

- 2.1.1. This factsheet outlines the objectives which are expected to be adopted and the measures that are expected to be put in place to control the effects of noise and vibration that might otherwise arise from the construction of the Proposed Scheme.
- 2.1.2. Noise, and sometimes vibration, from the construction of the Proposed Scheme could result in adverse impacts on people nearby.
- 2.1.3. The Construction Noise and Vibration Policy which is expected to be adopted for the Proposed Scheme is set out in Appendix A.
- 2.1.4. The noise insulation and temporary re-housing policy currently expected to be adopted for the Proposed Scheme is set out in Appendix B.
- 2.1.5. Appendix C describes an alternative scheme for people who would be eligible to be temporarily re-housed to request to receive cash compensation to stay in their home. This would be known as the Prolonged Disruption Compensation Scheme (PDCS).
- 2.1.6. A glossary of technical terms is provided in Appendix D.

3. Objectives

- 3.1.1. The nominated undertaker would take all reasonable steps to design and construct the Proposed Scheme so that noise and vibration from construction does not exceed the lowest observed adverse effect levels¹ set out in Tables 1 and 3 of Appendix A.
- 3.1.2. Where it is not reasonably practicable to achieve this objective, the nominated undertaker would reduce noise and vibration from the construction of the Proposed Scheme as far as is reasonably practicable.
- 3.1.3. Where noise or vibration from the construction of the Proposed Scheme exceed the significant observed adverse effect levels set out in Tables 1 and 3 of Appendix A, noise insulation or temporary re-housing would be offered with the aim that noise and vibration from the construction of the Proposed Scheme does not give rise to significant adverse effects on health and quality of life. Eligibility for noise insulation and temporary re-housing is explained in Appendix B.
- 3.1.4. Effects on health and quality of life are primarily avoided and minimised through the control of noise and vibration at residential dwellings. It is recognised that effects can also occur when people are engaged in noise sensitive activities away from their home. As a result, reasonable steps would also be taken to control noise and vibration from the construction of the Proposed Scheme to the levels set out in Tables 2 and 4 of Appendix A for noise sensitive non-residential buildings and external amenity spaces (see Appendix D for Glossary).
- 3.1.5. The Lowest Observed Adverse Effect Levels and Significant Observed Adverse Effect Levels presented in Tables 1 and 3 of Appendix A do not prejudice local authorities' powers and obligations under Sections 60 and 61 of the Control of Pollution Act 1974.

4. Control measures

- 4.1.1. The likely noise and vibration impact from the construction of the Proposed Scheme will continue to be assessed and the findings reported in the ES to be deposited alongside the Hybrid Bill.

¹ Noise characteristics such as impulses and tones will be considered as set out within BS5228-1:2009+A1:2014. Code of practice for noise and vibration control on construction and open sites. British Standards Institution.

- 4.1.2. The draft Code of Construction Practice (CoCP)² sets out the control measures that are expected to be applied by the nominated undertaker to minimise adverse impacts and effects. This will be developed as part of the ES.
- 4.1.3. For the Noise Insulation and Temporary Re-housing Policy which is expected to be adopted see Appendix B.

5. More information

- 5.1.1. Further factsheets and details on the Proposed Scheme can be found at:
www.hs2.org.uk/phase2b

² A separate factsheet relating to the draft Code of Construction Practice has been published.

Appendix A

The Proposed Scheme Airborne Noise Policy for altered roads and the operational railway³

The Noise Policy Statement for England (2010)

1. The aims set out in the Noise Policy Statement for England (NPSE) apply to the design, construction and operation of the Proposed Scheme.

<p style="text-align: center;">Noise Policy Aims</p> <p>Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:</p> <ul style="list-style-type: none">• avoid significant adverse impacts on health and quality of life;• mitigate and minimise adverse impacts on health and quality of life; and• where possible, contribute to the improvement of health and quality of life.
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2. Government's guiding principles of sustainable development include: ensuring a strong, healthy and just society; using sound science responsibly; living within environmental limits; achieving a sustainable economy; and promoting good governance.
3. There is a need to integrate consideration of the economic and social benefit of the activity or policy under examination with proper consideration of the adverse environmental effects, including the impact of noise on health and quality of life. This should avoid noise being treated in isolation in any particular situation.
4. The first two aims of the NPSE follow established concepts from toxicology that are applied to noise impacts, for example, by the World Health Organisation. They are:
 - NOEL – No Observed Effect Level - the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise; and
 - LOAEL – Lowest Observed Adverse Effect Level - the level above which adverse effects on health and quality of life can be detected.
5. The NPSE extends these to the concept of a significant observed adverse effect level.

³ Note: all sound levels reported in this Appendix are outdoor free-field levels unless otherwise stated

- SOAEL – Significant Observed Adverse Effect Level - The level above which significant adverse effects on health and quality of life occur.
6. The NPSE notes "It is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times".

Planning Practice Guidance - Noise (2014)

7. Government's Planning Practice Guidance on noise (PPG) provides guidance on the effects of noise exposure, relating these to people's perception of noise, and linking them to the NOEL and, as exposure increases, the LOAEL and SOAEL.
8. As exposure increases above the LOAEL, the noise begins to have an adverse effect and consideration needs to be given to mitigating and minimising those effects, taking account of the economic and social benefits being derived from the activity causing the noise. As the noise exposure increases, it will then at some point cross the SOAEL boundary.
9. The LOAEL is described in PPG as the level above which "noise starts to cause small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life."
10. PPG identifies the SOAEL as the level above which "noise causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area."

HS2 Environmental Policy (2019)

11. The HS2 environmental policy⁴ sets out HS2 Ltd's commitment to be an exemplar project. It further states that we will seek to minimise the impact of HS2 construction and operation on people and the environment including effects from air pollution, flooding and noise & vibration.

LOAELs for construction noise and vibration

⁴ <https://www.gov.uk/government/publications/hs2-environmental-policy>

12. The sound levels that are considered the LOAELs for construction noise are set out in Tables 1 and 3.
13. These levels are the 'lower cut offs' identified in Part 1 of the Code of practice for noise and vibration control on construction and open sites (BS5228).
14. Vibration levels (indoors, near the centre of any dwelling room on the ground floor) of 0.2 VDV m/s^{1.75} daytime (0700-2300) and/or 0.1 VDV m/s^{1.75} night time (2300 – 0700) are considered the LOAELs for ground-borne vibration.
15. Part 1 of the Guide to evaluation of human exposure to vibration in buildings (BS6472)⁵, identifies that there is a low probability of adverse comment from people exposed to these levels inside their homes.

SOAELs for construction noise and vibration

16. The sound levels that are considered the SOAELs for construction noise are set out in Table 1 and 3.
17. These are levels identified in Part 1 of BS5228 that, if exceeded for "significant" periods of time (either continuous or sporadic), could result in "widespread community disturbance, or interference with activities or sleep is likely to occur".
18. Vibration (indoors, near the centre of any dwelling room on the ground floor) of 0.8 VDV m/s^{1.75} daytime (0700-2300) and/or 0.4 VDV m/s^{1.75} night time (2300 – 0700) are considered the SOAELs for ground-borne vibration.
19. Part 1 of BS6472 identifies that adverse comment from people exposed to these levels inside their homes is probable.

Construction noise and vibration impact levels for non-residential property

20. The impact levels defined in Tables 2 and 4 are in line with the relevant guidance for the generic classification of non-residential receptors under consideration:
 - BS8233 (2014) Guidance on sound insulation and noise reduction in buildings. British Standards Institution;
 - Education Funding Agency (2012). Acoustics Performance Standards for the Priority Schools Building Programme. Department for Education. The Stationery Office Limited;

⁵ BS6472-1 (2008). Guide to Evaluation of Human Exposure to Vibration in Buildings. Part 1: Vibration Sources other than Blasting. British Standards Institution.

- Stationery Office (2011) Acoustics: Technical Design Manual 4032:0.3. The Stationery Office Limited; and
- British Council for Offices (2009). Guide to Specification. The British Council for Offices.

Table 1: Construction noise effect levels for permanent residential buildings (outdoor at the façade)⁶

Day	Time (hours)	Averaging Period T	Lowest Observed Adverse Effect Level $L_{pAeq,T}$ (dB)	Significant Observed Adverse Effect Level $L_{pAeq,T}$ (dB)
Mondays to Fridays	0700 - 0800	1 hour	60	70
	0800 - 1800	10 hours	65	75
	1800 - 1900	1 hour	60	70
	1900 - 2200	1 hour	55	65
Saturdays	0700 - 0800	1 hour	60	70
	0800 - 1300	5 hours	65	75
	1300 - 1400	1 hour	60	70
	1400 - 2200	1 hour	55	65
Sundays & Public Holidays	0700 - 2200	1 hour	55	65
Any night	2200 - 0700	1 hour	45	55

Table 2 - Noise impact levels for noise sensitive non-residential buildings, outdoor living spaces and shared community open areas (outdoor free field)

Examples	Day 0700-2300	Night 2300-0700
Large and small auditoria; concert halls; sound recording & broadcast studios; and theatres	60 dB L_{pAFmax} or 50 dB $L_{pAeq,T}$	60 dB L_{pAFmax} or 50 dB $L_{pAeq,T}$
Places of meeting for religious worship; courts; cinemas; lecture theatres; museums; and small auditoria or halls	50 $L_{pAeq,T}$	n/a
Schools; colleges; hospitals; hotels; and libraries	50 dB $L_{pAeq,T}$	45 dB $L_{pAeq,T}$
Offices and external amenity spaces	55 dB $L_{pAeq,T}$	n/a

⁶In line with the code of practice for noise and vibration control on construction and open sites (BS5228-1) significant adverse effects on health and quality of life are expected to occur when SOAELs are exceeded for at least the time periods set out in Appendix B Paragraph. In addition, where existing ambient levels exceed the SOAELs set out in Table 1, significant adverse effects on health and quality of life are expected to occur when construction noise levels are at least equal to the current ambient level and are exceeded for at least the time periods set out in Appendix B Paragraph 2.

Table 3 - Ground-borne noise and vibration⁷ effect levels for permanent residential buildings (indoors near but not at the centre of any habitable room)

Ground-borne noise	Lowest Observed Adverse Effect Level	L_{pASmax} [dB]	35
	Significant Observed Adverse Effect Level	L_{pASmax} [dB]	45
Vibration	Lowest Observed Adverse Effect Level	$VDV_{day}[m/s^{1.75}]$	0.2
		$VDV_{night}[m/s^{1.75}]$	0.1
	Significant Observed Adverse Effect Level	$VDV_{day}[m/s^{1.75}]$	0.8
		$VDV_{night}[m/s^{1.75}]$	0.4

Table 4 - Ground-borne vibration impact levels for non-residential buildings (indoors near but not at the centre of floors)

Examples	$VDV_{day}[m/s^{1.75}]$	$VDV_{night}[m/s^{1.75}]$
Hotels; hospital wards; and education dormitories	0.2	0.1
Offices; Schools; and Places of Worship	0.4	n/a
Workshops	0.8	n/a
Vibration sensitive research and manufacturing (e.g. computer chip manufacture); hospitals with vibration sensitive equipment / operations; universities with vibration sensitive research equipment / operations	Risk assessment will be undertaken based on the information currently available for the relevant equipment / process, or where information provided by the building owner or equipment manufacturer.	

⁷ BS 6472-1:2008 Guide to evaluation of human exposure to vibration in buildings Part 1

Appendix B

Noise insulation and temporary re-housing policy

1. This Policy explains how the noise insulation and temporary re-housing schemes work. The noise insulation and temporary re-housing policy will be implemented together with any relevant procedures set down in the nominated undertaker's Community Engagement Framework to ensure that residents understand how any concerns raised will be made known to the nominated undertaker and the lines of communication available through which action will be initiated.

Buildings and occupiers eligible under the policy

2. Noise insulation and temporary re-housing arrangements apply to dwellings and other buildings lawfully used for residential purposes⁸.
3. To be eligible you must own or occupy a residential dwelling and the dwelling must be one in which the predicted or actual noise exceeds any of the relevant thresholds in Table 5 for:
 - a period of 10 or more days of working in any 15 consecutive days during construction; or
 - for a total of 40 days or more in any 6 consecutive months during construction.
4. The scheme applies to all rooms, with a qualifying door or window, which are not solely used as a kitchen, utility room, bathroom, cellar or sanitary accommodation. On your behalf the nominated undertaker will prepare the predictions and monitor the actual construction noise levels in consultation with the relevant local authority.

Noise insulation and temporary re-housing thresholds

5. Full details of the noise thresholds for both construction noise insulation and temporary re-housing are set out in the draft Code of Construction Practice and reproduced in Table 5 below.

⁸ The meaning of Regulation 7 of The Noise Insulation (Railways and Other Guided Transport Systems Regulations 1996 shall be used to identify those buildings eligible under the policy, excluding that part of regulation 7 (1) which refers to distances from running rail or the nearest apparatus which is not applicable to noise from construction sites.

Table 5: Noise thresholds for noise insulation/temporary re-housing

Day	Time (hours)	Averaging Period T	Noise Insulation trigger level LAeq,T (dB) *	Temporary re-housing trigger level LAeq,T (dB) *
Monday to Friday	0700 - 0800	1 hour	70	80
	0800 - 1800	10 hours	75	85
	1800 - 1900	1 hour	70	80
	1900 - 2200	1 hour	65	75
Saturday	0700 - 0800	1 hour	70	80
	0800 - 1300	5 hours	75	85
	1300 - 1400	1 hour	70	80
	1400 - 2200	1 hour	65	75
Sunday & Public Holiday	0700 - 2200	1 hour	65	75
Any night	2200 - 0700	1 hour	55	65

*Proposed Scheme construction sound only. Trigger levels are defined as 1m in front of the closest facade of a habitable room.

** Where the current ambient noise level is greater than the noise insulation trigger level:

- the ambient noise level shall be used as the noise insulation trigger level, and
- the ambient noise level +10dB shall be used as the temporary rehousing trigger level.

Special cases

- Some buildings and/or their occupants may not be adequately protected by the thresholds in Table 5. Specific noise trigger levels and/or alternative noise control measures will be considered on a case by case basis for situations such as: residential homes where noise insulation does not represent a viable option including houseboats or mobile homes, night workers, those who regularly work from home needing a quiet environment to work in and those that have a medical condition which will be seriously aggravated by construction noise.
- Residential buildings exposed to levels of ground-borne noise or vibration that are predicted or measured to exceed the significant observed adverse effect levels set out in Table 3 of Appendix A, for two or more consecutive days or nights, will also be considered on a case by case basis.
- Where appropriate, the nominated undertaker will liaise with the local authority to determine appropriate noise insulation and temporary rehousing thresholds for residential special cases, where these are not explicitly set out above.
- Whilst the discretionary arrangements described above only apply to residential properties, buildings which may be particularly sensitive to noise (including,

commercial, educational and community) will be subject to individual consideration by the nominated undertaker on the application of anybody or person responsible for, or holding a legal interest or estate in, any such building.

Noise insulation package details

10. The package will consist of:

- secondary glazing for living room and bedroom windows on eligible facades, plus supplementary ventilation if required ;
- blinds on facades where there is a need to control solar gain; and
- insulation treatment for external doors on eligible facades.

11. Depending on the type of window you already have, secondary glazing will usually comprise another pane of glass in its own frame (wood, metal or plastic) 100-200mm inside the existing window. This can be opened for cleaning or ventilation. Secondary glazing is different to double glazing. Double glazing consists of two panes of glass in the same casing, typically around 20mm apart which replace the existing window. If your property already has double glazing, this will not affect your eligibility under this policy. Following a survey of your property, you will be advised as to the effectiveness of any currently installed double glazing in terms of attenuation of external noise, compared to the offer of secondary glazing. However, you are not obliged to accept the offer of insulation if you do not think you need it. You may, at your own discretion, and accepting the reduce level of noise attenuation, choose only to have ventilation units and blinds installed.

12. Windows work best to control noise when closed – so alternative ventilation, provided by means such as a small electric ventilator fan located in an outside wall, is usually required to enable windows to be kept closed when the noise is at its highest.

13. On some facades, solar gain on sunny days can make rooms too hot to keep windows closed. Subject to the agreement of the claimant, blinds will be fitted between the main window and the secondary glazing to minimise this effect. If the claimant chooses not to accept blinds as part of the noise insulation package the possible impacts of this will be explained to them. Blinds will not be retrofitted post installation of the noise insulation package should the claimant change their mind at a later date.

14. The nominated undertaker may be able to install a “secondary” door to improve noise insulation. If the design of your house prevents this, other methods may be used.

15. There may be circumstances in which it is not possible to fit secondary glazing or alternative ventilation. Such cases will be considered on a case by case basis. Where eligibility is confirmed, appropriate alternative mitigation measures will be considered - e.g. local screening. Alternatively, temporary re-housing may be offered even if the Temporary Re-housing thresholds are not exceeded.

Temporary re-housing package details

16. The nominated undertaker will offer to arrange your temporary re-housing package, which will include the following:
- Temporary alternative accommodation;
 - Removals;
 - Storage and insurance of your personal effects;
 - Insurance for the house you vacate;
 - Where appropriate your pets to go into kennels, catteries etc.; and
 - Where appropriate the disconnection and later reconnection of gas, water, electricity etc.
17. Alternatively, you can choose to make these arrangements yourself. In such circumstances, you will be supplied with information and guidance on all the matters listed above, to enable you to make the arrangements yourself; and you will be offered help you ensure that the costs you incur can be agreed and paid to you as soon as practicable.
18. Irrespective of how your temporary re-housing arrangements are made, the nominated undertaker will bear (or reimburse you with) the reasonable costs associated with your temporary re-housing. The nominated undertaker will also bear any increased costs of maintaining or insuring your own home resulting from your temporary relocation. These include any additional council tax liability which is due on your own home whilst it is unoccupied.
19. If you have pre-existing obligations to maintain your property on a regular basis under the terms of your lease or as a result of statutory requirements, the nominated undertaker will ensure that you have suitable access to your own property, where reasonably practicable, to enable you to fulfil such obligations whilst you are away.
20. However, the acceptance of any offer of temporary re-housing is discretionary. You do not have to move if you do not want to. But if you do decide to stay, you cannot claim compensation for disruption due to the noise of the works.
21. If you are a tenant and are offered temporary re-housing during the construction works, you will still be responsible for the rent, bills and other outgoings at your current home and you will still be a tenant there. The offer of temporary re-housing

will include the additional cost of the relocation accommodation. You are free to visit and use your current home as you wish during the relocation, subject to the terms of your existing tenancy. If your tenancy agreement expires during the relocation you should (if you want to) renew it with your landlord in the normal way. If you choose not to renew your tenancy, grant to meet the cost of the alternative accommodation will cease when your tenancy expires.

22. If you are a landlord, your tenant will remain your tenant and remain liable to pay rent in accordance with your agreement with them.
23. The type of re-housing offered will depend on the duration of the relocation. For short durations hotel accommodation may be appropriate. For longer periods, alternative rented accommodation would be more suitable. In all cases account will be taken of your existing accommodation as far as possible.
24. The accommodation offered will be governed by what is available at the time and your reasonable requirements. Some people may be prepared to move to another area on a temporary basis if they would be nearer friends, family or work. Others may need to stay in the same area.
25. You may be eligible to receive both noise insulation and temporary re-housing, but this will depend on the circumstances. The noise generated by the works will vary over the course of the job. In some areas, the noise may qualify for temporary re-housing for one period, and noise insulation only for a different period. In these circumstances you would receive a temporary re-housing offer for one period and a noise insulation offer for the other period. In other areas, a home may qualify for temporary re-housing for a given period, but outside that period the noise may not trigger a separate noise insulation offer. In such a case, a temporary re-housing offer only would be made and noise insulation would not be offered.
26. However, if you qualify for temporary re-housing but not noise insulation, you do not have to accept the offer of re-housing and may request noise insulation instead. You will be made aware of any shortfall in sound insulation performance of the noise insulation in relation to the thresholds presented in Table 5 and that the degree of disturbance could be high even with the noise insulation in place. The nominated undertaker will take account of the performance of the noise insulation package when considering any later request you make for temporary re-housing under this scheme.

Procedure for identifying qualifying properties and implementing noise insulation and temporary re-housing measures

27. Initially eligibility for the scheme depends on the predicted noise level following the assessment that will be carried out for that purpose once detailed construction plans are in place.
28. If those noise predictions indicate that a property is eligible, the offer of noise insulation or grant for noise insulation will be made and, if accepted and all necessary approvals obtained, the insulation will be installed before the works commence. However, the actual noise may turn out to be more or less than the prediction and therefore the noise levels will be monitored at locations in consultation with the relevant local authority as work progresses. If it is found that noise levels are not as high as expected, the insulation package will not be removed. If it is found that the noise levels are higher than expected and meet the thresholds for temporary rehousing, you will be informed and the provisions under this policy will apply.
29. If those noise predictions indicate that a property is eligible, the offer of temporary re-housing will be made and, if accepted, arrangements for temporary alternative accommodation and associated services made. However, the actual noise may turn out to be more or less than the prediction and therefore the noise levels will be monitored as work progresses. If it is found that noise levels are not as high as expected, your temporary re-housing arrangements will still continue.
30. The procedure comprises of the following steps:
- the nominated undertaker will carry out an assessment in every area likely to be affected by HS2 construction noise, so as to predict what the noise levels will be;
 - the nominated undertaker will then notify owners or occupiers of buildings which, on the basis of the assessment, the nominated undertaker considers qualify, and accordingly which type of assistance (noise insulation or temporary re-housing) they are eligible for, The nominated undertaker will also send an application form at this stage, which will require you to confirm whether or not you are interested in receiving the assistance you are eligible for ;
 - if you receive such a notice and application form, you should complete and return the form to the nominated undertaker, confirming whether or not you are interested in receiving the assistance you are eligible for. If you choose not to accept at this stage, you are able to change your mind later by notifying the nominated undertaker. However, if you do change your mind, this is likely to result in a delay to you receiving the assistance you are eligible for;
 - if you confirm that you are interested in receiving the assistance you are eligible for, the nominated undertaker will then arrange to visit you in order to:
 - discuss the application with you generally;
 - view your home and in the case of noise insulation take any necessary measurements; and
 - identify any special issues or requirements (such as any other approvals that may be required in the case of noise insulation).

- the nominated undertaker will then assess your case in detail and, if it is accepted, notify you of:
 - any further survey likely to be needed at your house, and (in insulation cases) the work the nominated undertaker thinks should be done and their offer to do it; or
 - (in re-housing cases) either his proposals to re-house you temporarily or the information and guidance you need to make your own rehousing arrangements. In either case the proposals will be discussed with you and you will not be under any obligation to accept the offer.
- assuming you agree, the noise insulation package or temporary re-housing plan (as the case may be) is then put into effect;
- the nominated undertaker will either offer to do the work at their expense, or offer grant aid for you to carry out the works;
- the nominated undertaker reimburses you for any agreed costs, which you have incurred or (in grant cases) pays the balance of the grant. Alternatively, the nominated undertaker pays for noise insulation or removal/re-housing costs where the work has been done by the nominated undertaker. A noise insulation package will not be offered if the noise threshold is only exceeded whilst you are in temporary alternative accommodation; and
- the nominated undertaker asks you to ensure that you provide adequate access for the survey and installation, and if you should incur expense in arranging access, the nominated undertaker will reimburse you, provided the amount is agreed with the nominated undertaker before the cost is incurred.

31. In the cases where the nominated undertaker offers you a grant so that you can have the work done yourself, the grant would be made on the following conditions:

- you must first obtain three independent written quotations;
- the acoustic performance of the noise insulation works must be equivalent to or greater than that provided by the measures specified in the relevant specifications;
- you must select the quote that represents the best price;
- the amount of the grant will be for whichever is the lesser amount of either your selected quote, or the actual cost of the installation;
- the nominated undertaker may pay 10% of the estimated cost in advance, and the balance when the work is satisfactorily completed;
- the work must be completed within 12 months of the advance payment, or in advance of the HS2 construction works for which insulation is needed, whichever is the earlier, save in exceptional circumstances and with the nominated undertaker's agreement. If this condition is not complied with, no further grant will be paid, and any payments already made will have to be repaid to the nominated undertaker; and

- you must obtain the consent of any other person or body that may be required to permit the carrying out of insulation work (e.g. your landlord if you are a tenant and any planning/building consents required from your local authority).
32. Please note that the scheme cannot be used for work needed to remedy existing building defects, including the replacement of existing windows if these are in a poor state of repair.
 33. The scheme also covers the making good of the existing fabric and decoration (not including curtains) after the installation of secondary glazing, ventilation equipment, and second doors, including the adaptation of any existing pelmet and curtain rack. If you wish to have the noise insulation package removed following the completion of the construction works, the scheme also covers the cost of removal.
 34. A decision to accept an offer of noise insulation must be made within a certain timeframe. Specifically an offer must be accepted no later than 6 months after the date it is made in writing to you or one month before the installation of other noise insulation at eligible properties affected by the same HS2 construction works, whichever is the sooner. In the latter case, you will receive notice of the cut-off date for acceptance at the time the offer is made or shortly thereafter. If you do not respond within the time-frame due to circumstances beyond your control, due consideration will be given to your case but the construction works will continue as programmed. If you choose not to accept the offer of noise insulation, you may change your mind later. However, this is likely to result in a delay in the package being installed at your home.
 35. If a grant is offered and you accept it, you must have the works carried out to the specifications in the offer. Otherwise you must repay the grant. You are not obliged to accept the offer if you do not think you need it.
 36. If you are a landlord or tenant of a property qualifying for noise insulation measures, the nominated undertaker will try to reach agreement between all parties where possible, on their installation. In any event, the party wishing to have the work carried out is requested to do all that they reasonably can to reach agreement with all other interested parties that can influence whether or not the work can be carried out.
 37. If your home has already had insulation work carried out or a grant for such work in respect of another public works scheme (such as a road or earlier railway works), the existing noise insulation will be inspected to ensure that it is in a state adequate to attenuate the construction noise to the extent that it should. If it is not, the nominated undertaker will offer to carry out the works to bring your existing noise insulation package up to meet the relevant specifications. Alternatively, you can receive a grant if you wish to carry out these works yourself.

38. If you have had a noise insulation package installed privately, it will be inspected to check whether it is in a state adequate to attenuate the construction noise to the extent that it should. The person who incurred the cost of those works can receive a grant in respect of the work already done. The amount of grant offered will be calculated as follows:

- if your noise insulation package meets the relevant specifications and you sought at least three independent quotations in seeking and selecting a noise insulation package, the amount of grant you will receive will be for the full cost of the works you have incurred minus any costs attributable to work you have carried out in excess of the relevant specifications;
- if your noise insulation package meets the relevant specifications and you have not sought at least three independent quotations in seeking and selecting a noise insulation package, the amount of the grant you will receive will be equal to the cost which would have been incurred by the nominated undertaker if they had provided and installed the noise insulation package in accordance with the procedure set out in paragraph 29;
- if your noise insulation package does not meet the relevant specifications, the amount of grant you will receive will be equal to the amount which would have been incurred by the nominated undertaker if they had provided and installed the noise insulation package in accordance with the procedure set out in paragraph 29, minus the cost of the remedial works incurred by the nominated undertaker to bring your package up to meet the relevant specifications.

Appendix C

1. This Appendix outlines the prolonged disruption compensation scheme for those particularly affected by construction works during the building of the Proposed Scheme.
2. The Policy adds to the noise insulation and temporary re-housing measures set out in this Information Paper. It will modify and enhance those measures to:
 - give people more choice to remain in their homes, help avoid the disruption of being temporarily re-housed and support them with cash compensation to provide alternative respite from such works; and
 - in special circumstances, give owner occupiers of residential dwellings the option of requiring the Secretary of State to purchase their property.
3. The prolonged disruption compensation arrangements apply to dwellings and other buildings lawfully used for residential purposes.
4. The scheme is tiered:
 - As a starting point, the nominated undertaker will take all reasonable steps to keep construction noise and vibration below the lowest observed adverse effect levels. Principally this will be through the design of the work and the timing of construction activity;
 - Where the above is not practicable, the nominated undertaker will offer affected residents noise insulation;
 - Where temporary rehousing thresholds (set 10 decibels higher than for noise insulation) are breached for 10 or more days of working in any consecutive 15-day period, eligible residents will have a further choice between temporary re-housing or a cash payment; and
 - Where noise levels are predicted to exceed the temporary re-housing threshold for three or more consecutive months, property owners have the right to request the Secretary of State to purchase their property for its full unblighted value.
5. The scheme is open to both those who own and rent their homes, on the principle that disturbance from construction makes no distinction on the basis of tenure. Nor does it include a 'no prior knowledge' date, as disruption may affect different properties at different times over the construction phase.
6. The scheme will come into operation prior to the commencement of the main construction works. More detailed guidance on the scheme, including a statement of the criteria for eligibility to make an application for compensation under the scheme, will be published in advance of the date on which the scheme comes into operation.

Appendix D

Glossary

Decibel (dB) - Between the quietest audible sound and the loudest tolerable sound there is a ten million to one ratio in sound pressure (measured in Pascal (Pa)). Because of this wide range, a level scale called the decibel (dB) scale, based on a logarithmic ratio, is used in sound measurement. Audible sound covers a range of approximately 0-140 dB.

dB(A) - The human ear system does not respond uniformly to sound across the detectable frequency range and consequently instrumentation used to measure sound is weighted to represent the performance of the ear. This is known as the 'A weighting' and is written as 'dB(A)'.

Outdoor free-field - with reference to sound pressure measurement locations: a position more than 3.5m from all sound-reflecting surfaces other than the ground.

At the façade - with reference to sound pressure measurement locations: a position 1m from the building.

LpAeq, T - An index used internationally to measure and assess environmental sound from sources such as roads, railways and construction. It is defined as the notional unchanging level that would, over a given period of time (T), deliver the same sound energy as the actual time-varying sound over the same period. Hence fluctuating sound levels can be described in terms of an equivalent single figure value.

LpASmax - the maximum A-weighted sound pressure level attained during a given time interval, T (30 seconds, 5 minutes etc) measured using a noise meter's slow (S) time weighting setting. It is used internationally in the measurement and assessment of ground-borne noise from railways.

Relevant specifications - means the items in Part I of Schedule 1 to the Noise Insulation (Railways and Other Guided Transport Systems) Regulations 1996 except where they are amended by the provisions of this Information Paper, such of the items in Part II of Schedule 1 to the Regulations as may be approved by the Secretary of State and such of the specifications set out in Part III of Schedule 1 to the Regulations as are applicable in the circumstances of the case or items whose performance is equivalent thereto.

Qualifying door - an external door opening directly into an eligible room which is in that part of the facade that exceeds the relevant thresholds in Table 5.

Qualifying window - a window in an eligible room which is in that part of the facade in respect of which the relevant noise level satisfies the requirements of Table 5

Vibration Dose Value (VDV) - measure used to estimate the probability of adverse comment which might be expected from human beings experiencing vibration in buildings.

