



# High Speed Rail (West Midlands - Crewe)

Supplementary Environmental Statement and  
Additional Provision Environmental Statement

Volume 5: Technical appendices

Sound, noise and vibration report (SV-002-000)



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Additional Provision Environmental Statement  
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## Department for Transport

High Speed Two (HS2) Limited has been tasked by the Department for Transport (DfT) with managing the delivery of a new national high speed rail network. It is a non-departmental public body wholly owned by the DfT.

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# 1 Introduction

## 1.1 Structure of the sound, noise and vibration appendix

- 1.1.1 This document is an appendix which forms part of Volume 5 of the Supplementary Environmental Statement (SES) and Additional Provision Environmental Statement (AP ES).
- 1.1.2 This appendix provides an update to the sound, noise and vibration assessment presented in the High Speed Rail (West Midlands - Crewe) Environmental Statement (ES)<sup>1</sup> published in July 2017 (the main ES), as a result of the supplementary environmental information, changes and corrections included within the SES (Part 1); and the amendments included within the AP ES (Part 2). This update should be read in conjunction with Volume 5: Appendix SV-001-000, Volume 5: Appendix SV-002-001, Volume 5: Appendix SV-002-002, Volume 5: Appendix SV-002-003, Volume 5: Appendix SV-002-004 and Volume 5: Appendix SV-002-005 of the main ES.
- 1.1.3 This appendix covers the following community areas (CA):
- CA1: Fradley to Colton;
  - CA2: Colwich to Yarlet;
  - CA3: Stone and Swynnerton;
  - CA4: Whitmore Heath to Madeley; and
  - CA5: South Cheshire
- 1.1.4 For each community area, the appendix is structured as follows:
- Part 1: Supplementary Environmental Statement; and
  - Part 2: Additional Provision Environmental Statement.
- 1.1.5 Maps referred to in this appendix are contained in the Volume 5: Sound, Noise and Vibration Map Book in both the main ES and the SES and AP ES.

## 1.2 Scope and methodology

- 1.2.1 The assessment scope, key assumptions and limitations for sound, noise and vibration are as set out in the main ES Environmental Impact Assessment Scope and Methodology Report (see main ES Volume 5: Appendix CT-001-001<sup>2</sup>).
- 1.2.2 In order to differentiate between the original proposals assessed as part of the main ES and subsequent changes, the following terms are used throughout the SES and the AP SES to define the scheme as it relates to the HS2 Phase 2a project:
- 'the original scheme' - the Bill scheme submitted to Parliament in July 2017,

<sup>1</sup> HS2 Ltd (2017), *High Speed Rail (West Midlands-Crewe) Environmental Statement*, <https://www.gov.uk/government/collections/hs2-phase-2a-environmental-statement>.

<sup>2</sup> HS2 Ltd (2017), *High Speed Two (HS2) Phase 2a (West Midlands - Crewe), Environmental Impact Assessment Scope and Methodology Report, Volume 5: Appendix CT-001-001*. [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/627187/E23\\_EIA\\_SMR\\_CT-001-001\\_WEB.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/627187/E23_EIA_SMR_CT-001-001_WEB.pdf)

which was assessed in the main ES;

- 'the SES scheme' – the original scheme with any changes described in the SES that are within the existing powers of the Bill; and
- 'the AP revised scheme' – the original scheme as amended by the SES changes and AP amendments.

1.2.3 The following SES changes have the potential to lead to changes in significant noise effects from those assessed in the main ES:

- CA1: change in construction assumptions with respect to slab track at Pyford North embankment satellite compound and Stockwell Heath cutting satellite compound;
- CA1: Woodhouse Farm committed development change of occupancy;
- CA1: correction to the number of properties associated with Hamley House Farm;
- CA2: two additional properties (Bank Cottage, Hopton and Hill Top Farm, Yarlet) that were not included in the construction noise insulation list;
- CA2: seven residential properties represented by assessment locations references: 12146, 12148 and 12153, which were not assessed as being impacted in the main ES during construction;
- CA2: the number of properties associated with assessment locations references: 12004 and 12007;
- CA4: incorrect identification in the traffic modelling of vehicles using the stretch of Manor Road between the construction access road and A53 junction with the A525 Bar Hill in Madeley; and
- CA5: three additional properties (Basford House, Oakleigh Cottage and Casey Lane Stables) that were not included in the construction noise insulation list.

1.2.4 In some cases, these SES changes have resulted in a change in traffic flow on roads within the relevant community area.

1.2.5 The following AP amendments have the potential to lead to changes in significant noise effects from those assessed in the main ES:

- CA2: Change in Bill powers for the permanent diversion of Cadent gomm low pressure gas main at Yarlet (AP-002-106);
- CA3: Additional land permanently required and a change in the powers of the Bill for the viaduct crossing of the Norton Bridge to Stone Railway and track crossovers along the HS2 route (AP-003-001);
- CA3: Additional land for the permanent diversion of two Severn Trent Water water mains along Swynnerton Footpath 10 accommodation underbridge (AP-003-114);
- CA5: Additional land for a new temporary Scottish Power Energy Networks

power line to Blakenhall cutting satellite compound (AP-005-105);

- CA5: Additional land for a new temporary Scottish Power Energy Networks power line to Waybutt Lane satellite compound (AP-005-108);
- CA5: Additional land for the permanent diversion of Scottish Power Energy Networks 11kV overhead line along Chorlton Lane (AP-005-109); and
- CA5: Additional land for a new temporary United Utilities water mains supply and Scottish Power Energy Networks power supply to the Crewe South crossovers satellite compound (AP-005-122).

1.2.6 An assessment of these changes is presented in this appendix. Details of the standard methodology used for determining significance of effects for sound, noise and vibration are presented in the main ES Volume 5: Appendix SV-001-000.



## 2 Fradley to Colton

### 2.1 Part 1: Supplementary Environmental Statement

#### Effects during construction

##### *Introduction*

- 2.1.1 The assessment is reported first for ground-borne vibration and then for airborne sound. Under each of these headings, the results of the quantitative identification of impacts, effects and significant effects are presented. The significant effects and the evidence used to support these conclusions are presented in the SES and AP ES Volume 2, Fradley to Colton community area report.

##### *Avoidance and mitigation measures*

- 2.1.2 The avoidance and mitigation measures are set out in the main ES Volume 2, Fradley to Colton community area report, Section 13.

##### *Quantitative identification of impacts and effects*

#### **Ground-borne vibration**

- 2.1.3 The SES changes do not change the likely significant effects identified in the main ES.

#### **Airborne sound: direct impacts and effects**

- 2.1.4 Activities associated with the construction phases of the SES scheme will generate airborne noise. The assessment of the likely impacts and significant effects as a result of the construction noise has considered the effects on:
- residential receptors, both as individual dwellings and communities; and
  - non-residential receptors, including quiet areas.
- 2.1.5 For each type of receptor, subject to the screening distances identified, and based upon supplied plant information from engineers, the typical and highest monthly  $L_{Aeq,T}$  noise levels from construction activities have been calculated at the facade of all assessment locations, which are representative of a number of receptors in the study area. The assessment results, impact criteria and significance criteria for the assessment of the SES scheme at residential and non-residential receptors are presented in Table 2 and Table 3 respectively.
- 2.1.6 Explanation of the information within Table 2 and Table 3 is provided in Table 1 and Volume 5: Appendix SV-001-000 of the main ES.

## SES and AP ES Volume 5 - Appendix SV-002-000

Table 1: Explanatory notes for assessment results – direct construction effects

Symbol	Explanation
	Where the significant effect column is highlighted, then a significant effect is identified at the referenced community, or individual receptor
	Yellow denotes a low ground-borne noise impact or a minor ground-borne vibration impact
	Orange denotes a medium ground-borne noise impact or a moderate ground-borne vibration impact
	Red denotes a high ground-borne noise impact or a major ground-borne vibration impact
	Dark red denotes a very high ground-borne noise impact
*	Significant effect – the quantitative impact methodology has identified an impact at this receptor which, based upon further qualitative receptor information, (see assessment text) does not give rise to a significant effect
~	When considered under the significance criteria set out in Volume 5: Appendix SV-001-000 of the main ES, Annex A, Section 1.3, these adverse effects are not considered to be significant on a community basis.
A	Sound levels from HS2 exceed Lowest Observed Adverse Effect Level (LOAEL): the significance criteria set out in Volume 5: Appendix SV-001-000 of the main ES, Annex A, Section 1.3 are considered when establishing significant effects
S	Sound levels from HS2 exceed Significant Observed Adverse Effect Level (SOAEL): noise insulation (or temporary rehousing at higher noise levels) therefore provided
NA	Sound levels from HS2 do not exceed Lowest Observed Adverse Effect Level (LOAEL), therefore generally no adverse effect
B	Type of receptor - residential
R	Type of receptor - residential
G1 – G5	Type of receptor - (G1) theatres, large auditoria and concert halls, (G2) sound recording and broadcast studios, (G3) places of meeting for religious worship, courts, cinemas, lecture theatres, museums and small auditoria or halls, (G4) schools, colleges, hospitals, hotels and libraries, and (G5) offices and general commercial premises
V1-V4	Type of receptor – (V1) vibration sensitive research and manufacturing, hospital, and university equipment, (V2) hotels, hospital wards and education dormitories, (V3) offices, schools and places of worship, (V4) workshops
T	Receptor design – typical
S	Receptor design - special
H	Existing environment – high existing ambient noise levels, day >75 dB, evening >65 dB or night >55 dB $L_{pAeq}$ at the facade
L	Existing environment – low existing ambient noise levels, day and evening $\leq 45$ dB, or night $\leq 35$ dB $L_{pAeq}$ at the facade
D,E,N	Impact duration (months) – duration of impact during the day (D), evening (E) or night (N)

## SES and AP ES Volume 5 - Appendix SV-002-000

Symbol	Explanation
O, CT, V	Combined Impact: If impacts from other construction activities occur at this location: Onsite activities (O), off-site construction traffic activities (CT), or construction Vibration (V)
NI	Mitigation effect - identified as likely to qualify for noise insulation under the Draft Code of Construction Practice (CoCP) <sup>3</sup>
TR	Mitigation effect - identified as likely to qualify for temporary rehousing under the Draft CoCP

<sup>3</sup> *Draft Code of Construction Practice*, Volume 5: Appendix CT-003-000 of the main ES. HS2 Ltd (2017), High Speed Two (HS2) Phase 2a (West Midlands - Crewe), Draft Code of Construction Practice, Volume 5: Appendix CT-003-000.  
[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/627182/E26\\_CT-003-000\\_WEB.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/627182/E26_CT-003-000_WEB.pdf)

Table 2: Assessment of construction noise at residential receptors

Assessment location		Impact criteria				Significance criteria									
Ref	Area represented	Typical/highest monthly outdoor L <sub>pAeq</sub> [dB] at the facade [Assessment category A/B/C]			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Impact duration (Months)	Combined impact	Mitigation effect	Significant effect
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
11022	Wood End Lane, Curborough <sup>4</sup>	56/59 [A]	-	-	Day: Earthworks	NA	1	R	T	-	-	-	-	-	
11047	Wood End Lane, Curborough <sup>4</sup>	53/57 [A]	-	-	Day: Borrow pit excavation	NA	1	R	T	-	-	-	-	-	
11238	Hamley House Farm Area <sup>5</sup> (CD ref: 16/01032/PND, 16/01019/FUL, 14/00779/FUL, and 14/00690/FUL)	59/63 [A]	-	-	Day: Earthworks	NA	5	CD-R	T	-	-	-	-	-	

<sup>4</sup> Change as a result of SES change: change in construction assumptions with respect to slab track at Pyford North embankment satellite compound and Stockwell Heath cutting satellite compound.

<sup>5</sup> Change as a result of SES change: correction to the number of properties associated with Hamley House Farm.

Table 3: Assessment of construction noise at non-residential receptors

Assessment location		Impact criteria				Significance criteria										
Ref	Area represented	Typical/highest monthly outdoor $L_{pAeq}$ [dB] at the facade [assessment category A/B/C]		Change		Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Impact duration (months)	Combined impact	Mitigation effect	Significant effect
		Day 0700-1900	Night 2300-0700	Day 0700-1900	Night 2300-0700											
8001(N)	Alrewas Hayes Countryside Venue, Alrewas <sup>4</sup>	51/55	-	7	-	Day: Haul Road setup	B	1	G4	T	-	-	-	-	-	*

### Airborne sound: indirect effects

2.1.7 There is no change in the airborne sound indirect effects compared to the main ES.

### Airborne sound levels used in other assessments

2.1.8 The construction sound results contained in this document have been used by other disciplines, namely the landscape and visual assessment. This includes the information in Table 4. Locations of interest to these other disciplines which do not appear in Table 3 are presented in Table 4.

Table 4: Construction airborne sound levels for use in cross discipline assessments

Assessment location ID		Impact information				Discipline					
Ref.	Area represented	Typical/highest monthly outdoor $L_{pAeq}$ [dB] at the facade [Assessment category A/B/C]		Change		Construction activity resulting in highest forecast noise levels	Agriculture	Communities	Heritage	Landscape and visual	Socio-economic
		Day 0700-1900	Night 2300-0700	Day 0700-1900	Night 2300-0700						
11216 (N)	Alrewas Hayes, Alrewas <sup>4</sup>	53/56	-	8	-	Day: Borrow pit excavation	-	-	-	Y	-

## Effects arising during operation

### Introduction

- 2.1.9 The assessment is reported first for ground-borne sound and vibration and then for airborne sound. Under each of these headings, the results of the quantitative identification of impacts, effects and significant effects are presented. The significant effects and the evidence used to support these conclusions are presented in the SES and AP ES Volume 2 Fradley to Colton community area report.

### Avoidance and mitigation measures

- 2.1.10 The avoidance and mitigation measures are set out in the main ES Volume 2, Fradley to Colton community area report, Section 13.

### Quantitative identification of impacts and effects

#### Ground-borne sound and vibration

- 2.1.11 The properties are located outside the scoping distance for ground-borne sound and vibration associated with residential dwellings, therefore no updated information is provided.

#### Airborne sound: direct impacts and effects

- 2.1.12 The direct effects from the operation of the SES scheme as well as any new, amended or altered roads or railway lines, which are identified as part of the SES scheme, are presented in Table 6 for residential receptors. The assessment information, impact criteria and significance criteria for the assessment of the incorporated mitigation case at residential receptors are presented in Table 6. The SES changes listed in Section 1.2.3 do not affect any non-residential receptors.
- 2.1.13 The results should be considered in conjunction with the information contained in the main ES and SES and AP ES Volume 5: Map Series SV-02. Explanation of the information in Table 6 is provided in Table 5 and Volume 5: Appendix SV-001-000 of the main ES.

Table 5: Explanatory notes for operational assessment results

Symbol	Explanation
	Where the significant effect column is marked, then a significant effect is identified at the referenced group of dwellings, or individual residential or non-residential receptor.
	Yellow denotes a minor impact at a residential building – a change is of 3-5 dB
	Orange denotes a moderate impact at a residential building – a change is of 5-10 dB
	Red denotes a major impact at a residential building – a change is of >10 dB
*	Day - $L_{pAeq,07:00-23:00}$
**	Night - $L_{pAeq,23:00-07:00}$

## SES and AP ES Volume 5 - Appendix SV-002-000

Symbol	Explanation
***	Max - $L_{pAFmax}$ . In the "SES scheme only" or "AP revised scheme only" columns, two values are presented. The first is the value for the HS2 mitigated train and the second is the value for the TSI compliant train. For further information, refer to Volume 5: Appendix SV-001-000 of the main ES.
****	Where the SES scheme or AP revised scheme modifies an existing source, i.e. road or railway realignments, the "SES scheme only" or "AP revised scheme only" and (Opening year baseline + Year 15 traffic) levels in the table include the sound from the modified source.
A	Sound levels from HS2 exceed Lowest Observed Adverse Effect Level (LOAEL): the significance criteria set out in Appendix SV-001-000, Annex A, Section 1.3 are considered when establishing significant effects.
B	For non-residential receptors further detail about the type of effect is set out in the text of Appendix SV-001-000 of the main ES.
CD	Committed Development. The 'Area represented' column contains information about the potential number of impacts included in the development.
G	(G1) Theatres, large auditoria and concert halls, (G2) Sound recording and broadcast studios, (G3) Places of meeting for religious worship, courts, cinemas, lecture theatres, museums and small auditoria or halls, (G4) Schools, colleges, hospitals, hotels and libraries, and (G5) Offices and general commercial premises
H	High existing ambient sound level. Defined as $>65dB_{LAeq, day}$ and/or $>55dB_{LAeq, night}$
L	Low existing ambient sound level. Defined as $<42dB_{LAeq, day}$ and/or $<32dB_{LAeq, night}$
LD	Landscape receptor
NA	Sound levels from HS2 do not exceed Lowest Observed Adverse Effect Level (LOAEL), therefore generally no adverse effect
NI	The receptor is predicted to qualify for mitigation, which shall be provided to the specification defined in the Noise Insulation (Railways and other Guided Rail Systems) Regulations 1996
R	Residential receptor
RM	Residential mooring
S	Sound levels from HS2 exceed Significant Observed Adverse Effect Level (SOAEL): noise insulation therefore provided.
#	A change of 3dB or greater has been identified however, the assessment methodology only defines an impact where the absolute sound level from the AP revised scheme is greater or equal to 50 dB $L_{pAeq, 23:00-07:00}$ during the daytime or 40 dB $L_{pAeq, 07:00-23:00}$ at night. At the receptor denoted the absolute level condition is not met and therefore no impact is identified
~	When considered under the significance criteria set out in Annex A, Section 1.3 Volume 5: Appendix SV-001-000 of the main ES, these adverse effects are not considered to be significant on a community basis.
\$	A change of 3dB or greater has been identified however, the impact methodology for non-residential receptors includes a screening criteria for G3 building use of 50 dB $L_{pAeq, 07:00-23:00}$ , for G4 building use 55 dB $L_{pAeq, 07:00-23:00}$ and 45 dB $L_{pAeq, 23:00-07:00}$ , for G5 building use 55 dB $L_{pAeq, 07:00-23:00}$ . At the receptor denoted the screening criteria is not met



SES and AP ES Volume 5 - Appendix SV-002-000

Symbol	Explanation
	and therefore no impact is identified. Further information is provided in Volume 5: Appendix SV-001-000 of the main ES.

Table 6: Operational airborne sound, noise impacts and significant effects: residential receptors

Assessment location		Impact criteria										Significance criteria							Significant effect	
Ref	Area represented	SES scheme only (year 15 traffic)			Do nothing (opening year baseline)			Do something (opening year baseline + year 15 traffic) ****		Change		Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact		Mitigation effect
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
11103	The Bungalow and Woodhouse Farm, Blithbury <sup>6</sup>	67	57	83/85	38	31	41	67	57	29	26	S	2	R	T	-	-	-	NI	OSV01-Co7 / OSV01-Do5
11231	Woodhouse Farm, Pipe Lane, Pipe Ridware (CD Ref: 14/00614/FUL) <sup>6</sup>	59	49	74/75	38	31	41	59	49	21	18	S	7	CD-R	T	-	-	-		OSV01-Co7
11238	Hamley House Farm Area <sup>5</sup> (CD ref: 16/01032/PND, 16/01019/FUL, 14/00779/FUL, and 14/00690/FUL)	54	44	71/72	43	34	49	54	44	11	10	A	5	CD-R	T	-	-	-		OSV01-Co6

<sup>6</sup> Change as a result of SES change: Woodhouse Farm committed development change of occupancy.

**Airborne sound: indirect impacts and effects**

- 2.1.14 There is no change in the airborne sound indirect effects compared to the main ES as a result of the SES changes listed in Section 1.2.3.

**Airborne sound levels used in other assessments**

- 2.1.15 There is no change in the airborne sound levels compared to the main ES as a result of the SES changes listed in Section 1.2.3.

**2.2 Part 2: Additional Provision Environmental Statement**

- 2.2.1 There are no amendments in this community area that have the potential to lead to changes in significant noise effects from those assessed in the main ES or where relevant the SES.

## 3 Colwich to Yarlet

### 3.1 Part 1: Supplementary Environmental Statement

#### Effects during construction

##### *Introduction*

- 3.1.1 The assessment is reported first for ground-borne vibration and then for airborne sound. Under each of these headings, the results of the quantitative identification of impacts, effects and significant effects are presented. The significant effects and the evidence used to support these conclusions are presented in the SES and AP ES Volume 2 Colwich to Yarlet community area report.

##### *Avoidance and mitigation measures*

- 3.1.2 The avoidance and mitigation measures are set out in the main ES Volume 2, Colwich to Yarlet community area report, Section 13.

##### *Quantitative identification of impacts and effects*

#### **Ground-borne vibration**

- 3.1.3 The SES changes do not change the likely significant effects identified in the main ES.

#### **Airborne sound: direct impacts and effects**

- 3.1.4 Activities associated with the construction phases of the SES scheme will generate airborne noise. The assessment of the likely impacts and significant effects as a result of the construction noise has considered the effects on:
- residential receptors, both as individual dwellings and communities; and
  - non-residential receptors, including quiet areas.
- 3.1.5 For each type of receptor, subject to the screening distances identified, and based upon supplied plant information from engineers, the typical and highest monthly  $L_{Aeq,T}$  noise levels from construction activities have been calculated at the façade of all assessment locations, which are representative of a number of receptors in the study area. The assessment results, impact criteria and significance criteria for the assessment of the SES scheme at residential receptors are presented in Table 7. No non-residential receptors are affected by this change.
- 3.1.6 Explanation of the information within Table 7 is provided in Table 1 and in Volume 5: Appendix SV-001-000 of the main ES.

Table 7: Assessment of construction noise at residential receptors

Assessment location		Impact criteria			Significance criteria										Significant effect
Ref	Area represented	Typical/highest monthly outdoor L <sub>pAeq</sub> [dB] at the facade [Assessment category A/B/C]			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Impact duration (Months)	Combined impact	Mitigation effect	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
12146	Lower Lane, Hopton <sup>7</sup>	60/66 [A]	-	-	Day: Haul road setup	A	1	R	T	-	-	-	-	-	CSV02-Co4
12148	Wilmore Hill Lane, Hopton <sup>7</sup>	59/66 [A]	-	-	Day: Underground utility diversion	A	5	R	T	-	-	-	-	-	CSV02-Co4
12153	Wilmore Hill Lane, Hopton <sup>7</sup>	68/71 [A]	-	-	Day: Underground utility diversion	A	1	R	T	-	-	D3	-	-	CSV02-Co4
12158	Bank Top House, Hopton <sup>8</sup>	72/76 [A]	-	-	Day: Underground utility diversion	A	1	R	T	-	-	D12	V	NI	CSV02-Co4
12218	Hill Top Farm, Yarlet <sup>8</sup>	74/78 [C]	-	-	Day: Earthworks	S	1	R	T	-	-	-	-	NI	~

<sup>7</sup> Change as a result of SES change: seven residential properties represented by assessment locations references: 12146, 12148 and 12153, which were not assessed as being impacted in the main ES during construction.

<sup>8</sup> Change as a result of SES change: two additional properties (Bank Cottage, Hopton and Hill Top Farm, Yarlet) that were not included in the construction noise insulation list.

### **Airborne sound: indirect effects**

- 3.1.2 There is no change in the airborne sound indirect effects compared to the main ES as a result of the SES changes listed in Section 1.2.3.

### **Airborne sound levels used in other assessments**

- 3.1.3 There is no change in the airborne sound levels used in other assessments compared to the main ES as a result of the SES changes listed in Section 1.2.3.

## **Effects arising during operation**

### *Introduction*

- 3.1.4 The assessment is reported first for ground-borne sound and vibration and then for airborne sound. Under each of these headings, the results of the quantitative identification of impacts, effects and significant effects are presented. The significant effects and the evidence used to support these conclusions are presented in the SES and AP ES Volume 2 Colwich to Yarlet community area report.

### *Avoidance and mitigation measures*

- 3.1.5 The avoidance and mitigation measures are set out in the main ES Volume 2, Fradley Colwich to Yarlet community area report, Section 13.

### *Quantitative identification of impacts and effects*

### **Ground-borne sound and vibration**

- 3.1.6 The SES changes do not change the likely significant effects identified in the main ES.

### **Airborne sound: direct impacts and effects**

- 3.1.7 The direct effects from the operation of the SES scheme as well as any new, amended or altered roads or railway lines, which are identified as part of the SES scheme, are presented in Table 8 for residential receptors. No non-residential receptors are affected by this change. The assessment information, impact criteria and significance criteria for the assessment of the incorporated mitigation case at residential receptors are presented in Table 8. The results should be considered in conjunction with the information contained in the main ES Volume 5: Map Series SV-02.
- 3.1.8 Explanation of the information in Table 8 is provided in Table 5 and Volume 5: Appendix SV-001-000 of the main ES.

Table 8: Operational airborne sound, noise impacts and significant effects: residential receptors

Assessment location		Impact criteria										Significance criteria							Significant effect	
Ref	Area represented	SES scheme only (year 15 traffic)			Do nothing (opening year baseline)			Do something (opening year baseline + year 15 traffic) ****		Change		Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact		Mitigation effect
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
12004	Moreton Grange, Bishton Lane, Moreton <sup>9</sup>	60	51	78/79	44	35	49	60	51	16	16	S	3	R	T	-	-	-	NI	OSV02-C01/ OSV02-D01
12007	Farmhouse at Moreton House Farm <sup>9</sup>	59	49	75/76	40	33	45	59	50	19	17	A	2	R	T	-	-	-	-	OSV02-C01

<sup>9</sup> Change as a result of SES change: the number of properties associated with assessment locations 12004 and 12007.

### **Airborne sound: indirect impacts and effects**

- 3.1.9 There is no change in the airborne sound indirect effects compared to the main ES as a result of the SES changes listed in Section 1.2.3.

### **Airborne sound levels used in other assessments**

- 3.1.10 There is no change in the airborne sound levels used in other assessments compared to the main ES as a result of the SES changes listed in Section 1.2.3.

## **3.2 Part 2: Additional Provision Environmental Statement**

### **Effects during construction**

#### *Introduction*

- 3.2.1 The assessment is reported first for ground-borne vibration and then for airborne sound. Under each of these headings, the results of the quantitative identification of impacts, effects and significant effects are presented. The significant effects and the evidence used to support these conclusions are presented in the SES and AP ES Volume 2, Colwich to Yarlet community area report.

#### *Avoidance and mitigation measures*

- 3.2.2 The avoidance and mitigation measures are set out in the main ES Volume 2, Colwich to Yarlet community area report, Section 13.

#### *Quantitative identification of impacts and effects*

### **Ground-borne vibration**

- 3.2.3 There is no change in the ground-borne vibration effects compared to the main ES or where relevant the SES.

### **Airborne sound: direct impacts and effects**

- 3.2.4 Activities associated with the construction phases of the AP revised scheme will generate airborne noise. The assessment of the likely impacts and significant effects as a result of the construction noise has considered the effects on:

- residential receptors, both as individual dwellings and communities; and
- non-residential receptors, including quiet areas.

- 3.2.5 For each type of receptor, subject to the screening distances identified, and based upon supplied plant information from engineers, the typical and highest monthly  $L_{Aeq,T}$  noise levels from construction activities have been calculated at the façade of all assessment locations, which are representative of a number of receptors in the study area. The assessment results, impact criteria and significance criteria for the assessment of the AP revised scheme at non-residential receptors are presented in Table 9. No residential receptors are affected by this change.

- 3.2.6 Explanation of the information within Table 9 is provided in Table 1 and Volume 5: Appendix SV-001-000 of the main ES.



Table g: Assessment of construction noise at non-residential receptors

Assessment location		Impact criteria				Significance criteria										Significant effect
Ref	Area represented	Typical/highest monthly outdoor $L_{pAeq}$ [dB] at the facade [assessment category A/B/C]		Change		Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Impact duration (months)	Combined impact	Mitigation effect	
		Day 0700-1900	Night 2300-0700	Day 0700-1900	Night 2300-0700											
12209(N)	Yarlet School, Yarlet: Main Building <sup>10</sup>	53/62	-	11	-	Day: Utility works	B	1	G4	T	-	-	D1	-	-	CSV02-No <sub>4</sub>

<sup>10</sup> As a result of AP amendment ref: AP-002-106.

**Airborne sound: indirect effects**

- 3.2.7 There is no change in the airborne sound indirect effects compared to the main ES or where relevant the SES.

**Airborne sound levels used in other assessments**

- 3.2.8 There is no change in the airborne sound levels used in other assessments compared to the main ES or where relevant the SES.

**Effects arising during operation**

- 3.2.9 There is no change in the operational sound, noise and vibration compared to the main ES or where relevant the SES.

## **4 Stone and Swynnerton**

### **4.1 Part 1: Supplementary Environmental Statement**

4.1.1 There are no SES changes in this community area that have the potential to lead to changes in significant noise effects from those assessed in the main ES.

### **4.2 Part 2: Additional Provision Environmental Statement**

#### **Effects during construction**

##### *Introduction*

4.2.1 The assessment is reported first for ground-borne vibration and then for airborne sound. Under each of these headings, the results of the quantitative identification of impacts, effects and significant effects are presented. The significant effects and the evidence used to support these conclusions are presented in the SES and AP ES Volume 2, Stone and Swynnerton community area report.

##### *Avoidance and mitigation measures*

4.2.2 The avoidance and mitigation measures are set out in the main ES Volume 2, Stone and Swynnerton community area report, Section 13.

##### *Quantitative identification of impacts and effects*

#### **Ground-borne vibration**

4.2.3 Assessment locations defined for the quantitative assessment of impacts are shown on the main ES Volume 5: Map Series SV-03. For each assessment location, the assessment results are presented in Table 10 and an explanation of the information in the table is provided in Table 1 and Volume 5: Appendix SV-001-000 of the main ES.

Table 10: Assessment of construction induced ground-borne vibration at residential and non-residential receptors

Assessment location		Impact criteria			Significance criteria										Significant Effect
Ref.	Area represented	Peak particle velocity (PPV) [mm/s] on foundation	Typical/highest monthly indoor vibration dose value (VDV) [M/S <sup>1.75</sup> ]		Construction activity resulting in highest forecast vibration levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [m]	Mitigation effect	
			Day 0700-2300	Night 2300-0700											
13078	Eccleshall Road, Stone <sup>11</sup>	<1	0.1 / <0.8 <sup>13</sup>	-		A	1	R	T	-	-	-	D1	-	<sup>14</sup>
13166	Shelton Under Harley Farm, Shelton Under Harley <sup>12</sup>	<1	0.2 / <0.8 <sup>13</sup>	-	Underground utility diversion	A	1	R	T	-	-	-	D1	-	<sup>14</sup>

<sup>11</sup> As a result of AP amendment ref: AP-003-001.

<sup>12</sup> As a result of AP amendment ref: AP-003-114.

<sup>13</sup> Construction methods will be selected to ensure that on a monthly basis the significant adverse effect level is not exceeded.

<sup>14</sup> Impacts with durations of less than one month are not generally considered significant.

### **Airborne sound: direct impacts and effects**

- 4.2.4 Activities associated with the construction phases of the AP revised scheme will generate airborne noise. The assessment of the likely impacts and significant effects as a result of the construction noise has considered the effects on residential receptors, as individual dwellings and communities.
- 4.2.5 For each type of receptor, subject to the screening distances identified, and based upon supplied plant information from engineers, the typical and highest monthly  $L_{Aeq,T}$  noise levels from construction activities have been calculated at the façade of all assessment locations, which are representative of a number of receptors in the study area. The assessment results, impact criteria and significance criteria for the assessment of the AP revised scheme at residential and non-residential receptors are presented in Table 11 and an explanation of the information within Table 11 is provided in Table 1 and Volume 5: Appendix SV-001-000 of the main ES.

Table 11: Assessment of construction noise at residential receptors

Assessment location		Impact criteria				Significance criteria									
Ref	Area represented	Typical/highest monthly outdoor L <sub>pAeq</sub> [dB] at the facade [Assessment category A/B/C]			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Impact duration (Months)	Combined impact	Mitigation effect	Significant effect
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
13078	Eccleshall Road, Stone <sup>11</sup>	60/66 [B]	-	-	Day: Site setup / takedown	NA	1	R	T	-	-	-	-	-	
13083	Yarnfield Lane, Stone <sup>11</sup>	59/62 [A]	-	-	Day: Earthworks	NA	3	R	T	-	-	-	-	-	
13099	Whitemoor Farm, Yarnfield Lane, Yarnfield <sup>11</sup>	65/72 [C]	-	-	Day: Demolitions	NA	1	R	T	-	-	-	-	-	
13164	Honeysuckle Cottage / Camelot Cottage, Shelton Under Harley <sup>12</sup>	70/76 [A]	-	-	Day: Demolitions	S	2	R	T	-	-	D16	CT	NI	~
13166	Shelton under Harley Farm, Shelton Under Harley <sup>12</sup>	70/76 [A]	-	-	Day: Underground utilities / Demolitions	S	1	R	T	-	-	D18	CT	NI	~

### **Airborne sound: indirect effects**

- 4.2.6 There is no change in the airborne sound indirect effects compared to the main ES or where relevant the SES.

### **Airborne sound levels used in other assessments**

- 4.2.7 There is no change in the airborne sound levels used in other assessments compared to the main ES or where relevant the SES.

## **Effects arising during operation**

### *Introduction*

- 4.2.8 The assessment is reported first for ground-borne sound and vibration and then for airborne sound. Under each of these headings, the results of the quantitative identification of impacts, effects and significant effects are presented. The significant effects and the evidence used to support these conclusions are presented in the SES and AP ES Volume 2, Stone and Swynnerton community area report.

### *Avoidance and mitigation measures*

- 4.2.9 The avoidance and mitigation measures are set out in main ES Volume 2, Stone and Swynnerton community area report, Section 13.

### *Quantitative identification of impacts and effects*

#### **Ground-borne sound and vibration**

- 4.2.10 There is no change in the ground-borne noise and vibration impacts compared to the main ES or where relevant the SES.

#### **Airborne sound: direct impacts and effects**

- 4.2.11 The direct effects from the operation of the AP revised scheme as well as any new, amended or altered roads or railway lines, which are identified as part of the AP revised scheme, are presented in Table 12 for residential receptors. The assessment information, impact criteria and significance criteria for the assessment of the incorporated mitigation case at residential are presented in Table 12. The results should be considered in conjunction with the information contained in the main ES Volume 5: Map Series SV-02.
- 4.2.12 Explanation of the information in Table 12 is provided in Table 5 and Volume 5: Appendix SV-001-000 of the main ES.
- 4.2.13 There is no change in the operational sound, noise and vibration compared to the main ES or where relevant the SES.

Table 12: Operational airborne sound, noise impacts and significant effects: residential receptors

Assessment location		Impact criteria										Significance criteria							Significant effect	
Ref	Area represented	AP revised scheme only (year 15 traffic)			Do nothing (opening year baseline)			Do something (opening year baseline + year 15 traffic) ****		Change		Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact		Mitigation effect
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
13078	Eccleshall Road, Stone <sup>11</sup>	55	45	68/69	62	58	65	63	58	1	0	A	1	R	T	H	-	-	-	
13083	Yarnfield Lane, Stone <sup>11</sup>	56	46	70/71	56	48	62	58	50	2	2	A	3	R	T	-	-	-	-	
13099	White Moor Farm, Yarnfield Lane, Yarnfield <sup>11</sup>	66	60	69/70	69	62	71	68	60	-1	-2	S	1	R	T	H	-	-	NI	OSV03-D01



**Ground-borne sound and vibration impact summary**

- 4.2.14 There is no change in the operational ground-borne sound and vibration impact compared to the main ES or where relevant the SES.

**Airborne sound: direct impacts and effects**

- 4.2.15 There is no change in the airborne sound direct effects compared to the main ES or where relevant the SES.

**Airborne sound: indirect impacts and effects**

- 4.2.16 There is no change in the airborne sound indirect effects compared to the main ES or where relevant the SES.

**Airborne sound levels used in other assessments**

- 4.2.17 There is no change in the airborne sound levels used in other assessments compared to the main ES or where relevant the SES.

# 5 Whitmore Heath to Madeley

## 5.1 Part 1: Supplementary Environmental Statement

### Effects during construction

#### *Introduction*

- 5.1.1 The assessment is reported first for ground-borne vibration and then for airborne sound. Under each of these headings, the results of the quantitative identification of impacts, effects and significant effects are presented. The significant effects and the evidence used to support these conclusions are presented in the SES and AP ES Volume 2, Whitmore Heath to Madeley community area report.

#### *Avoidance and mitigation measures*

- 5.1.2 The avoidance and mitigation measures are set out in the main ES Volume 2, Whitmore Heath to Madeley community area report, Section 13.

#### *Quantitative identification of impacts and effects*

##### **Ground-borne vibration**

- 5.1.3 The SES changes do not change the likely significant effects identified in the main ES.

##### **Airborne sound: direct impacts and effects**

- 5.1.4 The SES changes do not change the likely significant effects identified in the main ES.

**Airborne sound: indirect effects**

- 5.1.5 Construction road traffic associated with the SES scheme amends the airborne noise predicted in the main ES at Manor Road, Madeley. Based upon traffic information for the SES scheme, the change in traffic noise level at a reference distance of 10m from the edge of the nearside carriageway resulting from the presence of construction traffic for a given road has been predicted. Data has been produced for a typical month during the construction period and for a worst-case month during the construction period. The results for potentially significant road links are presented in Table 14.
- 5.1.6 Explanation of the information within Table 14 is provided in Table 13 and Volume 5: Appendix SV- 001-000 of the main ES.

Table 13: Explanatory notes for assessment results – indirect construction effects

Colour	Explanation
	Where the significant effect column is highlighted, then a significant effect is identified on nearby communities or individual receptors
	Yellow denotes a minor impact – a change is of 3-5 dB or 1-3dB where a high existing sound level is identified
	Orange denotes a moderate impact – a change is of 5-10 dB or 3-5dB where a high existing sound level is identified
	Red denotes a major impact – a change is of >10 dB or >5dB where a high existing sound level is identified

Table 14: Assessment of construction traffic noise levels

Road name	Portion of road affected	Number of dwellings affected (approx.)	Daytime traffic sound levels $L_{A10,18hr}$ dB			Change compared to current traffic sound level (dB)		Combined impact	Significant effect
			Without HS2 (2017)	Typical month during construction	Peak month during construction	Typical month during construction	Peak month during construction		
Manor Road <sup>15</sup>	From the proposed Manor Road closure to the junction with the A525 in Madeley.	<5	58	60	62	2	4	No	

<sup>15</sup> As a result of SES change: incorrect identification in the traffic modelling of vehicles using the stretch of Manor Road between the construction access road and A53 junction with the A525 Bar Hill in Madeley

**Airborne sound levels used in other assessments**

- 5.1.7 There is no change in the airborne sound levels used in other assessments compared to the main ES.

**Effects arising during operation**

- 5.1.8 There is no change in the operational sound, noise and vibration compared to the main ES.

**5.2 Part 2: Additional Provision Environmental Statement**

- 5.2.1 There are no proposed amendments in this community area that require the need to alter the powers conferred by the Bill.

## 6 South Cheshire

### 6.1 Part 1: Supplementary Environmental Statement

#### Effects during construction

##### *Introduction*

- 6.1.1 The assessment is reported first for ground-borne vibration and then for airborne sound. Under each of these headings, the results of the quantitative identification of impacts, effects and significant effects are presented. The significant effects and the evidence used to support these conclusions are presented in SES and AP ES Volume 2, South Cheshire community area report.

##### *Avoidance and mitigation measures*

- 6.1.2 The avoidance and mitigation measures are set out in the main ES Volume 2, South Cheshire community area report, Section 13.

##### *Quantitative identification of impacts and effects*

#### **Ground-borne vibration**

- 6.1.3 The properties are located outside the scoping distance for ground-borne sound and vibration associated with residential dwellings, therefore no updated information is provided.

#### **Airborne sound: direct impacts and effects**

- 6.1.4 Activities associated with the construction phases of the SES scheme will generate airborne noise. The assessment of the likely impacts and significant effects as a result of the construction noise has considered the effects on:
- residential receptors, both as individual dwellings and communities; and
  - non-residential receptors, including quiet areas.
- 6.1.5 For each type of receptor, subject to the screening distances identified, and based upon supplied plant information from engineers, the typical and highest monthly  $L_{Aeq,T}$  noise levels from construction activities have been calculated at the façade of all assessment locations, which are representative of a number of receptors in the study area. The assessment results, impact criteria and significance criteria for the assessment of the SES scheme at residential receptors are presented in Table 15. No non-residential receptors are affected by this change.
- 6.1.6 Explanation of the information within Table 15 is provided in Table 1 and Volume 5: Appendix SV-001-000 of the main ES.

Table 15: Assessment of construction noise at residential receptors

Assessment location		Impact criteria			Significance criteria										Significant effect
Ref	Area represented	Typical/highest monthly outdoor L <sub>pAeq</sub> [dB] at the facade [Assessment category A/B/C]			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Impact duration (Months)	Combined impact	Mitigation effect	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
15111	Newcastle Road, Chorlton <sup>16</sup>	79/81 [B]	-	-	Day: Demolition of bridge	S	2	R	T	-	-	D4	-	NI	CSV05-Co5
15112	Newcastle Road, Chorlton <sup>16</sup>	71/77 [C]	-	-	Day: Demolition of bridge	S	1	R	T	-	-	D2	-	NI	~
15114	Newcastle Road, Chorlton <sup>16</sup>	72/79 [C]	-	-	Day: Demolition of bridge	S	1	R	T	-	-	D3	-	NI	~

<sup>16</sup> As a result of SES change: three additional properties (Basford House, Oakleigh Cottage and Casey Lane Stables) that were not included in the construction noise insulation list.

**Airborne sound: indirect effects**

- 6.1.7 There is no change in the airborne sound indirect effects compared to the main ES.

**Airborne sound levels used in other assessments**

- 6.1.8 There is no change in the airborne sound levels used in other assessments compared to the main ES.

**Effects arising during operation**

- 6.1.9 There is no change in the operational sound, noise and vibration compared to the main ES.

**6.2 Part 2: Additional Provision Environmental Statement**

**Effects during construction**

*Introduction*

- 6.2.1 The assessment is reported first for ground-borne vibration and then for airborne sound. Under each of these headings, the results of the quantitative identification of impacts, effects and significant effects are presented. The significant effects and the evidence used to support these conclusions are presented in the SES and AP ES Volume 2, South Cheshire community area report.

*Avoidance and mitigation measures*

- 6.2.2 The avoidance and mitigation measures are set out in the main ES Volume 2, South Cheshire community area report, Section 13.

*Quantitative identification of impacts and effects*

**Ground-borne vibration**

- 6.2.3 Assessment locations defined for the quantitative assessment of impacts are shown on the main ES Volume 5: Map Series SV-04. For each assessment location, the assessment results are presented in Table 16.
- 6.2.4 Explanation of the information within Table 16 is provided in Table 1 and Volume 5: Appendix SV-001-000 of the main ES.



Table 16: Assessment of construction induced ground-borne vibration at residential and non-residential receptors

Assessment location		Impact criteria			Significance criteria										Significant Effect
Ref.	Area represented	Peak particle velocity (PPV) [mm/s] on foundation	Typical/highest monthly indoor vibration dose value (VDV) [M/S <sup>1.75</sup> ]		Construction activity resulting in highest forecast vibration levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [m]	Mitigation effect	
			Day 0700-2300	Night 2300-0700											
15028	Checkley Lane, Wrinehill <sup>17</sup>	0.53	0.28/<0.34	-	Underground utility diversion	A	3	R	T	-	-	-	D1	-	<sup>18</sup>
15036	Den Lane, Wrinehill <sup>17</sup>	0.55	0.09/0.36	-	Underground utility diversion	A	1	R	T	-	-	-	D1	-	<sup>20</sup>
15069	Freshwater Drive, Wynchwood Park, Weston <sup>19</sup>	<1	0.31/<0.8 <sup>20</sup>	-	Underground utility diversion	A	7	R	T	-	-	-	D1	-	
15090	Henley Road, Wynchwood Park, Weston <sup>19</sup>	0.91	0.11/0.64	-	Underground utility diversion	A	6	R	T	-	-	-	D1	-	<sup>20</sup>
15095	Chiltern Close, Wynchwood Park, Weston <sup>21</sup>	<1	0.6/<0.8 <sup>20</sup>	-	Underground utility diversion	A	3	R	T	-	-	-	D1	-	
15103	Chorlton Lane, Chorlton <sup>21</sup>	<1	0.44/<0.8 <sup>20</sup>	-	Underground utility diversion	A	1	R	T	-	-	-	D1	-	
15117	Casey Lane, Basford <sup>21</sup>	<1	0.46/<0.8 <sup>20</sup>	-	Underground utility diversion	A	8	R	T	-	-	-	D1	-	

<sup>17</sup> As a result of AP amendment ref: AP-005-105.

<sup>18</sup> Impacts with durations of less than one month are not generally considered significant.

<sup>19</sup> As a result of AP Amendment ref: AP-005-108.

<sup>20</sup> Construction methods will be selected to ensure that on a monthly basis the significant adverse effect level is not exceeded.

<sup>21</sup> As a result of AP Amendment ref: AP-005-109.

Assessment location		Impact criteria			Significance criteria										Significant Effect
Ref.	Area represented	Peak particle velocity (PPV) [mm/s] on foundation	Typical/highest monthly indoor vibration dose value (VDV) [M/S <sup>1.75</sup> ]		Construction activity resulting in highest forecast vibration levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [m]	Mitigation effect	
			Day 0700-2300	Night 2300-0700											
15126	Weston Lane, Basford <sup>22</sup>	<1	0.11/<0.8	-	Underground utility diversion	A	12	R	T	-	-	-	D1	-	
15127	Larch Avenue, Basford <sup>22</sup>	0.8	0.19/0.55	-	Underground utility diversion	A	6	R	T	-	-	-	D1	-	<sup>20</sup>
15128	Larch Avenue, Basford <sup>22</sup>	0.68	0.3/0.46	-	Underground utility diversion	A	9	R	T	-	-	-	D1	-	<sup>20</sup>

<sup>22</sup> As a result of AP Amendment ref: AP-005-122.

### **Airborne sound: direct impacts and effects**

- 6.2.5 Activities associated with the construction phases of the AP revised scheme will generate airborne noise. The assessment of the likely impacts and significant effects as a result of the construction noise has considered the effects on:
- residential receptors, both as individual dwellings and communities; and
  - non-residential receptors, including quiet areas.
- 6.2.6 For each type of receptor, subject to the screening distances identified, and based upon supplied plant information from engineers, the typical and highest monthly  $L_{Aeq,T}$  noise levels from construction activities have been calculated at the façade of all assessment locations, which are representative of a number of receptors in the study area. The assessment results, impact criteria and significance criteria for the assessment of the AP revised scheme at residential receptors are presented in Table 17. No non-residential receptors are affected by the amendments assessed.
- 6.2.7 Explanation of the information within Table 17 is provided in Table 1 and Volume 5: Appendix SV-001-000 of the main ES.

Table 17: Assessment of construction noise at residential receptors

Assessment location		Impact criteria			Significance criteria										Significant effect
Ref	Area represented	Typical/highest monthly outdoor L <sub>pAeq</sub> [dB] at the facade [Assessment category A/B/C]			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Impact duration (Months)	Combined impact	Mitigation effect	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
15036	Den Lane, Wrinehill <sup>17</sup>	72/77 [A]	-	-	Day: Underground utility diversion	S	1	R	T	-	-	D9	-	NI	~
15049	Hampstead Drive, Wynchwood Park Weston <sup>19</sup>	60/66 [A]	-	-	Day: Underground utility diversion	A	4	R	T	-	-	D1	-	-	CSV05-Co4
15090	Henley Road, Wynchwood Park, Weston <sup>21</sup>	65/71 [A]	-	-	Day: Underground utility diversion	A	6	R	T	-	-	D2	-	-	CSV05-Co4
15097	Chorlton Lane, Chorlton <sup>21</sup>	73/78 [B]	-	-	Day: Underground utility diversion	S	1	R	T	-	-	D6	-	NI	CSV05-Co4
15103	Chorlton Lane, Chorlton <sup>21</sup>	74/78 [A]	-	-	Day: Underground utility diversion	S	1	R	T	-	-	D2	-	NI	~
15126	Weston Lane, Basford <sup>22</sup>	74/74 [A]	-	-	Day: Underground utility diversion	A	12	R	T	-	-	D2	-	-	CSV05-Co6
15127	Larch Avenue, Basford <sup>22</sup>	65/69 [A]	-	-	Day: Underground utility diversion	A	6	R	T	-	-	D2	-	-	CSV05-Co6
15128	Larch Avenue, Basford <sup>22</sup>	64/68 [A]	-	-	Day: Underground utility diversion	A	9	R	T	-	-	D2	-	-	CSV05-Co6

**Airborne sound: indirect effects**

- 6.2.8 There is no change in the airborne sound indirect effects compared to the main ES or where relevant the SES.

**Airborne sound levels used in other assessments**

- 6.2.9 There is no change in the airborne sound levels used in other assessments compared to the main ES or where relevant the SES.

**Effects arising during operation**

- 6.2.10 There is no change in the operational sound, noise and vibration compared to the main ES or where relevant the SES.

## 7 References

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