

HIGH SPEED RAIL (LONDON - WEST MIDLANDS)

Supplementary Environmental Statement 4 and Additional Provision 5 Environmental Statement

Volume 5 | Technical appendices

Sound, noise and vibration

(SV-003-024, SV-004-010, SV-004-013)

December 2015

SES4 and AP5 ES 3.5.1.3

HIGH SPEED RAIL (LONDON - WEST MIDLANDS)

Supplementary Environmental Statement 4 and
Additional Provision 5 Environmental Statement

Volume 5 | Technical appendices

Sound, noise and vibration

(SV-003-024, SV-004-010, SV-004-013)

December 2015

SES4 and AP5 ES 3.5.1.3



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.

A report prepared for High Speed Two (HS2) Limited:

AECOM

ARUP

ATKINS

CAPITA



ineco



**PARSONS
BRINCKERHOFF**



High Speed Two (HS2) Limited,
One Canada Square,
London
E14 5AB

Details of how to obtain further copies are available from HS2 Ltd.

Telephone: 020 7944 4908

General email enquiries: HS2enquiries@hs2.org.uk

Website: www.gov.uk/hs2

Copyright © High Speed Two (HS2) Limited, 2015, except where otherwise stated.

High Speed Two (HS2) Limited has actively considered the needs of blind and partially sighted people in accessing this document. The text will be made available in full via the HS2 website. The text may be freely downloaded and translated by individuals or organisations for conversion into other accessible formats. If you have other needs in this regard please contact High Speed Two (HS2) Limited.



Printed in Great Britain on paper
containing at least 75% recycled fibre.

Index

This table shows the topics covered by the technical appendices in this volume, and the reference codes for them.

CFA name and number	Code
CFA ₂₄ , Birmingham Interchange and Chelmsley Wood	SV-003-024
CFA ₁₀ , Dunsmore, Wendover and Halton	SV-004-010
CFA ₁₃ , Calvert, Steeple Claydon, Twyford and Chetwode	SV-004-013

SES4 and AP5 Appendix SV-003-024

Environmental topic:	Sound, noise and vibration	SV
Appendix name:	Construction assessment report	003
Community forum area:	Birmingham Interchange and Chelmsley Wood	024

Contents

1	Introduction	1
2	Scope, assumptions and limitations	1
	2.1 Changes of relevance to this assessment	1
3	Effects arising during construction	1
	3.1 Avoidance and mitigation measures	1
	3.2 Quantitative identification of impacts and effects	1
	3.3 Assessment of significance of effects	3

List of tables

Table 1: Assessment of construction noise at non-residential receptors (AP5-024-001)	2
--	---

1 Introduction

- 1.1.1 This appendix provides an update to Appendix SV-003-024 construction assessment report for community forum area (CFA) 24 from the main Environmental Statement (ES) as a result of design change AP5-024-001 as part of the Additional Provision 5 Environmental Statement (AP5 ES). This update should be read in conjunction with Appendix SV-003-024 Construction assessment report from the main ES.

2 Scope, assumptions and limitations

2.1 Changes of relevance to this assessment

- 2.1.1 AP5-024-001 – Additional land required for the realignment of the people mover between the Birmingham Airport and National Exhibition Centre people mover stops

3 Effects arising during construction

3.1 Avoidance and mitigation measures

- 3.1.1 These are unchanged from those set out in the main ES, Volume 2, Birmingham Interchange and Chelmsley Wood (CFA Report 24), Section 11.

3.2 Quantitative identification of impacts and effects

Airborne sound: direct impacts and effects

- 3.2.1 Table 1 sets out the changes to the main ES, Volume 5, Appendix, SV-003-024, Sound, noise and vibration assessment for the relevant assessment locations for AP5-024-001.
- 3.2.2 Explanation of the information within all these tables is provided in Appendix SV-001-000 and Appendix SV-003-024 (Volume 5 of the main ES).

SES4 and AP5 Appendix SV-003-024

Table 1: Assessment of construction noise at non-residential receptors (AP5-024-001)

Assessment location		Impact criteria			Construction activity resulting in highest forecast noise levels	Significance criteria									Significant effect
ID	Area represented	Typical/highest monthly outdoor L_{pAeq} [dB]				Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
700562	Exhibition Halls, National Exhibition Centre, Birmingham	66/76	<40/42	-	Day: Prepare ground; Eve: People Mover M42 viaduct beams	D	8	G3	T	-	-	N	D 35	-	CSV24-No1
722001	Portland House, Bickenhill Lane, Hampton-In-Arden, Solihull	59/69	-	-	Day: Prepare ground	D	1	G5	T	-	-	N	-	-	
722002	Diamond House, Birmingham International Airport	68/75	-	-	Day: Prepare ground	D	1	G5	T	-	-	N	-	-	
722003	Novotel, Ibis and Etap hotels, Birmingham International Airport	58/64	-	48/53	Day: Prepare ground; Night: People mover Airport viaduct beams	DSd	3	G4	T	-	-	N	D 9	-	CSV24-No3

3.3 Assessment of significance of effects

Non-residential receptors - direct effects

AP5-024-001

- 3.3.1 The amendment to realign the people mover between the NEC people mover stop and the Birmingham Airport people mover stop will relocate some of the construction works assessed in the main ES.
- 3.3.2 The main ES reported significant daytime construction noise effects in the vicinity of the amendment at the closest NEC buildings to the people mover, Exhibition Hall 1 and the Pavilion area, and the Diamond House office building. Significant daytime construction noise effects were also identified at the hotels immediately adjacent to the airport (Novotel, Ibis and Etap). An exceedance of the night-time impact screening criterion was also predicted at the hotels. However, based on the limited magnitude and duration of the impact a significant night-time effect was not identified.
- 3.3.3 An assessment has been undertaken to determine whether the construction works associated with the amendment will result in any likely significant effects, using the significance criteria detailed in the main ES (Volume 5: Appendix SV-001-000).
- 3.3.4 No change to the significant effect reported in the main ES at the closest NEC buildings to the people mover is anticipated due to the amendment.
- 3.3.5 The relocation of the people mover works slightly further away from the Diamond House offices results in the removal of the significant construction noise effect at this location.
- 3.3.6 The significant effect at the Novotel, Ibis and Etap hotels remains, though the magnitude and duration of the impact are reduced slightly as a result of the change. The typical monthly daytime construction noise levels are reduced by 1dB (to 58dB), although no change to the worst case monthly daytime construction noise level is anticipated. The duration of the daytime impact is reduced from 15 months to 9 months. The exceedance of the night-time screening criterion is removed, as typical and worst case night-time monthly noise levels are reduced by 2dB (to 48dB and 53dB respectively).
- 3.3.7 Due to the distance from the people mover works, a significant construction noise effect is not anticipated at the new Radisson Blu hotel (planning reference PL/2015/51216/PPFL), which has been granted planning permission since the submission of the main ES.

SES4 and AP5 ES Appendix SV-004-010

Environmental topic:	Sound, noise and vibration	SV
Appendix name:	Operational assessment report	004
Community forum area:	Dunsmore, Wendover and Halton	010

Contents

1	Introduction	1
2	Scope, assumptions and limitations	1
	2.1 Changes of relevance to this assessment	1
3	Effects arising during operation	1
	3.1 Avoidance and mitigation measures	1
	3.2 Quantitative identification of impacts and effects	1
	3.3 Assessment of significance of effects	13

List of tables

Table 1:	Operational airborne sound level, noise impacts and effects	4
----------	---	---

1 Introduction

- 1.1.1 This appendix provides an update to Appendix SV-004-010 Operational sound, noise and vibration assessment report for community forum area (CFA) Dunsmore, Wendover and Halton from the main Environmental Statement (ES) as a result of Additional Provision 5 Environmental Statement (AP₅ ES). This update should be read in conjunction with Appendix SV-004-010 Operational assessment report from the main ES and SES₃ and AP₄ ES.

2 Scope, assumptions and limitations

2.1 Changes of relevance to this assessment

- 2.1.1 Operational sound, noise and vibration assessments have been undertaken for the additional noise mitigation at Wendover (SES₄-010-001).

3 Effects arising during operation

3.1 Avoidance and mitigation measures

- 3.1.1 The design change alters the noise fence barriers in the locale of Wendover, as shown on SES₄ and AP₅ ES maps series SV-01 and SV-02. This envisaged mitigation amends the noise fence barrier shown in this location in the main ES, CFA₁₀, Volume 2, Section 11.

3.2 Quantitative identification of impacts and effects

Ground-borne sound and vibration

- 3.2.1 The design changes do not alter the assessment of operational ground-borne sound and vibration identified in main ES Appendix SV-010-004.

Airborne sound: direct impacts and effects

- 3.2.2 The direct effects from the operation of the SES₄ scheme as well as any new, amended or altered roads or railway lines, which are identified as part of the scheme, are presented in Table 1 for all assessment locations within CFA₁₀.
- 3.2.3 The assessment information, impact criteria and significance criteria for the assessment of the incorporated mitigation case at residential and non-residential receptors are presented in Table 1. The results should be considered in conjunction with the information contained in SES₄ and AP₅ ES map series SV-02 in the CFA₁₀ Volume 5 Map book.

3.2.4 Explanation of the Table 1 information is provided in main ES, Volume 5: Appendix SV-001-000, with the following additional notes.

	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
D	Day - $L_{pAeq,07:00-23:00}$
N	Night - $L_{pAeq,23:00-07:00}$
M	Max - L_{pAFmax} In the Proposed Scheme only column, 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.
*	Where the Proposed Scheme modifies an existing source, i.e. road or railway realignments, the <i>Proposed Scheme only</i> level in the table includes the sound from the modified source. In this situation the <i>Do something (Opening year baseline + Year 15 traffic)</i> level has been corrected so as to not double count the sound associated with the road or railway on its new and existing alignment.
A	Adverse effect
B	For non-residential receptors further detail about the type of effect is set out in the text of Appendix SV-001-000.
CD	Committed Development. The value in brackets in the number of impacts represented column is the value with the committed 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 $>65dB_{Leq, day}$ and/or $>55dB_{Leq, night}$
L	Low existing ambient sound level. Defined as $<42dB_{Leq, day}$ and/or $<32dB_{Leq, night}$
LD	Landscape receptor
NA	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

SES₄ and AP₅ ES Appendix SV-004-010

RM Residential mooring

S Significant adverse effect

A change of 3dB or greater has been identified however, the assessment methodology only defines an impact where the absolute sound level from the Proposed 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.

~ The forecast adverse effects are not considered to be significant on a community basis (further information on methodology is provided in Volume 5: Appendix SV-001-000).

\$ 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 and therefore no impact is identified. Further information is provided in Volume 5: Appendix SV-001-000.

^ The impact methodology has either identified an impact at a receptor which based upon further qualitative information does not give rise to a significant effect. Further information is provided at the end of this Appendix.

SES4 and AP5 ES Appendix SV-004-010

Table 1: Operational airborne sound level, noise impacts and effects

Assessment Location		Impact criteria										Significance criteria								Significant effect
ID	Area represented	Proposed 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 of effect	
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
312373	North Lee Lane, Terrick	51	43	59/62	49	48	51	52	49	3	1	A	1	R	T	-	-	-	-	~
312509	Nash Lee Road, Terrick	48	39	63/66	56	45	53	56	46	1	1	NA	5	R	T	-	-	-	-	
313082	North Lee Lane, Terrick	50	43	58/61	49	48	51	52	49	3	1	A	5	R	T	-	-	-	-	~
313100	North Lee Lane, Terrick	50	43	56/60	49	48	51	52	49	3	1	A	1	R	T	-	-	-	-	~
313140	North Lee Lane, Terrick	49	39	60/63	46	39	51	51	42	5	3	NA	1	R	T	-	-	-	-	#
313291	North Lee Lane, Terrick	49	40	59/62	49	48	51	52	48	3	1	A	4	R	T	-	-	-	-	#
313337	Risborough Road, Stoke Mandeville	51	42	61/64	54	45	53	55	47	2	2	A	8	R	T	-	-	-	-	
314444	Nash Lee Road, Terrick	48	39	61/64	56	45	53	56	46	1	1	NA	13	R	T	-	-	-	-	
314625	Nash Lee Farm, Nash Lee	52	43	65/68	56	45	53	57	47	2	2	A	6	R	T	-	-	-	-	
314652	Nash Lee Road, Terrick	59	50	65/70	57	46	53	61	51	4	5	A	1	R	T	-	-	-	-	OSV10-Co4
314668	Nash Lee Road, Terrick	58	50	65/68	57	46	53	58	50	1	3	A	1	R	T	-	-	-	-	OSV10-Co4
314704	Nash Lee Road, Terrick	60	51	70/73	57	46	53	61	51	4	5	A	4	R	T	-	-	-	-	OSV10-Co4
314865	Wendover Road, Stoke Mandeville	49	41	61/64	54	47	52	55	48	1	1	A	1	R	T	-	-	-	-	
350579	London Road, Wendover	45	35	62/65	57	52	90	58	52	0	0	NA	2	R	T	-	-	-	-	
350695	Cobblers Hill, Wendover	43	34	58/61	51	45	55	51	45	1	0	NA	2	R	T	-	-	-	-	
350753	London Road, Wendover	51	41	66/69	66	60	83	66	60	0	0	A	3	R	T	H	-	-	-	
350796	London Road, Wendover	46	37	61/64	52	49	57	53	49	1	0	NA	2	R	T	-	-	-	-	
350868	London Road, Wendover	50	41	64/67	74	69	83	74	69	0	0	A	1	R	T	H	-	-	-	
350945	Wendover Dean, Aylesbury	48	39	63/66	63	58	83	63	58	0	0	NA	1	R	T	H	-	-	-	
351596	Aylesbury Road, Great Missenden	42	33	58/61	63	57	90	63	57	0	0	NA	9	R	T	H	-	-	-	
351644	Aylesbury Road, Great Missenden	43	34	58/61	69	63	90	69	63	0	0	NA	2	R	T	H	-	-	-	

SES4 and AP5 ES Appendix SV-004-010

Assessment Location		Impact criteria										Significance criteria							Significant effect	
ID	Area represented	Proposed 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 of effect
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
351671	London Road, Wendover	47	38	64/67	66	60	90	66	60	0	0	NA	1	R	T	H	-	-	-	
351696	Bowood Lane, Wendover	56	47	67/70	51	45	55	57	49	6	4	A	4	R	T	-	-	-	-	OSV10-Co1
351710	Wendover Dean, Aylesbury	58	48	69/72	51	45	55	59	50	8	5	A	1	R	T	-	-	-	-	OSV10-Co1
351740	Wendover Dean, Aylesbury	56	46	70/73	51	45	55	57	49	6	4	A	1	R	T	-	-	-	-	OSV10-Co1
351792	Bowood Lane, Wendover	56	47	67/70	52	49	57	58	51	5	2	A	3	R	T	-	-	-	-	OSV10-Co1
351934	Kings Lane, Wendover	49	39	61/64	52	49	57	54	49	1	0	NA	1	R	T	-	-	-	-	
355409	Hunts Green, The Lee	42	33	55/58	54	53	68	54	53	0	0	NA	1	R	T	-	-	-	-	
355417	Hunts Green, The Lee	43	34	56/59	54	53	68	54	53	0	0	NA	1	R	T	-	-	-	-	
355448	Hunts Green, The Lee	40	31	52/55	46	39	51	47	40	1	1	NA	6	R	T	-	-	-	-	
355498	The Lee, Great Missenden	35	26	45/48	46	39	51	46	39	0	0	NA	5	R	T	-	-	-	-	
355734	Nash Lee Lane, Wendover	50	41	63/65	54	46	52	55	47	1	1	A	7	R	T	-	-	-	-	
356230	Aylesbury Road, Wendover	31	22	50/52	53	44	55	53	44	0	0	NA	82	R	T	-	-	-	-	
356878	Small Dean Lane, Wendover	48	39	65/68	49	37	51	52	41	2	4	NA	3	R	T	-	-	-	-	#
356932	London Road, Wendover	58	49	76/79	74	69	83	74	69	0	0	A	1	R	T	H	-	-	-	
357093	Bacombe Lane, Wendover	44	35	61/64	48	41	47	49	42	2	1	NA	5	R	T	-	-	-	-	
357199	Nash Lee Lane, Wendover	60	51	73/76	51	46	58	60	51	9	6	A	7	R	T	-	-	-	-	OSV10-Co4
357521	Ellesborough Road, Wendover	35	27	49/52	51	44	75	51	44	0	0	NA	5	R	T	-	-	-	-	
357547	Ellesborough Road, Wendover	35	27	51/54	54	47	75	54	47	0	0	NA	5	R	T	-	-	-	-	
357601	Ellesborough Road, Wendover	35	27	53/56	60	53	75	60	53	0	0	NA	5	R	T	-	-	-	-	
357663	Ellesborough Road, Wendover	45	36	55/58	49	43	53	50	43	1	0	NA	1	R	T	-	-	-	-	
357730	Ellesborough Road, Wendover	45	36	55/58	49	43	53	50	44	1	1	NA	4	R	T	-	-	-	-	
357877	Nash Lee End, Wendover	43	35	57/60	54	46	53	54	46	0	0	NA	1	R	T	-	-	-	-	
357971	Nash Lee Lane, Wendover	55	47	67/69	56	51	60	58	51	2	1	A	6	R	T	-	-	-	-	

SES4 and AP5 ES Appendix SV-004-010

Assessment Location		Impact criteria										Significance criteria							Significant effect	
ID	Area represented	Proposed 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 of effect
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
358410	Wendover Road, Stoke Mandeville	45	36	59/62	54	47	52	54	48	0	0	NA	2	R	T	-	-	-	-	
358677	Wendover Road, Stoke Mandeville	46	37	58/61	54	47	52	54	48	1	0	NA	3	R	T	-	-	-	-	
358776	Nash Lee End, Wendover	41	33	53/56	54	47	52	54	47	0	0	NA	1	R	T	-	-	-	-	
358870	Little London, Wendover	44	35	62/64	49	37	51	50	39	1	2	NA	3	R	T	-	-	-	-	
359140	Small Dean Lane, Wendover	50	40	66/69	49	37	51	52	42	3	5	A	2	R	T	-	-	-	-	~
359159	Small Dean Lane, Wendover	51	42	66/69	49	37	51	53	43	4	6	A	2	R	T	-	-	-	-	~
359175	Bacombe Lane, Wendover	42	33	59/62	48	41	47	49	41	1	1	NA	1	R	T	-	-	-	-	
359188	Bacombe Lane, Wendover	39	29	54/57	48	41	47	48	41	1	0	NA	2	R	T	-	-	-	-	
359264	London Road, Wendover	60	51	75/78	49	42	49	60	51	12	9	A	2	R	T	-	-	-	-	~
359341	Bacombe Lane, Wendover	46	37	64/67	49	47	51	51	47	2	0	NA	6	R	T	-	-	-	-	
359368	Bacombe Lane, Wendover	48	39	67/70	49	47	51	52	48	3	1	NA	1	R	T	-	-	-	-	#
359406	Bacombe Lane, Wendover	43	34	65/68	52	45	41	53	45	0	0	NA	3	R	T	-	-	-	-	
359465	Ellesborough Road, Wendover	32	23	50/53	52	46	55	52	46	0	0	NA	4	R	T	-	-	-	-	
359523	Ellesborough Road, Wendover	34	26	57/60	50	43	54	50	43	0	0	NA	3	R	T	-	-	-	-	
359570	Ellesborough Road, Wendover	19	11	44/47	58	52	60	58	52	0	0	NA	6	R	T	-	-	-	-	
359628	Ellesborough Road, Wendover	17	10	41/44	58	52	60	58	52	0	0	NA	8	R	T	-	-	-	-	
359821	Forest Close, Wendover	39	33	53/56	62	51	59	62	51	0	0	NA	41	R	T	-	-	-	-	
359991	Coombe Avenue, Wendover	38	31	46/49	62	51	59	62	51	0	0	NA	20	R	T	-	-	-	-	
360117	Thornton Crescent, Wendover	33	25	57/60	53	44	55	53	44	0	0	NA	31	R	T	-	-	-	-	
360282	Witchell, Wendover	36	27	54/58	52	49	56	52	49	0	0	NA	32	R	T	-	-	-	-	
360527	High Street, Wendover	33	24	52/55	52	49	56	52	49	0	0	NA	34	R	T	-	-	-	-	
361026	Dobbins Lane, Wendover	33	26	53/55	53	44	55	53	44	0	0	NA	69	R	T	-	-	-	-	

SES4 and AP5 ES Appendix SV-004-010

Assessment Location		Impact criteria										Significance criteria							Significant effect	
ID	Area represented	Proposed 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 of effect
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
361089	Vinetrees, Wendover	29	20	47/50	53	44	55	53	44	0	0	NA	59	R	T	-	-	-	-	
361283	Tring Road, Wendover	32	23	49/52	53	44	55	53	44	0	0	NA	32	R	T	-	-	-	-	
361353	Little Hampden Close, Wendover	37	28	57/59	62	51	59	62	51	0	0	NA	62	R	T	-	-	-	-	
361567	South Street, Wendover	43	34	61/64	52	49	56	52	50	1	0	NA	4	R	T	-	-	-	-	
361934	Dobbins Lane, Wendover	32	25	54/56	53	44	55	53	44	0	0	NA	14	R	T	-	-	-	-	
362092	Dobbins Lane, Wendover	35	27	55/58	53	44	55	53	44	0	0	NA	28	R	T	-	-	-	-	
362169	Chiltern Road, Wendover	32	23	52/55	53	44	55	53	44	0	0	NA	59	R	T	-	-	-	-	
362513	Dobbins Lane, Wendover	39	30	58/61	53	44	55	53	44	0	0	NA	22	R	T	-	-	-	-	
362638	Thornton Crescent, Wendover	39	30	61/64	59	53	63	59	53	0	0	NA	49	R	T	-	-	-	-	
362785	Bridleways, Wendover	45	36	64/66	50	45	53	52	45	1	1	NA	22	R	T	-	-	-	-	
362860	Dobbins Lane, Wendover	38	29	58/61	53	44	55	53	44	0	0	NA	83	R	T	-	-	-	-	
363376	Nightingale Road, Wendover	34	25	53/56	53	44	55	53	44	0	0	NA	103	R	T	-	-	-	-	
363661	Dobbins Lane, Wendover	42	33	60/63	50	41	48	50	41	1	1	NA	19	R	T	-	-	-	-	
364087	Orchard Close, Wendover	37	28	55/57	50	41	48	50	41	0	0	NA	37	R	T	-	-	-	-	
364294	The Cedars, Wendover	39	30	57/60	50	41	48	50	41	0	0	NA	53	R	T	-	-	-	-	
364751	Haglis Drive, Wendover	35	26	53/55	50	41	48	50	41	0	0	NA	64	R	T	-	-	-	-	
365001	Lionel Avenue, Wendover	39	30	55/58	46	45	51	47	45	1	0	NA	24	R	T	-	-	-	-	
365130	Aylesbury Road, Wendover	36	28	51/54	50	43	75	50	43	0	0	NA	15	R	T	-	-	-	-	
365216	Aylesbury Road, Wendover	37	28	51/54	50	43	75	50	43	0	0	NA	10	R	T	-	-	-	-	
365280	Aylesbury Road, Wendover	40	31	56/59	46	45	51	47	45	1	0	NA	1	R	T	-	-	-	-	
365348	Aylesbury Road, Wendover	35	26	50/52	66	59	75	66	59	0	0	NA	37	R	T	H	-	-	-	
365756	Bryants Acre, Wendover	32	23	50/53	66	59	75	66	59	0	0	NA	48	R	T	H	-	-	-	
366563	Lionel Avenue, Wendover	37	28	53/56	46	45	51	47	45	0	0	NA	38	R	T	-	-	-	-	

SES4 and AP5 ES Appendix SV-004-010

Assessment Location		Impact criteria										Significance criteria							Significant effect	
ID	Area represented	Proposed 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 of effect
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
366705	Lionel Avenue, Wendover	42	33	59/62	46	45	51	48	45	1	0	NA	32	R	T	-	-	-	-	
366745	Aylesbury Road, Wendover	28	20	47/50	53	44	55	53	44	0	0	NA	19	R	T	-	-	-	-	
366911	Liffre Drive, Wendover	33	24	50/53	63	56	75	63	56	0	0	NA	43	R	T	H	-	-	-	
367404	Aylesbury Road, Wendover	39	30	53/56	51	43	75	51	43	0	0	NA	2	R	T	-	-	-	-	
368607	London Road, Wendover	55	45	73/75	74	69	83	74	69	0	0	A	7	R	T	H	-	-	-	
368658	London Road, Wendover	52	43	70/72	74	69	83	74	69	0	0	A	7	R	T	H	-	-	-	
368776	Rocky Lane, Wendover	53	44	68/70	54	46	54	56	48	3	2	A	6	R	T	-	-	-	-	OSV10-C02
368781	Rocky Lane, Wendover	59	50	78/80	54	47	54	60	51	5	4	A	1	R	T	-	-	-	-	OSV10-C02
368819	London Road, Wendover	51	42	66/69	74	69	83	74	69	0	0	A	4	R	T	H	-	-	-	
368834	Rocky Lane, Wendover	63	54	79/82	50	41	48	63	54	13	13	A	1	R	T	-	-	-	NI	OSV10-C02 OSV10-D02
368919	London Road, Wendover	55	46	69/72	45	35	47	55	46	10	11	A	3	R	T	-	-	-	-	~
369011	Hale Lane, Wendover	44	35	59/62	47	39	46	49	40	2	2	NA	4	R	T	-	-	-	-	
369123	Hale Lane, Wendover	44	35	60/63	47	39	46	49	40	2	2	NA	5	R	T	-	-	-	-	
369288	Hale Road, Wendover	44	35	60/63	47	39	46	49	40	2	2	NA	11	R	T	-	-	-	-	
369370	Hale Road, Wendover	42	33	58/61	47	39	46	48	40	1	1	NA	12	R	T	-	-	-	-	
369461	Heron Path, Wendover	41	32	56/59	52	49	56	52	49	0	0	NA	7	R	T	-	-	-	-	
369725	Honey Banks, Wendover	34	25	51/54	52	49	56	52	49	0	0	NA	38	R	T	-	-	-	-	
369820	Hale Road, Wendover	33	24	50/53	52	49	56	52	49	0	0	NA	1	R	T	-	-	-	-	
369935	Hale Road, Wendover	37	28	53/56	47	39	46	48	39	0	0	NA	7	R	T	-	-	-	-	
370028	Hazeldene, Wendover	37	28	54/57	52	49	56	52	49	0	0	NA	8	R	T	-	-	-	-	
370197	Church Lane, Wendover	48	39	62/65	55	49	56	56	50	1	0	NA	4	R	T	-	-	-	-	
370218	Hale Road, Wendover	48	39	64/67	47	39	46	51	42	4	3	NA	3	R	T	-	-	-	-	#
370600	Hampden Road, Wendover	31	22	47/51	52	49	56	52	49	0	0	NA	65	R	T	-	-	-	-	

SES4 and AP5 ES Appendix SV-004-010

Assessment Location		Impact criteria										Significance criteria							Significant effect	
ID	Area represented	Proposed 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 of effect
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
371603	The Poplars, Wendover	31	22	48/51	53	44	55	53	44	0	0	NA	136	R	T	-	-	-	-	
371673	Jusons Glebe, Wendover	31	22	48/51	53	44	55	53	44	0	0	NA	32	R	T	-	-	-	-	
372731	Rocky Lane, Wendover	52	43	67/70	48	46	51	54	48	5	2	A	1	R	T	-	-	-	-	OSV10-CO2
372742	Rocky Lane, Wendover	55	46	71/74	50	44	52	56	48	7	4	A	1	R	T	-	-	-	-	OSV10-CO2
372781	Rocky Lane, Wendover	55	46	70/73	50	44	52	56	48	7	4	A	2	R	T	-	-	-	-	OSV10-CO2
372817	Rocky Lane, Wendover	61	51	75/79	48	46	51	61	53	13	6	A	1	R	T	-	-	-	-	OSV10-CO2
372897	Kings Ash, Great Missenden	47	38	60/63	53	42	53	54	44	1	1	NA	2	R	T	-	-	-	-	
372916	Kings Ash, Great Missenden	47	38	63/66	53	42	53	54	44	1	1	NA	2	R	T	-	-	-	-	
372950	Chesham Lane, The Lee	46	36	65/68	53	42	53	54	43	1	1	NA	2	R	T	-	-	-	-	
372983	Kings Ash, Great Missenden	43	34	59/61	53	42	53	54	43	0	1	NA	5	R	T	-	-	-	-	
373067	Kings Ash, Great Missenden	46	36	64/66	53	42	53	54	43	1	1	NA	1	R	T	-	-	-	-	
373102	Kings Ash, Great Missenden	47	37	60/63	47	46	51	50	46	3	1	NA	1	R	T	-	-	-	-	#
373141	London Road, Wendover	54	44	68/71	45	35	47	54	45	9	10	A	1	R	T	-	-	-	-	~
700305	Rocky Lane, Wendover	56	46	71/74	50	44	52	57	48	7	4	A	1	R	T	-	-	-	-	OSV10-CO2
700307	Kings Ash, Great Missenden	48	39	62/65	47	46	51	51	46	3	1	NA	1	R	T	-	-	-	-	#
700312	Hale Road, Wendover	48	39	64/67	47	39	46	51	42	4	3	NA	1	R	T	-	-	-	-	#
700313	Heron Path, Wendover	43	33	57/61	52	49	56	52	50	1	0	NA	1	R	T	-	-	-	-	
700315	South Street, Wendover	40	31	60/63	62	51	59	62	51	0	0	NA	2	R	T	-	-	-	-	
700323	Ellesborough Road, Wendover	36	27	60/63	50	43	54	50	43	0	0	NA	1	R	T	-	-	-	-	
700324	Ellesborough Road, Wendover	35	27	55/58	50	43	54	50	43	0	0	NA	1	R	T	-	-	-	-	
700326	Forest Close, Wendover	38	32	45/48	62	51	59	62	51	0	0	NA	2	R	T	-	-	-	-	
700327	Bridleways, Wendover	45	36	64/67	50	45	53	51	45	1	1	NA	1	R	T	-	-	-	-	
700328	Ellesborough Road, Wendover	37	29	55/58	52	46	55	52	46	0	0	NA	2	R	T	-	-	-	-	

SES4 and AP5 ES Appendix SV-004-010

Assessment Location		Impact criteria										Significance criteria							Significant effect	
ID	Area represented	Proposed 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 of effect
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
901001	Chiltern Scarpe - Sam	26	17	41/44	42	37	41	42	37	0	0	B	-	LD	-	L	-	-	-	
901002	Longwick Vale - 100m	57	48	69/72	52	42	53	58	49	6	7	B	-	LD	-	-	-	-	-	
901003	Longwick Vale - 250m	49	40	61/64	49	43	53	52	45	3	2	B	-	LD	-	-	-	-	-	
901004	Longwick Vale - 500m	47	37	58/61	49	43	53	51	44	2	1	B	-	LD	-	-	-	-	-	
901017	HV - Aylesbury (1km)	17	10	28/31	49	43	53	49	43	0	0	B	-	LD	-	-	-	-	-	
350753	Bowood Lane, Wendover, (Engineering Works)	51	41	66/69	66	60	83	66	60	0	0	B	1	G5	T	H	-	-	-	
356230	Wendover Health Centre, Aylesbury Road (Health Centre)	31	22	50/52	53	44	55	53	44	0	0	B	1	G4	T	-	-	-	-	
357950	Nash Lee End, Wendover (Shopping)	49	40	60/62	56	51	60	57	51	1	0	B	1	G5	T	-	-	-	-	
358776	Aylesbury Road, Wendover (General Commercial)	41	33	53/56	54	47	52	54	47	0	0	B	1	G5	T	-	-	-	-	
359821	Pound Street, Wendover (General Commercial)	39	33	53/56	62	51	59	62	51	0	0	B	2	G5	T	-	-	-	-	
359821	Abbeyfield House, Dobbins Lane (Office)	39	33	53/56	62	51	59	62	51	0	0	B	2	G5	T	-	-	-	-	
360117	Station Approach, Wendover (General Commercial)	33	25	57/60	53	44	55	53	44	0	0	B	5	G5	T	-	-	-	-	
360117	The Military Gallery, Station Approach (Art Gallery)	33	25	57/60	53	44	55	53	44	0	0	B	1	G5	T	-	-	-	-	
360282	High Street, Wendover (General Commercial)	36	27	54/58	52	49	56	52	49	0	0	B	12	G5	T	-	-	-	-	
360527	High Street, Wendover (General Commercial)	33	24	52/55	52	49	56	52	49	0	0	B	9	G5	T	-	-	-	-	
360527	Wendy Lewis Studio & Gallery, Wendover (Art Gallery)	33	24	52/55	52	49	56	52	49	0	0	B	3	G5	T	-	-	-	-	
360527	Woollerton House, High Street (General Commercial)	33	24	52/55	52	49	56	52	49	0	0	B	1	G5	T	-	-	-	-	
361026	High Street, Wendover (General Commercial)	33	26	53/55	53	44	55	53	44	0	0	B	7	G5	T	-	-	-	-	
361089	High Street, Wendover (General Commercial)	29	20	47/50	53	44	55	53	44	0	0	B	10	G5	T	-	-	-	-	

SES4 and AP5 ES Appendix SV-004-010

Assessment Location		Impact criteria										Significance criteria							Significant effect	
ID	Area represented	Proposed 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 of effect
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
361283	The Tanyard, Tring Road, Wendover (Shopping)	32	23	49/52	53	44	55	53	44	0	0	B	2	G5	T	-	-	-	-	
361283	Holly Court, Tring Road, Wendover (General Commercial)	32	23	49/52	53	44	55	53	44	0	0	B	2	G5	T	-	-	-	-	
361283	Aylesbury Road, Wendover (General Commercial)	32	23	49/52	53	44	55	53	44	0	0	B	4	G5	T	-	-	-	-	
361283	Tring Road, Wendover (General Commercial)	32	23	49/52	53	44	55	53	44	0	0	B	1	G5	T	-	-	-	-	
361934	Dobbins Lane, Wendover (Club)	32	25	54/56	53	44	55	53	44	0	0	B	1	G5	T	-	-	-	-	
362513	Dobbins Lane, Wendover (General Commercial)	39	30	58/61	53	44	55	53	44	0	0	B	2	G5	T	-	-	-	-	
362638	Station Approach, Wendover (General Commercial)	39	30	61/64	59	53	63	59	53	0	0	B	4	G5	T	-	-	-	-	
363376	Chiltern Road, Wendover (British Legion Club)	34	25	53/56	53	44	55	53	44	0	0	B	1	G5	T	-	-	-	-	
365348	Complementary Health Clinic, Castle Park Road (Clinic)	35	26	50/52	66	59	75	66	59	0	0	B	1	G4	T	H	-	-	-	
365756	Knights Court, Aylesbury Road, Wendover, (Shopping)	32	23	50/53	66	59	75	66	59	0	0	B	1	G5	T	H	-	-	-	
366563	Aylesbury Road, Wendover (Police Station)	37	28	53/56	46	45	51	47	45	0	0	B	1	G4	T	-	-	-	-	
366745	Wendover Free Church (Church)	28	20	47/50	53	44	55	53	44	0	0	B	2	G3	T	-	-	-	-	
366745	Hall, Aylesbury Road, Wendover (Hall)	28	20	47/50	53	44	55	53	44	0	0	B	1	G3	T	-	-	-	-	
367404	Aylesbury Road, Wendover (General Commercial)	39	30	53/56	51	43	75	51	43	0	0	B	1	G5	T	-	-	-	-	
368702	London Road, Wendover, (General Commercial)	49	40	68/71	74	69	83	74	69	0	0	B	1	G5	T	H	-	-	-	
369123	Boddington Cottage, Hale Lane (General Commercial)	44	35	60/63	47	39	46	49	40	2	2	B	1	G5	T	-	-	-	-	
369223	St Mary's Church (Church)	46	37	60/63	55	49	56	56	50	1	0	B	1	G3	T	-	-	-	-	
369461	Hale Road, Wendover, (General Commercial)	41	32	56/59	52	49	56	52	49	0	0	B	1	G5	T	-	-	-	-	

SES4 and AP5 ES Appendix SV-004-010

Assessment Location		Impact criteria										Significance criteria							Significant effect	
ID	Area represented	Proposed 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 of effect
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
370197	Chiltern Way Federation, Church Lane, Wendover, (School)	48	39	62/65	55	49	56	56	50	1	0	B	1	G4	T	-	-	-	-	
371603	Scout Hall, Clay Lane, Wendover (Hall)	31	22	48/51	53	44	55	53	44	0	0	B	1	G3	T	-	-	-	-	
700312	Knights Court, Hale Road (General Commercial)	48	39	64/67	47	39	46	51	42	4	3	B	2	G5	T	-	-	-	-	\$

3.3 Assessment of significance of effects

Residential receptors: direct effects- individual dwellings

- 3.3.1 Taking account of the avoidance and mitigation measures set out in the main ES, the assessment in the main ES estimated that 4 properties: Hartley Farm on Rocky Lane and Larkfield, Long Meadow, and Cobwebs on Bacombe Lane, Wendover were likely to qualify for discretionary noise insulation. These properties were identified by the appropriate symbol on Map Series SV-01 and SV-02 (main ES, Volume 5, Sound, Noise and Vibration Map Book).
- 3.3.2 The design change will reduce the operational airborne noise levels at the properties in the vicinity of Bacombe Lane to an extent that the properties Larkfield, Long Meadow and Cobwebs are predicted to be not likely to qualify for noise insulation.
- 3.3.3 The design change does not alter the forecast noise levels at Hartley Farm and therefore the likely noise insulation qualification at this property remains as estimated in the main ES.

Residential receptors: direct effects- communities

- 3.3.4 The main ES identified a likely significant adverse operational noise effect on a community basis at Wendover Dean South, Wendover Dean North, Bacombe Lane and Nash Lee.
- 3.3.5 The design change reduces the forecast sound levels at properties in the vicinity of Bacombe Lane to an extent that the likely significant adverse operational noise effect, identified as OSV10-C03 in the main ES, is no longer likely.
- 3.3.6 The significant adverse operational noise effects on the communities at Wendover Dean South, Wendover Dean North and Nash Lee remain following the design change.

Residential receptors: indirect effects

- 3.3.7 No change from the main ES.

Non-residential receptors: direct effects

- 3.3.8 The original scheme identified, on a precautionary basis, St. Mary's Church, Wendover as being subject to a significant adverse operational noise effect denoted by OSV10-No1 on Map Series SV-01 and SV-02 (main ES, Volume 5, Sound, Noise and Vibration Map Book).
- 3.3.9 With the envisaged mitigation, the sound levels at St. Mary's Church are forecast to be reduced to a level of 60 dB L_{pAFmax} during the pass-by of the HS2 trains and 63 dB L_{pAFmax} during the pass-by of a train which just meets the noise levels stated in the Trans European Standard on Interoperability (TSI). Considering that existing ambient sound levels at the church during performance times are 59 - 64 dB L_{pAFmax} , the forecast maximum levels from train pass-bys are not considered likely to result in

a significant adverse effect at the church. The presence of sound from HS2 would result in a negligible effect on the acoustic character surrounding the church. Therefore the significant adverse operational noise effect identified at St. Mary's Church denoted by OSV10-No1 on Map Series SV-01 and SV-02 (main ES, Volume 5, Sound, Noise and Vibration Map Book) is no longer likely as a result of this design change.

Non-residential receptors: indirect effects

3.3.10 No change from the main ES.

Cumulative effects

3.3.11 No change from the main ES.

SES4 and AP5 ES Appendix SV-004-013

Environmental topic:	Sound, noise and vibration	SV
Appendix name:	Operational assessment report	004
Community forum area:	Calvert, Steeple Claydon, Twyford and Chetwode	013

Contents

1	Introduction	1
2	Scope, assumptions and limitations	1
	2.1 Changes of relevance to this assessment	1
3	Effects arising during operation	1
	3.1 Avoidance and mitigation measures	1
	3.2 Quantitative identification of impacts and effects	1
	3.3 Assessment of significance of effects	6

List of tables

Table 1:	Operational airborne sound level, noise impacts and effects	4
----------	---	---

1 Introduction

- 1.1.1 This appendix provides an update to Appendix SV-004-013 Operational sound, noise and vibration assessment report for community forum area (CFA) Calvert, Steeple Claydon, Twyford and Chetwode from the main Environmental Statement (ES) as a result of Additional Provision 5 Environmental Statement (AP₅ ES). This update should be read in conjunction with Appendix SV-004-013 Operational assessment report from the main ES and SES₃ and AP₄ ES.

2 Scope, assumptions and limitations

2.1 Changes of relevance to this assessment

- 2.1.1 Operational sound, noise and vibration assessments have been undertaken for the additional noise mitigation at Chetwode (SES₄-013-001).

3 Effects arising during operation

3.1 Avoidance and mitigation measures

- 3.1.1 The design change alters the noise fence barriers in the locale of Chetwode, as shown on SES₄ and AP₅ ES maps series SV-01 and SV-02. This mitigation amends the noise fence barrier shown in this location in the main ES, CFA₁₃, Volume 2, Section 11.

3.2 Quantitative identification of impacts and effects

Ground-borne sound and vibration

- 3.2.1 The amendments do not alter the assessment of operational ground-borne sound and vibration identified in main ES Appendix SV-004-013.

Airborne sound: direct impacts and effects

- 3.2.2 The direct effects from the operation of the SES₄ and AP₅ revised scheme as well as any new or altered roads or railway lines identified as part of the scheme, are presented in Table 1 for those locations in the vicinity of the design change.
- 3.2.3 The assessment information, impact criteria and significance criteria for the assessment of the incorporated mitigation case at residential and non-residential receptors are presented in Table 1. The results should be considered in conjunction with the information contained in SES₄ and AP₅ ES map series SV-02 in the Volume 5 Map Book.

3.2.4 Explanation of the Table 1 information is provided in Volume 5: Appendix SV001-000, with the following additional notes.

	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
D	Day - $L_{pAeq,07:00-23:00}$
N	Night - $L_{pAeq,23:00-07:00}$
M	Max - L_{pAFmax} In the Proposed Scheme only column, 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.
*	Where the Proposed Scheme modifies an existing source, i.e. road or railway realignments, the <i>Proposed Scheme only</i> level in the table includes the sound from the modified source. In this situation the <i>Do something (Opening year baseline + Year 15 traffic)</i> level has been corrected so as to not double count the sound associated with the road or railway on its new and existing alignment.
A	Adverse effect
B	For non-residential receptors further detail about the type of effect is set out in the text of Appendix SV-001-000.
CD	Committed Development. The value in brackets in the number of impacts represented column is the value with the committed 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 $>65dB_{Leq, day}$ and/or $>55dB_{Leq, night}$
L	Low existing ambient sound level. Defined as $<42dB_{Leq, day}$ and/or $<32dB_{Leq, night}$
LD	Landscape receptor
NA	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

SES₄ and AP₅ ES Appendix SV-004-013

RM Residential mooring

S Significant adverse effect

A change of 3dB or greater has been identified however, the assessment methodology only defines an impact where the absolute sound level from the Proposed 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.

~ The forecast adverse effects are not considered to be significant on a community basis (further information on methodology is provided in Volume 5: Appendix SV-001-000).

\$ 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 and therefore no impact is identified. Further information is provided in Volume 5: Appendix SV-001-000.

^ The impact methodology has either identified an impact at a receptor which based upon further qualitative information does not give rise to a significant effect. Further information is provided at the end of this Appendix.

SES4 and AP5 ES Appendix SV-004-013

Table 1: Operational airborne sound level, noise impacts and effects

Assessment location		Impact criteria										Significance criteria								Significant effect
ID	Area represented	SES3 scheme only (year 15 traffic)			Do nothing (opening year baseline)			Do Something (opening year baseline + year 15 traffic)*		Change with SES scheme		Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Mitigation of effect	
		D	N	M	D	N	M	D	N	D	N									
274142	Chetwode, Buckingham	65	56	81/84	43	31	35	65	56	22	25	S	2	R	T	L	Y	Y	NI	OSV13-C03 OSV13-D01
1274201	Newton Purcell, Buckingham	41	31	59/62	50	42	49	51	42	0	0	NA	1	R	T	-	-	-	-	
274255	Newton Purcell, Buckingham	41	32	55/58	50	42	49	51	42	1	0	NA	1	R	T	-	-	-	-	
274265	Newton Purcell, Buckingham	38	29	50/52	51	43	49	51	43	0	0	NA	1	R	T	-	-	-	-	
274535	Chetwode, Buckingham	47	38	61/63	45	35	44	49	40	4	5	NA	3	R	T	-	-	-	-	#
274609	Chetwode, Buckingham	56	47	70/72	52	38	43	58	48	6	9	A	8	R	T	-	-	-	-	OSV13-C03
274745	Chetwode, Buckingham	52	43	65/68	42	36	41	53	44	11	8	A	1	R	T	L	Y	-	-	OSV13-C03
275094	School End, Chetwode	47	38	59/62	42	36	41	48	40	6	4	NA	5	R	T	L	-	-	-	#
275155	Chetwode, Buckingham	47	38	59/62	42	36	41	48	40	6	4	NA	2	R	T	L	-	-	-	#
275187	Chetwode, Buckingham	56	47	70/72	42	33	41	56	47	14	14	A	1	R	T	L	Y	-	-	OSV13-C03
275245	Newton Purcell, Buckingham	52	43	67/70	47	38	47	53	44	6	6	A	1	R	T	-	-	-	-	OSV13-C03
275251	Chetwode, Buckingham	61	52	75/79	45	35	44	61	52	16	16	A	1	R	T	-	-	-	-	OSV13-C03
277651	Chetwode, Buckingham	48	39	63/66	52	38	43	53	42	1	3	NA	1	R	T	-	-	-	-	#
277682	Barton Hartshorn, Buckingham	46	37	59/62	47	40	42	49	41	2	2	NA	8	R	T	-	-	-	-	
277726	Barton Hartshorn, Buckingham	47	38	63/65	47	40	42	50	42	3	2	NA	8	R	T	-	-	-	-	#
277745	Barton Hartshorn, Buckingham	49	40	62/65	47	40	42	51	43	4	3	A	2	R	T	-	-	-	-	~
277995	Barton Hartshorn, Buckingham	55	46	69/71	47	40	42	56	47	9	7	A	1	R	T	-	-	-	-	~
279462	Barton Hartshorn, Buckingham	44	36	61/63	47	40	42	49	41	2	1	NA	2	R	T	-	-	-	-	#
700431	Chetwode, Buckingham	39	29	52/54	45	35	44	46	36	1	1	NA	2	R	T	-	-	-	-	
710608	Chetwode, Buckingham	47	38	59/62	42	36	41	48	40	6	4	NA	1	R	T	L	-	-	-	#
711004	Committed development CFA13/4	76	67	91/94	42	33	41	76	67	34	33	S	1	CD	T	L	Y	-	NI	OSV13-C03 OSV13-D03
277726	Manor Farm, Barton Hartshorn (General Commercial)	47	38	63/65	47	40	42	50	42	3	2	B	1	G5	T	-	-	-	-	\$

SES4 and AP5 ES Appendix SV-004-013

Assessment location		Impact criteria										Significance criteria							Significant effect	
ID	Area represented	SES3 scheme only (year 15 traffic)			Do nothing (opening year baseline)			Do Something (opening year baseline + year 15 traffic)*		Change with SES scheme		Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact		Mitigation of effect
		D	N	M	D	N	M	D	N	D	N									
279462	St James's Church (Church)	44	36	61/63	47	40	42	49	41	2	1	B	1	G3	T	-	-	-	-	
710608	St. Mary's and St. Nicholas (Church)	47	38	59/62	42	36	41	48	40	6	4	B	1	G3	T	L	-	-	-	\$

3.3 Assessment of significance of effects

Residential receptors: direct effects- individual dwellings

- 3.3.1 Taking account of the avoidance and mitigation measures set out in the main ES, forecast sound levels at Rosehill Barns, Rosehill Farm, The Hermitage and the proposed residential property in committed development ref. CFA_{13/4} (refer to main ES Volume 2, Section 2) were above the under the daytime trigger threshold included in the Noise Insulation (Railways and Other Guided Transport Systems) Regulations 1996. As a result, it was estimated that these buildings were likely to qualify for noise insulation. The mitigation measures, including noise insulation, will reduce noise inside all dwellings such that it will not reach a level where it would significantly affect residents.
- 3.3.2 The design change reduces the sound level forecast at The Hermitage such that it is below the daytime trigger threshold included in the Noise Insulation (Railways and other Guided Transport Systems) Regulations 1996. The forecast level is also below the discretionary night-time and maximum noise insulation trigger levels.
- 3.3.3 It is estimated that Rosehill Barns, Rosehill Farm and the proposed residential property in committed development ref. CFA_{13/4} remain likely to qualify for noise insulation following the design change.

Residential receptors: direct effects- communities

- 3.3.4 The main ES identified a likely significant adverse noise effect on a community basis at approximately 25 dwellings and associated shared community open areas in the vicinity of the road that runs through Chetwode, identified as OSV₁₃-Co₃ on main ES Map Series SV-01 and SV-02 (main ES, Volume 5, Sound, Noise and Vibration Map Book).
- 3.3.5 The design change reduces the forecast sound levels at Chetwode such that residual adverse effects are forecast around approximately 15 residential dwellings in the vicinity of the road than runs through Chetwode. These adverse effects are significant when assessed on a community basis, so a significant adverse operational noise effect remains likely at the community of Chetwode. This significant effect, identified as OSV₁₃-Co₃ on SES₄ and AP₅ ES Map Series SV-01 and SV-02 (SES₄ and AP₅ ES Volume 5, Map Book) is considered different to that reported in the main ES.

Residential receptors: indirect effects

- 3.3.6 No change from the main ES.

Non-residential receptors: direct effects

- 3.3.7 No change from the main ES.

Non-residential receptors: indirect effects

- 3.3.8 No change from the main ES.

Cumulative effects

- 3.3.9 No change from the main ES.

High Speed Two (HS2) Limited

One Canada Square
London E14 5AB

T 020 7944 4908

E hs2enquiries@hs2.org.uk

A10