

High Speed Rail (West Midlands - Crewe)

Environmental Statement

Volume 5: Technical appendices

CA3: Stone and Swynnerton

Sound, noise and vibration report (SV-002-003)



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Department for Transport

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

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1 Introduction

- 1.1.1 This document is part of the sound, noise and vibration Appendix to the sound, noise and vibration assessment.
- 1.1.2 The appendices are split into two sections:
- the first of these is a single document containing an introduction to the relevant route-wide methodology, assumptions and assessment (Volume 5: Appendix SV-001-000) and relates to the sound, noise and vibration assessment for all community areas (CA); and
 - the second is split across five documents, one per CA, and contains the detailed sound, noise and vibration levels for that CA.
- 1.1.3 This document relates to the Stone and Swynnerton community area (CA3), and contains the detailed baseline, construction and operational sound noise and vibration levels.
- 1.1.4 The outcomes of the sound, noise and vibration assessment are summarised in Volume 2: Community area reports.
- 1.1.5 Maps referred to throughout the sound, noise and vibration appendices are contained in the Volume 5: Sound, Noise and Vibration Map Book.

2 Scope, assumptions and limitations

2.1 Regional and local policy guidance

2.1.1 The policy framework for sound, noise and vibration is set out in Volume 1¹ and in Volume 5: Appendix SV-001-000. As part of the engagement with local authorities, where the Proposed Scheme would operate, information regarding any specific local planning guidance in respect of noise and vibration were requested. For the Stone and Swynnerton area the guidance within The Plan for Stafford Borough (2011 – 2031)² has been considered as part of formulating the detailed application of the impact and significance criteria set out in the Volume 5: Appendix SV-001-000, the Scope and Methodology Report (SMR) and the SMR Addendum³ (Section 6).

2.2 Engagement

2.2.1 Details of engagement on a route-wide basis with the local and county authorities' Environmental Health Practitioners is set out in Volume 1.

2.2.2 Meetings⁴ have been held with representatives of Stafford Borough Council (SBC) and Staffordshire County Council regarding the approach which has been taken to baseline monitoring within this area, the identification of noise and vibration sensitive receptors and the selection of assessment locations and to discuss the development of the mitigation to be included in the Proposed Scheme.

2.2.3 Changes suggested during these meetings have influenced the assessment locations used and the monitoring undertaken and reported in this appendix. SBC officers attended baseline sound measurements in this area and witnessed the measurement procedures used.

2.2.4 Local engagement through the working draft Environmental Impact Assessment (EIA) Report consultation provided the opportunity for local stakeholders to suggest appropriate baseline sound monitoring locations, building uses and review of the draft list of non-residential properties to be considered in the assessment.

2.3 Methodology

2.3.1 The methodology used for the assessment of airborne sound, ground-borne sound and vibration impacts and the determination of significant effects is defined in the SMR and the SMR Addendum. Further information is contained in Volume 5: Appendix SV-001-000.

2.4 Assumptions

2.4.1 Route-wide assumptions are outlined in Volume 1 (Section 8) and are further detailed in Volume 5: Appendix SV-001-000. Local assumptions that apply to the assessment

¹ See Environmental Statement Volume 1, Introduction to the Environmental Statement

² Stafford Borough Council (2014), *The Plan for Stafford Borough 2011 – 2031*, <http://www.staffordbc.gov.uk/live/Documents/Planning%20Policy/Plan%20for%20Stafford%20Borough/PFSB-Adoption.pdf>.

³ Environmental Impact Assessment Scope and Methodology Report, Volume 5: Appendix CT-001-001 and Environmental Impact Assessment Scope and Methodology Report Addendum, Volume 5: Appendix CT-001-002

⁴ Meetings held on 22 April 2016, 5 July 2016 and 13 October 2016

of construction sound noise and vibration within this area are set out Volume 2, Stone and Swynnerton (CA Report 3), Section 13.

2.5 **Limitations**

- 2.5.1 The route-wide limitations and the approach adopted to ensure that they will not impact the robust assessment of sound, noise and vibration are presented in Volume 5: Appendix SV-001-000 and Volume 2.

3 Baseline

3.1 Existing acoustic environment

- 3.1.1 The area is characterised by a mix of small towns, villages, hamlets and isolated residential properties in a predominantly rural setting. The sound environment is generally dominated by local and distant road traffic, with trains (on the West Coast Main Line (WCML)), overflying aircraft, local neighbourhood sources and natural sounds also contributing.
- 3.1.2 The area is characterised by a mix of small towns, villages, hamlets and isolated residential properties in a predominantly rural setting. The area also includes the Walton Industrial Estate and sewage works. The sound environment is generally dominated by motorway, local and distant road traffic, with trains (on the WCML), overflying aircraft, local neighbourhood sources and natural sounds also contributing.
- 3.1.3 There are several major roads in the area including the A34 which runs through Aston-by-Stone, the M6, the B5026 Eccleshall Road that runs east to west through Walton, and the A51 Lichfield Road. The M6 is a major contributor to the sound environment for many assessment locations within this community area. Sound levels close to the main transportation routes are high during the daytime but, with the exception of locations in close proximity to the M6, are lower at night. The sound levels are lower further from the transportation routes.
- 3.1.4 The community of Walton is characterised, for dwellings near the A34, by sound from the A34 road which runs through the town. The residential areas in the south-west of the town in the vicinity of the B5026 Eccleshall Road within the SNV Study Area are located further from the A34. Here daytime sound levels are typically characterised by sound from the M6 and are around 45-50dB daytime and 35 to 40 dB night-time.
- 3.1.5 The community of Yarnfield is characterised by sound from local roads and distant sound from the M6. Sound levels are typically around 60dB daytime and 50dB night-time at properties facing Yarnfield Lane. Further from Yarnfield Lane noise levels are lower, typically 50dB daytime and 40dB night-time.
- 3.1.6 The community of Swynnerton is characterised by sound from Swynnerton Road which runs through the community. Sound levels at properties closest to Swynnerton Road are typically around 50dB daytime and 45dB night-time. Away from the road sound levels are typically around 45dB daytime and 40 dB night time.

3.2 Existing baseline sound monitoring locations

- 3.2.1 Baseline monitoring locations have been defined in order to provide representative sound levels at each assessment location within the study area. Baseline information has been gathered incrementally through successive rounds of field surveys focused on locations where likely significant effects are forecast.
- 3.2.2 Areas within the study area where baseline data is required have been divided into a series of smaller sub-areas. Each of these sub-areas is representative of clusters of receptors where the noise climate is influenced by the same sound sources. Within each of the sub-areas, a programme of unattended monitoring has been undertaken, supplemented by attended observations to ensure identification of the contributing

sources to the sound climate at the measurement locations. All attended observations have been undertaken simultaneously with the unattended measurements to allow a direct comparison between assessment locations to be established.

- 3.2.3 Maps showing the baseline sound monitoring locations and assessment locations with this area are included in Map Series SV-03 and SV-04 (Volume 5: Sound, Noise and Vibration Map Book).

3.3 Existing baseline data collection methodology

- 3.3.1 The overall approach to baseline data collection for sound noise and vibration is described in Volume 5: Appendix SV-001-000.

- 3.3.2 In summary, the approach to defining baseline levels includes a mixture of sound monitoring and – for major transport noise sources – sound modelling verified using results from sound monitoring.

- 3.3.3 Within the Stone and Swynnerton area, 22 locations have been defined to represent all sound and vibration sensitive receptors within the spatial scope of the assessment. The assessment locations are shown on the detailed maps in Map Series SV-03 and SV-04 (Volume 5: Sound, Noise and Vibration Map Book). These measurement locations have been classified as follows:

- seven long-term measurements – unattended measurements of several days duration; and
- Fifteen medium-term measurements – attended measurements typically of 24 hours duration.

3.4 Existing baseline sound levels

- 3.4.1 From the measurements described in Section 3.1, baseline sound levels have been ascertained for each assessment location within this area. These levels are presented in terms of the following key sound indicators:

- baseline levels used for the operational sound assessment:
 - $L_{pAeq,16hr}$ weekday daytime (07:00-23:00) sound pressure level;
 - $L_{pAeq,8hr}$ weekday night-time (23:00-07:00) sound pressure level;
 - arithmetic average of $L_{pAFmax,5min}$ night-time sound pressure level; and
 - highest $L_{pAFmax,5min}$ night-time sound pressure level.
- baseline levels used for the construction sound assessment:
 - daytime L_{pAeq} sound pressure level (Monday to Friday 07:00-19:00; Saturday 07:00-13:00);
 - evening/weekend L_{pAeq} sound pressure level (Monday to Friday 19:00-23:00, Saturday 13:00-23:00; Sunday 07:00-23:00); and
 - night-time L_{pAeq} sound pressure level (Monday to Sunday 23:00-07:00).

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- 3.4.2 These values are presented in Table 1. The data source coding included within this table details how the baseline sound levels allocated to each assessment location have been derived. This coding is summarised in Table 2 and explained in detail in Volume 5: Appendix SV-001-000. Codes contained within parentheses relate to the derivation of night-time baseline noise levels where they are different to the daytime derivation method.

Table 1: Existing baseline sound levels

Assessment location		Measurement location	Existing baseline sound levels (dB)							Data source coding
Ref	Area represented		For operational sound assessment				For construction sound assessment			
			Daytime L _{pAeq,16hr}	Night-time L _{pAeq,8hr}	Arithmetic average L _{pAFmax,5min}	Highest night-time L _{pAFmax,5min}	Daytime, L _{pAeq}	Evening / weekend, L _{pAeq}	Night-time, L _{pAeq}	
8239	North Pirehill Farm, Walton	-	44	36	44	77	45	41	36	3, C, -, b
8240	Walton House Farm, Walton	ML184	61	57	65	87	61	60	57	1, A, ii, b
8251	Micklow House Farm, Walton	ML184	64	60	65	87	64	63	60	1, B, iii, c
8268	Sandyford Farm, Sandyford	ML901	56	48	55	74	57	50	48	1, A, i, a
8274	Swynnerton Heath Farm, Swynnerton	-	45	41	58	71	46	41	41	3, C, -, b
8361	Clement House / Walton Heath Farm, Stone	ML184	61	57	65	87	61	60	57	1, A, i, a
8369	Plants Alive Limited, Swynnerton Grange, Swynnerton	-	52	45	62	77	53	49	45	3, C, -, c
13001	Birch Farm, Enson	ML188	53	43	50	82	54	50	43	2, A, iii, a
13007	Wood Farm, Yarlet	ML188	63	54	67	77	64	60	54	2, A, iii, b
13010	New House Farm, Yarlet	-	61	55	67	77	62	58	55	3, A, -, a
13013	Stafford Road, Stone	ML112	46	42	55	81	46	46	42	1, A, i, a

Assessment location		Measurement location	Existing baseline sound levels (dB)							Data source coding
			For operational sound assessment				For construction sound assessment			
Ref	Area represented		Daytime L _{pAeq,16hr}	Night-time L _{pAeq,8hr}	Arithmetic average L _{pAFmax,5min}	Highest night-time L _{pAFmax,5min}	Daytime, L _{pAeq}	Evening / weekend, L _{pAeq}	Night-time, L _{pAeq}	
13014	Staffordshire Fire And Rescue Service Hq	ML112	46	42	55	81	46	46	42	1, A, i, a
13019	Pirehill Lane, Stone	ML27	44	36	48	57	45	39	36	1, A, iii, c
13024	Pirehill Lane, Stone	ML27	44	36	44	77	45	39	36	1, A, ii, a
13025	Pirehill Lane, Stone	-	44	37	44	77	45	41	37	3, C, -, b
13026	Pirehill Lane, Stone	-	44	37	44	77	45	41	37	3, C, -, b
13027	Hawthorn Avenue, Stone	-	40	36	48	57	41	37	36	3, C(CD), -, c
13028	Pirehill Lane, Stone	-	45	37	44	77	46	42	37	3, C, -, b
13029	Tudor Close, Stone	-	40	36	48	57	41	37	36	3, C(CD), -, b
13031	Redfern Road, Stone	-	41	36	48	57	42	38	36	3, C(CD), -, b
13032	Pirehill Lane, Stone	ML27	44	36	44	77	45	40	36	3, C, i, b
13034	Cherry Tree Close, Stone	-	41	36	48	57	42	38	36	3, C(CD), -, b
13035	Coombe Park Road, Stone	-	43	36	48	57	44	40	36	3, C, -, b
13037	Pirehill Lane, Stone	-	46	39	44	77	47	43	39	3, C, -, b

Assessment location		Measurement location	Existing baseline sound levels (dB)							Data source coding
Ref	Area represented		For operational sound assessment				For construction sound assessment			
			Daytime L _{pAeq,16hr}	Night-time L _{pAeq,8hr}	Arithmetic average L _{pAFmax,5min}	Highest night-time L _{pAFmax,5min}	Daytime, L _{pAeq}	Evening / weekend, L _{pAeq}	Night-time, L _{pAeq}	
13039	Cherry Tree Close, Stone	-	42	36	48	57	43	39	36	3, C(CD), -, b
13040	Stuart Close North, Stone	-	43	36	48	57	44	40	36	3, C, -, b
13041	Meadow Way, Stone	-	41	36	48	57	42	38	36	3, C(CD), -, b
13042	Fraser Close, Stone	-	41	36	48	57	42	38	36	3, C(CD), -, b
13045	Coombe Park Road, Stone	-	45	38	48	57	46	42	38	3, C, -, b
13046	Redfern Road, Stone	-	41	36	48	57	42	38	36	3, C(CD), -, b
13047	Meadow Way, Stone	-	41	36	48	57	42	37	36	3, C(CD), -, b
13050	Windsor Close, Stone	-	46	39	48	57	47	43	39	3, C, -, b
13051	Crestwood Drive, Stone	-	41	36	48	57	42	38	36	3, C(CD), -, b
13052	Crestwood Drive, Stone	-	43	36	48	57	44	40	36	3, C, -, b
13053	Crestwood Drive, Stone	-	45	39	48	57	46	42	39	3, C, -, b
13055	Coalport Drive, Stone	-	42	36	48	57	43	39	36	3, C, -, b
13058	Foxwood Close, Stone	-	50	43	48	57	51	45	43	3, C, -, b

Assessment location		Measurement location	Existing baseline sound levels (dB)							Data source coding
Ref	Area represented		For operational sound assessment				For construction sound assessment			
			Daytime L _{pAeq,16hr}	Night-time L _{pAeq,8hr}	Arithmetic average L _{pAFmax,5min}	Highest night-time L _{pAFmax,5min}	Daytime, L _{pAeq}	Evening / weekend, L _{pAeq}	Night-time, L _{pAeq}	
13059	Tyler Grove, Stone	-	44	38	44	77	45	41	38	3, C, -, b
13062	Wedgwood Avenue, Stone	-	48	41	48	57	49	44	41	3, C, -, b
13067	Fieldsway, Stone	-	56	50	71	78	56	55	50	4, A, -, b
13069	Walton House Farm, Walton	ML184	61	57	65	87	61	60	57	1, B, ii, b
13070	Days Inn, Southbound M6 Stafford Services Near Stone	ML184	63	59	65	87	63	62	59	1, B, iii, c
13071	Woodlands Close, Stone	-	46	44	71	78	48	45	44	5, C, -, c
13072	Common Lane, Stone	ML184	61	57	65	87	61	60	57	1, B, ii, b
13073	Woodlands Close, Stone	-	55	44	71	78	58	56	44	5, C, -, c
13075	Common Lane, Stone	ML184	61	57	65	87	61	60	57	1, A, i, a
13078	Eccleshall Road, Stone	ML184	62	58	65	87	62	61	58	1, B, ii, b
13080	Darlaston Park, Stone	ML3	50	46	62	77	52	49	46	2, A, i, a
13081	Yarnfield Lane, Stone	ML3	50	46	62	77	52	49	46	2, A, ii, b

Assessment location		Measurement location	Existing baseline sound levels (dB)							Data source coding
Ref	Area represented		For operational sound assessment				For construction sound assessment			
			Daytime L _{pAeq,16hr}	Night-time L _{pAeq,8hr}	Arithmetic average L _{pAFmax,5min}	Highest night-time L _{pAFmax,5min}	Daytime, L _{pAeq}	Evening / weekend, L _{pAeq}	Night-time, L _{pAeq}	
13083	Yarnfield Lane, Stone	ML3	56	48	62	77	57	52	48	3, A, ii, c
13084	Travelodge, M6 Northbound Stafford Services	-	56	49	71	78	57	53	49	3, C, -, b
13086	Darlaston Park, Stone	ML3	50	46	62	77	52	49	46	2, A, ii, c
13090	Eccleshall Road, Stone	-	57	48	59	65	58	54	48	3, C, -, c
13095	Eccleshall Road, Stone Test	-	54	47	59	65	55	51	47	3, C, -, c
13097	Eccleshall Road, Stone	-	50	46	59	65	51	47	46	3, C, -, c
13098	Jervis Lane, Meaford	-	46	40	71	78	47	43	40	3, C, -, c
13099	White Moor Farm, Yarnfield Lane, Yarnfield	-	69	62	71	78	70	66	62	3, C, -, b
13100	Yarnfield Lane, Yarnfield	-	53	46	59	65	55	53	46	5, A, -, c
13101	Yarnfield Lane, Yarnfield	-	55	48	59	65	56	51	48	3, C, -, c
13102	Bury Bank, Meaford	-	52	45	71	78	53	49	45	3, C, -, c
13103	Yarnfield Lane, Yarnfield	-	51	42	59	65	52	45	42	3, A, -, c
13104	Blakelow, Swynnerton	-	53	46	71	78	54	50	46	3, C, -, c

Assessment location		Measurement location	Existing baseline sound levels (dB)							Data source coding
Ref	Area represented		For operational sound assessment				For construction sound assessment			
			Daytime L _{pAeq,16hr}	Night-time L _{pAeq,8hr}	Arithmetic average L _{pAFmax,5min}	Highest night-time L _{pAFmax,5min}	Daytime, L _{pAeq}	Evening / weekend, L _{pAeq}	Night-time, L _{pAeq}	
13105	Moss Lane, Yarnfield	-	53	46	59	65	54	50	46	3, C, -, b
13107	Covert Lodge Bungalow, Sandyford	-	54	47	71	78	55	51	47	3, C, -, b
13112	Chase Lane, Tittensor	-	51	45	71	78	52	48	45	3, C, -, c
13113	Blakelow Farm, Swynnerton	-	56	49	71	78	57	53	49	3, C, -, c
13114	Covert Lodge Bungalow, Sandyford	-	56	49	71	78	57	53	49	3, C, -, b
13115	Highlows Lane, Yarnfield	-	48	41	62	77	49	45	41	3, C, -, c
13116	Chase Lane, Sandyford	-	56	49	68	81	57	53	49	3, C, -, c
13117	Chase Lane, Sandyford	-	55	49	68	81	56	52	49	3, C, -, c
13118	Swynnerton Grange, Swynnerton	-	51	44	62	77	52	48	44	3, C, -, c
13119	Swynnerton Grange Farm, Swynnerton	-	49	42	62	77	50	46	42	3, C, -, c
13121	Chase Lane, Sandyford	-	60	53	68	81	61	57	53	3, C, -, b
13122	Chase Lane, Sandyford	-	71	64	68	81	72	68	64	3, C, -, b
13123	Sandyford Cottage, Sandyford	-	61	54	68	81	62	56	54	3, A, -, b

Assessment location		Measurement location	Existing baseline sound levels (dB)							Data source coding
Ref	Area represented		For operational sound assessment				For construction sound assessment			
			Daytime L _{pAeq,16hr}	Night-time L _{pAeq,8hr}	Arithmetic average L _{pAFmax,5min}	Highest night-time L _{pAFmax,5min}	Daytime, L _{pAeq}	Evening / weekend, L _{pAeq}	Night-time, L _{pAeq}	
13124	Hall Lane, Swynnerton	-	53	46	68	81	54	50	46	3, C, -, c
13125	Sandyford Farm, Sandyford	ML901	56	48	55	74	57	50	48	1, A, i, a
13126	Long Compton, Sandyford	-	60	53	59	70	61	54	53	3, A, -, b
13127	Hall Lane, Swynnerton	ML126	46	42	52	78	48	43	42	2, A, i, a
13128	Glebe House, Swynnerton	ML119	53	53	61	77	55	51	53	2, A, i, b
13129	Hall Lane, Swynnerton	ML126	46	42	52	78	48	43	42	2, A, ii, a
13131	St. Mary's Church, Swynnerton	ML126	46	42	52	78	48	43	42	2, A, ii, b
13132	The Barn, Swynnerton	ML126	46	42	52	78	48	43	42	2, A, ii, b
13133	1 Home Farm Cottage, Swynnerton	-	53	44	56	76	54	47	44	3, A, i, a
13134	The Old School House, Swynnerton	-	50	42	58	71	51	46	42	3, C, i, a
13135	1 Home Farm Cottage, Swynnerton	-	56	47	56	76	57	49	47	3, A, ii, b
13136	The Water Tower, Swynnerton	ML32	49	44	58	71	50	46	44	2, A, i, a
13137	The Cottage, Swynnerton	-	59	50	56	76	60	52	50	3, C, ii, b

Assessment location		Measurement location	Existing baseline sound levels (dB)							Data source coding
Ref	Area represented		For operational sound assessment				For construction sound assessment			
			Daytime L _{pAeq,16hr}	Night-time L _{pAeq,8hr}	Arithmetic average L _{pAFmax,5min}	Highest night-time L _{pAFmax,5min}	Daytime, L _{pAeq}	Evening / weekend, L _{pAeq}	Night-time, L _{pAeq}	
13138	Our Lady of The Assumption Church, Swynnerton	ML126	46	42	52	78	48	43	42	2, A, ii, b
13139	Early Lane, Swynnerton	ML115	44	41	51	82	44	44	41	1, A, ii, b
13140	Weavers Walk, Swynnerton	ML115	44	41	51	82	44	44	41	1, A, i, a
13142	Early Lane, Swynnerton	ML115	44	41	51	82	44	44	41	1, A, ii, b
13143	Swynnerton Village Hall	ML115	44	41	51	82	44	44	41	1, A, ii, b
13144	Cliffords Wood, Swynnerton	ML180	46	40	51	87	46	45	40	1, A, i, a
13145	Frobisher Drive, Swynnerton	ML115	44	41	51	82	44	44	41	1, A, i, a
13146	Fairbanks Walk, Swynnerton	ML115	44	41	51	82	44	44	41	1, A, ii, b
13147	Old Lane, Beech	ML722	53	47	55	66	54	47	47	2, A, i, b
13148	Fairbanks Walk, Swynnerton	ML154	46	43	53	74	47	39	43	2, A, i, a
13150	Cliffords Wood, Swynnerton	-	50	44	55	69	51	45	44	3, C, -, b
13151	Cliffords Wood, Swynnerton	-	54	48	55	69	55	49	48	3, A, -, b

Assessment location		Measurement location	Existing baseline sound levels (dB)							Data source coding
Ref	Area represented		For operational sound assessment				For construction sound assessment			
			Daytime L _{pAeq,16hr}	Night-time L _{pAeq,8hr}	Arithmetic average L _{pAFmax,5min}	Highest night-time L _{pAFmax,5min}	Daytime, L _{pAeq}	Evening / weekend, L _{pAeq}	Night-time, L _{pAeq}	
13152	Swynnerton Heath Farmhouse, Swynnerton	-	50	45	58	71	51	46	45	3, A, -, b
13153	Cliffords Wood, Swynnerton	-	44	38	55	69	45	38	38	3, A, -, b
13155	Lodge Barn, Cotes Heath	ML176	43	38	51	65	44	41	38	2, A, i, a
13156	The Hattons, Cotes Heath	ML723	44	40	48	69	45	42	40	2, A, i, a
13157	Hatton Manor, Cotes Heath	ML176	43	38	51	65	44	41	38	2, A, ii, c
13159	1 Hatton Waterworks Cottages, Cotes Heath	ML176	52	38	51	65	54	47	38	5(2), C(A), ii, c
13161	The Rowe, Stableford	-	57	54	63	84	57	56	54	4, C, -, b
13162	The Rowe, Stableford	-	60	56	63	84	60	59	56	4, C, -, b
13163	The Rowe, Stableford	-	57	53	63	84	57	56	53	4, C, -, b
13164	Honeysuckle Cottage/Camelot Cottage, Shelton Under Harley	ML171	43	38	53	71	44	39	38	2, A, iii, c
13165	The Rowe, Stableford	ML715	57	47	63	84	60	55	47	5(2), C(A), i, b
13166	Shelton Under Harley Farm, Shelton Under Harley	ML171	53	46	53	71	55	49	46	5, C, iii, c

Assessment location		Measurement location	Existing baseline sound levels (dB)							Data source coding
Ref	Area represented		For operational sound assessment				For construction sound assessment			
			Daytime L _{pAeq,16hr}	Night-time L _{pAeq,8hr}	Arithmetic average L _{pAFmax,5min}	Highest night-time L _{pAFmax,5min}	Daytime, L _{pAeq}	Evening / weekend, L _{pAeq}	Night-time, L _{pAeq}	
13167	Shelton Under Harley Farm, Shelton Under Harley	ML171	54	48	53	71	56	49	48	5, A, iii, c
13168	Common Lane, Stone	ML905	53	45	48	57	55	47	45	2, A, i, a
13169	Eccleshall Road, Stone	-	58	51	65	87	59	52	51	3, A, -, b
13171	Common Lane/Eccleshall Road Residential Development, Walton: ~90 Dwellings On B5026 , Stone (CD Ref.: 14/20854/OUT)	-	52	45	48	57	53	47	45	3, C, -, b
13172	Walton Hill Residential Development, Walton (CD Ref.: 13/19002/OUT)	-	50	43	44	77	51	47	43	3, C, -, c
13173	Home Farm Buildings, Swynnerton (CD Ref.: 12/16697/FUL)	ML76	51	46	56	76	53	50	46	2, A, ii, b
13174	Home Farm Cottage, Swynnerton (CD Ref.: 12/16593/FUL)	-	59	50	56	76	60	52	50	3, A, ii, b
13175	Pirehill, Stone	-	44	38	55	81	45	40	38	3, C, -, b
13176	Green Lane, Whitgreave	-	51	44	59	65	52	48	44	3, C, -, b
13177	Common Lane, Stone	-	50	44	48	57	51	47	44	3, C, -, b

Assessment location		Measurement location	Existing baseline sound levels (dB)							Data source coding
Ref	Area represented		For operational sound assessment				For construction sound assessment			
			Daytime L _{pAeq,16hr}	Night-time L _{pAeq,8hr}	Arithmetic average L _{pAFmax,5min}	Highest night-time L _{pAFmax,5min}	Daytime, L _{pAeq}	Evening / weekend, L _{pAeq}	Night-time, L _{pAeq}	
13178	Hall Lane, Swynnerton	ML126	46	42	52	78	48	43	42	2, A, ii, b
13179	Swynnerton Grange, Swynnerton	-	46	40	62	77	47	43	40	3, C, -, c
13182	Cliffords Wood, Swynnerton	-	46	39	51	87	47	42	39	3, C, -, b
13183	Top Lane, Beech	-	50	43	60	80	51	47	43	3, C, -, c
13185	The Hattons, Cotes Heath	ML40	39	33	44	71	38	39	33	2, A, iii, c
13186	Drayton Road, Hanchurch	ML40	39	33	44	71	38	39	33	2, A, iii, c
13187	Camelot Cottage, Shelton Under Harley	ML40	39	33	44	71	38	39	33	2, A, iii, c
13188	Drayton Road, Hanchurch	ML40	39	33	44	71	38	39	33	2, A, iii, c
13189	Camelot Cottage, Shelton Under Harley	ML40	39	33	44	71	38	39	33	2, A, iii, c
13190	New House Farmhouse, Acton	ML40	39	33	44	71	38	39	33	2, A, iii, c
13191	Drayton Road, Hanchurch	ML40	39	33	44	71	38	39	33	2, A, iii, c
13192	The Rowe, Stableford	ML723	44	40	48	69	45	42	40	2, C, iii, c
13193	Early Lane, Swynnerton	ML115	44	41	51	82	44	44	41	1, A, ii, b

Assessment location		Measurement location	Existing baseline sound levels (dB)							Data source coding
Ref	Area represented		For operational sound assessment				For construction sound assessment			
			Daytime L _{pAeq,16hr}	Night-time L _{pAeq,8hr}	Arithmetic average L _{pAFmax,5min}	Highest night-time L _{pAFmax,5min}	Daytime, L _{pAeq}	Evening / weekend, L _{pAeq}	Night-time, L _{pAeq}	
13194	Pirehill Cottage Farm, Pirehill, Stone	-	44	38	55	81	45	40	38	3, C, -, b
13195	Residential Development At Yarnfield Park, ~300 Dwellings, CD 09/12911/OUT	-	48	41	62	77	49	45	41	3, C, -, c
13196	Residential Development At Cold Norton, ~20 Houses (CD Ref: 05/03889/OUT)	-	54	47	59	65	55	51	47	3, C, -, c

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Table 2: Data source coding key

Code	Data source type
1	Long-term measurement location (c. 7 days)
2	Short-term (c. 24 hours)
3	Specific road traffic validated prediction
4	Specific rail traffic validated prediction
5	Specific combined road and rail traffic validated prediction
6	Levels adopted from nearby assessment location
Code	Corrections Applied
A	Data from above source applied directly
B	Correction applied for distance from source
C	Correction applied for downwind conditions
D	Minimum level cut-off applied
Code	Distance from measurement
i	Data applied from a measurement at or very close to the assessment location.
ii	Data applied from a local measurement location at a greater distance but noted to have equivalent acoustic climate.
iii	Data applied from a distant measurement location where sound levels would be expected to be similar.
Code	Uncertainty
a	Data are considered highly representative of the prevailing sound climate
b	Data are considered representative of the prevailing sound climate, but uncertainties and/or variations in measured levels indicate that there may be a higher degree of uncertainty than for (a).
c	Data are considered to be an estimate of the sound climate due to assumptions made.

3.5 Future baseline methodology

Construction

- 3.5.1 The assessment of noise from construction activities assumes a future baseline year of 2020. As a conservative assumption, it has been assumed that no change in baseline sound levels will occur between the existing baseline (2016) and the future baseline year of 2020.

Operation

- 3.5.2 Future baseline sound levels for operation (2027) have been calculated to account for changes in baseline sound sources between the date of the existing baseline sound levels and 2027. Changes in existing sound sources between 2016 and 2027 may result in changes to baseline sound levels.
- 3.5.3 For major transportation sources, data for existing and future baseline operations have been reviewed. Where changes may occur between the existing baseline and future baseline (2027) situations which may influence the assessment of likely significant effects, expected changes in baseline sound levels have been derived. For example, expected changes in traffic flow, composition and speed have been used to calculate changes in sound emission from roads using the methodology from the Calculation of Road Traffic Noise⁵.
- 3.5.4 The changes to major sound sources which have been identified in this area are summarised in Table 3.

Table 3: 2027 future baseline sound levels

Sound source affected	Cause of change in levels	Change in sound levels (existing baseline to 2027 future baseline (dB))	
		Daytime, $L_{pAeq,16hr}$	Night-time, $L_{pAeq,8hr}$
M6	Increase in traffic flow	0.6	0.3
B5013 Hamley Heath	Increase in traffic flow	0.6	0.6

⁵ DoT memorandum, Calculation of road traffic noise, 1988

4 Construction

4.1 Evaluation of impacts and effects

- 4.1.1 This appendix provides a quantitative assessment of construction noise and vibration impacts/effects and a qualitative assessment of likely significant effects, based on the impacts/effects identified and other local context information consistent with the scope and methodology defined for the Proposed Scheme.
- 4.1.2 Indirect effects arising from temporary changes in traffic patterns on the existing road network as a consequence of constructing the Proposed Scheme are reported where they are likely to occur within the study area as defined in Volume 5: Appendix SV-001-000.
- 4.1.3 In undertaking the assessment of sound, noise and vibration, consistent with the EIA Directive⁶ and National Planning Practice Guidance⁷ a differentiation between impacts and effects, adverse effects and significant effects is made. Further information is provided in Volume 5: Appendix SV-001-000.
- 4.1.4 The assessment of impacts and effects has been undertaken at assessment locations that are representative of a number of dwellings or other sensitive receptors. The construction assessment locations employed in this assessment are presented on Map Series SV-03 in the Volume 5: Sound, Noise and Vibration Map Book.
- 4.1.5 Baseline sound level data has been collected at locations representative of the airborne sound-sensitive receptors and presented in Table 1.

4.2 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 Volume 2, Stone and Swynnerton (CA Report 3), Section 13.
- 4.2.2 The structure of this section of the assessment report is:
- avoidance and mitigation measures; and
 - quantitative identification of impact and effects:
 - ground-borne sound and vibration:
 - residential; and
 - non-residential.

⁶ European Commission (2014), EC Directive 85/337/EEC, as amended by 97/11/EC, 2003/35/EC, 2011/92/EC and 2014/52/EU ('the EIA Directive')

⁷ National Planning Practice Guidance – Noise, <http://planningguidance.planningportal.gov.uk>; refer to the table summarising noise exposure hierarchy

- Airborne sound:
 - residential; and
 - non-residential.

Avoidance and mitigation measures

4.2.3 These are set out in, Volume 2, Stone and Swynnerton (CA Report 3), Section 13.

Quantitative identification of impacts and effects

Ground-borne vibration

4.2.4 Assessment locations defined for the quantitative assessment of impacts are shown on Map Series SV-03 in the Volume 5: Sound, Noise and Vibration Map book.

4.2.5 For each assessment location, the assessment results for residential and non-residential receptors are presented in Table 5. Explanation of the information in Table 5, Table 6, and Table 9 is provided in Volume 5: Appendix SV-001-000, with the following additional notes in Table 4.

Table 4: 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, 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, 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

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Symbol	Explanation
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 LpAeq at the facade
L	Existing environment – low existing ambient noise levels, day and evening ≤45 dB, or night ≤35 dB LpAeq at the facade
D, E, N	Impact duration (months) – duration of impact during the day (D), evening (E) or night (N)
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) ⁸
TR	Mitigation effect - identified as likely to qualify for temporary rehousing under the Draft CoCP

⁸ Draft Code of Construction Practice, Volume 5: Appendix CT-003-000

Table 5: 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 ^{1.75}]		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											
12214	Yarlet Hall Lodge, Yarlet	0.7	0.22/0.48	-	Piling	A	1	R	T	-	-	-	1	-	~
12218	Hill Top Farm, Yarlet	>5	0.07/<0.8 ⁹	-	Road construction	A	1	R	T	-	-	-	0.75	-	¹⁰
13069	Walton House Farm, Walton	0.3	0.25/0.31	-	Piling	A	4	R	T	-	-	-	Up to 2	-	~
13078	Eccleshall Road, Stone	0.2	0.08/0.18	-	Site set-up / takedown	NA	1	R	T	-	-	-	-	-	
13099	White Moor Farm, Yarnfield Lane, Yarnfield	0.6	0.51/0.70	-	Piling	A	1	R	T	-	-	-	Up to 3	-	~
13101	Yarnfield Lane, Yarnfield	0.9	0.01/0.68	-	Road construction	A	3	R	T	-	-	-	0.75	-	¹⁰
13104	Blakelow, Swynnerton	0.2	0.02/0.10	-	Underground utility diversion	NA	1	R	T	-	-	-	-	-	
13124	Hall Lane, Swynnerton	0.4	0.06/0.30	-	Underground utility diversion	A	3	R	T	-	-	-	0.2	-	¹⁰
13126	Long Compton, Sandyford	2.9	0.01/<0.8 ⁹	-	Road construction	A	1	R	T	-	-	-	0.75	-	¹⁰

⁹ Construction methods will be selected to ensure that the on a monthly basis the significant adverse effect level is not exceeded

¹⁰ Impacts with durations of less than 1 month are not generally considered significant

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 ^{1.75}]		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											
13144	Cliffords Wood, Swynnerton	0.6	0.25/0.50	-	Road construction	A	1	R	T	-	-	-	1	-	7
13156	The Hattons, Cotes Heath	0.9	0.10/0.71	-	Road construction	A	1	R	T	-	-	-	1	-	7
13164	Honeysuckle Cottage/Camelot Cottage, Shelton Under Harley	>5	0.09/<0.8 ⁹	-	Road construction	A	2	R	T	-	-	-	1	-	10
13169	Eccleshall Road, Stone	1.5	0.11/<0.8 ⁹	-	Underground utility diversion	A	1	R	T	-	-	-	0.2	-	10

Airborne sound: direct impacts and effects

- 4.2.6 Activities associated with the construction phases of the Proposed 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.
- 4.2.7 For each type of receptor, subject to the screening distances identified, and based upon supplied plant information from engineers, the typical and highest monthly LAeq,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.
- 4.2.8 The assessment results, impact criteria and significance criteria for the assessment of the scheme at residential and non-residential receptors are presented in Table 6 and Table 7 respectively.
- 4.2.9 Explanation of the information within Table 6 and Table 7 is provided in Volume 5: Appendix SV-001-000, with the additional notes presented in Table 4.

Table 6: Assessment of construction noise at 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]			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											
13001	Birch Farm, Enson	48/53 [A]	-	-	Day: Earthworks	NA	1	R	T	-	-	-	-	-	
13007	Wood Farm, Yarlet	50/55 [B]	-	-	Day: Earthworks	NA	1	R	T	-	-	-	-	-	
13010	New House Farm, Yarlet	52/58 [B]	-	-	Day: Earthworks	NA	3	R	T	-	-	-	-	-	
13013	Stafford Road, Stone	49/53 [A]	-	-	Day: Earthworks	NA	1	R	T	-	-	-	-	-	
13019	Pirehill Lane, Stone	44/48 [A]	-	-	Day: On-site traffic	NA	95	R	T	-	-	-	-	-	
13024	Pirehill Lane, Stone	49/54 [A]	-	-	Day: Earthworks	NA	1	R	T	-	-	-	-	-	
13025	Pirehill Lane, Stone	47/52 [A]	-	-	Day: Earthworks	NA	1	R	T	-	-	-	-	-	
13026	Pirehill Lane, Stone	51/55 [A]	-	-	Day: Earthworks	NA	1	R	T	-	-	-	-	-	
13027	Hawthorn Avenue, Stone	44/49 [A]	-	-	Day: On-site traffic	NA	28	R	T	-	-	-	-	-	
13028	Pirehill Lane, Stone	48/54 [A]	-	-	Day: Earthworks	NA	2	R	T	-	-	-	-	-	
13029	Tudor Close, Stone	44/49 [A]	-	-	Day: On-site traffic	NA	13	R	T	-	-	-	-	-	

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]			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											
13031	Redfern Road, Stone	44/49 [A]	-	-	Day: On-site traffic	NA	24	R	T	-	-	-	-	-	
13032	Pirehill Lane, Stone	51/55 [A]	-	-	Day: Earthworks	NA	2	R	T	-	-	-	-	-	
13034	Cherry Tree Close, Stone	46/50 [A]	-	-	Day: On-site traffic	NA	40	R	T	-	-	-	-	-	
13035	Coombe Park Road, Stone	46/50 [A]	-	-	Day: On-site traffic	NA	25	R	T	-	-	-	-	-	
13037	Pirehill Lane, Stone	58/64 [A]	-	-	Day: Earthworks	NA	1	R	T	-	-	-	-	-	
13039	Cherry Tree Close, Stone	45/49 [A]	-	-	Day: On-site traffic	NA	34	R	T	-	-	-	-	-	
13040	Stuart Close North, Stone	43/48 [A]	-	-	Day: On-site traffic	NA	51	R	T	-	-	-	-	-	
13041	Meadow Way, Stone	45/50 [A]	-	-	Day: On-site traffic	NA	33	R	T	-	-	-	-	-	
13042	Fraser Close, Stone	44/49 [A]	-	-	Day: On-site traffic	NA	39	R	T	-	-	-	-	-	
13045	Coombe Park Road, Stone	47/51 [A]	-	-	Day: On-site traffic	NA	11	R	T	-	-	-	-	-	
13046	Redfern Road, Stone	46/51 [A]	-	-	Day: On-site traffic	NA	23	R	T	-	-	-	-	-	
13047	Meadow Way, Stone	43/48 [A]	-	-	Day: On-site traffic	NA	40	R	T	-	-	-	-	-	

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]			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											
13050	Windsor Close, Stone	46/51 [A]	-	-	Day: Earthworks	NA	39	R	T	-	-	-	-	-	
13051	Crestwood Drive, Stone	45/49 [A]	-	-	Day: Earthworks	NA	27	R	T	-	-	-	-	-	
13052	Crestwood Drive, Stone	46/50 [A]	-	-	Day: On-site traffic	NA	62	R	T	-	-	-	-	-	
13053	Crestwood Drive, Stone	49/54 [A]	-	-	Day: Earthworks	NA	37	R	T	-	-	-	-	-	
13055	Coalport Drive, Stone	46/51 [A]	-	-	Day: On-site traffic	NA	49	R	T	-	-	-	-	-	
13058	Foxwood Close, Stone	52/58 [A]	-	-	Day: Earthworks	NA	33	R	T	-	-	-	-	-	
13059	Tyler Grove, Stone	53/57 [A]	-	-	Day: Earthworks	NA	84	R	T	-	-	-	-	-	
13062	Wedgwood Avenue, Stone	51/57 [A]	-	-	Day: Earthworks	NA	7	R	T	-	-	-	-	-	
13067	Fieldsway, Stone	55/58 [A]	-	-	Day: Earthworks	NA	8	R	T	-	-	-	-	-	
13069	Walton House Farm, Walton	73/74 [B]	-	-	Day: Demolitions	A	4	R	T	-	-	D2	-	-	
13071	Woodlands Close, Stone	58/61 [A]	-	-	Day: Planting	NA	16	R	T	-	-	-	-	-	

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]			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											
13072	Common Lane, Stone	54/57 [B]	-	-	Day: Pond construction/planting	NA	1	R	T	-	-	-	-	-	
13073	Woodlands Close, Stone	59/62 [A]	-	-	Day: Earthworks	NA	14	R	T	-	-	-	-	-	
13075	Common Lane, Stone	55/59 [B]	-	-	Day: Demolitions	NA	1	R	T	-	-	-	-	-	
13078	Eccleshall Road, Stone	60/66 [B]	-	-	Day: Site set-up/takedown	NA	1	R	T	-	-	-	-	-	
13080	Darlaston Park, Stone	41/46 [A]	-	-	Day: On-site traffic	NA	2	R	T	-	-	-	-	-	
13081	Yarnfield Lane, Stone	55/59 [A]	-	-	Day: Depot building construction	NA	1	R	T	-	-	-	-	-	
13083	Yarnfield Lane, Stone	59/62 [A]	-	-	Day: Earthworks	NA	3	R	T	-	-	-	-	-	
13086	Darlaston Park, Stone	42/47 [A]	-	-	Day: On-site traffic	NA	1	R	T	-	-	-	-	-	
13090	Eccleshall Road, Stone	54/58 [A]	-	-	Day: Depot building construction	NA	10	R	T	-	-	-	-	-	
13095	Eccleshall Road, Stone Test	54/58 [A]	-	-	Day: Depot building construction	NA	6	R	T	-	-	-	-	-	

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]			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											
13097	Eccleshall Road, Stone	53/57 [A]	-	-	Day: Depot building construction	NA	15	R	T	-	-	-	-	-	
13098	Jervis Lane, Meaford	52/56 [A]	-	-	Day: Depot building construction	NA	1	R	T	-	-	-	-	-	
13099	White Moor Farm, Yarnfield Lane, Yarnfield	65/72 [C]	-	-	Day: Demolitions	NA	1	R	T	-	-	-	-	-	
13100	Yarnfield Lane, Yarnfield	56/60 [A]	-	-	Day: Depot building construction	NA	1	R	T	-	-	-	-	-	
13101	Yarnfield Lane, Yarnfield	62/66 [A]	-	-	Day: Earthworks	A	3	R	T	-	-	D2	-	-	
13102	Bury Bank, Meaford	53/57 [A]	-	-	Day: Underground utility diversion	NA	1	R	T	-	-	-	-	-	
13103	Yarnfield Lane, Yarnfield	56/61 [A]	-	-	Day: Earthworks	NA	1	R	T	-	-	-	-	-	
13104	Blakelow, Swynnerton	55/63 [A]	-	-	Day: Underground utility diversion	NA	1	R	T	-	-	-	-	-	
13105	Moss Lane, Yarnfield	59/63 [A]	-	-	Day: Overbridge pile breakdown	NA	8	R	T	-	-	-	-	-	

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]			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											
13107	Covert Lodge Bungalow, Sandyford	53/57 [A]	-	-	Day: On-site traffic	NA	1	R	T	-	-	-	-	-	
13112	Chase Lane, Tittensor	47/51 [A]	-	-	Day: On-site traffic	NA	2	R	T	-	-	-	-	-	
13113	Blakelow Farm, Swynnerton	64/68 [A]	-	-	Day: Earthworks	A	1	R	T	-	-	D16	-	-	
13114	Covert Lodge Bungalow, Sandyford	53/57 [A]	-	-	Day: Vegetation clearance	NA	2	R	T	-	-	-	-	-	
13115	Highlows Lane, Yarnfield	53/58 [A]	-	-	Day: Earthworks	NA	1	R	T	-	-	-	-	-	
13116	Chase Lane, Sandyford	52/57 [A]	-	-	Day: On-site traffic	NA	1	R	T	-	-	-	-	-	
13117	Chase Lane, Sandyford	48/53 [A]	-	-	Day: On-site traffic	NA	4	R	T	-	-	-	-	-	
13118	Swynnerton Grange, Swynnerton	60/64 [A]	-	-	Day: Earthworks	NA	2	R	T	-	-	-	-	-	
13119	Swynnerton Grange Farm, Swynnerton	54/59 [A]	-	-	Day: On-site traffic	NA	1	R	T	-	-	-	-	-	
13121	Chase Lane, Sandyford	50/55 [B]	-	-	Day: Earthworks	NA	2	R	T	-	-	-	-	-	

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]			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											
13122	Chase Lane, Sandyford	52/56 [C]	-	-	Day: Earthworks	NA	1	R	T	-	-	-	-	-	
13123	Sandyford Cottage, Sandyford	54/58 [B]	-	-	Day: Earthworks	NA	1	R	T	-	-	-	-	-	
13124	Hall Lane, Swynnerton	63/67 [A]	-	-	Day: Earthworks	A	3	R	T	-	-	D14	-	-	
13125	Sandyford Farm, Sandyford	62/67 [A]	-	-	Day: Earthworks	A	1	R	T	-	-	D8	-	-	
13126	Long Compton, Sandyford	61/66 [B]	-	-	Day: Road construction	NA	1	R	T	-	-	-	-	-	
13127	Hall Lane, Swynnerton	49/55 [A]	-	-	Day: On-site traffic	NA	5	R	T	-	-	-	-	-	
13128	Glebe House, Swynnerton	59/64 [A]	-	-	Day: Earthworks	NA	2	R	T	-	-	-	-	-	
13129	Hall Lane, Swynnerton	52/58 [A]	-	-	Day: Earthworks	NA	3	R	T	-	-	-	-	-	
13132	The Barn, Swynnerton	48/53 [A]	-	-	Day: On-site traffic	NA	6	R	T	-	-	-	-	-	
13133	1 Home Farm Cottage, Swynnerton	55/61 [A]	-	-	Day: Earthworks	NA	9	R	T	-	-	-	-	-	
13134	The Old School House, Swynnerton	62/68 [A]	-	-	Day: Earthworks	A	3	R	T	-	-	D2	-	-	

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]			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											
13135	1 Home Farm Cottage, Swynnerton	55/61 [A]	-	-	Day: Road construction	NA	1	R	T	-	-	-	-	-	
13136	The Water Tower, Swynnerton	60/66 [A]	-	-	Day: Earthworks	A	1	R	T	-	-	D2	-	-	
13137	The Cottage, Swynnerton	50/56 [B]	-	-	Day: Earthworks	NA	4	R	T	-	-	-	-	-	
13139	Early Lane, Swynnerton	46/50 [A]	-	-	Day: On-site traffic	NA	6	R	T	-	-	-	-	-	
13140	Weavers Walk, Swynnerton	45/50 [A]	-	-	Day: On-site traffic	NA	31	R	T	-	-	-	-	-	
13142	Early Lane, Swynnerton	49/54 [A]	-	-	Day: On-site traffic	NA	8	R	T	-	-	-	-	-	
13144	Cliffords Wood, Swynnerton	64/71 [A]	-	-	Day: Road construction	A	1	R	T	-	-	D7	-	-	
13145	Frobisher Drive, Swynnerton	44/49 [A]	-	-	Day: On-site traffic	NA	44	R	T	-	-	-	-	-	
13146	Fairbanks Walk, Swynnerton	44/49 [A]	-	-	Day: On-site traffic	NA	26	R	T	-	-	-	-	-	
13147	Old Lane, Beech	48/52 [A]	-	-	Day: Earthworks	NA	2	R	T	-	-	-	-	-	
13148	Fairbanks Walk, Swynnerton	44/49 [A]	-	-	Day: On-site traffic	NA	57	R	T	-	-	-	-	-	

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]			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											
13150	Cliffords Wood, Swynnerton	58/63 [A]	-	-	Day: Earthworks	NA	1	R	T	-	-	-	-	-	
13151	Cliffords Wood, Swynnerton	59/65 [A]	-	-	Day: Earthworks	NA	2	R	T	-	-	-	-	-	
13152	Swynnerton Heath Farmhouse, Swynnerton	54/59 [A]	-	-	Day: On-site traffic	NA	2	R	T	-	-	-	-	-	
13153	Cliffords Wood, Swynnerton	52/56 [A]	-	-	Day: On-site traffic	NA	1	R	T	-	-	-	-	-	
13155	Lodge Barn, Cotes Heath	48/53 [A]	-	-	Day: Pond construction/planting	NA	2	R	T	-	-	-	-	-	
13156	The Hattons, Cotes Heath	53/60 [A]	-	-	Day: Earthworks	NA	1	R	T	-	-	-	-	-	
13157	Hatton Manor, Cotes Heath	51/56 [A]	-	-	Day: Earthworks	NA	11	R	T	-	-	-	-	-	
13159	1 Hatton Waterworks Cottages, Cotes Heath	42/47 [A]	-	-	Day: On-site traffic	NA	8	R	T	-	-	-	-	-	
13161	The Rowe, Stableford	45/49 [A]	-	-	Day: On-site traffic	NA	5	R	T	-	-	-	-	-	
13162	The Rowe, Stableford	50/57 [B]	-	-	Day: Earthworks	NA	2	R	T	-	-	-	-	-	
13163	The Rowe, Stableford	57/63 [A]	-	-	Day: Earthworks	NA	11	R	T	-	-	-	-	-	

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]			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											
13164	Honeysuckle Cottage/Camelot Cottage, Shelton Under Harley	70/76 [A]	-	-	Day: Demolitions	S	2	R	T	-	-	D16	CT	NI	~
13165	The Rowe, Stableford	60/66 [B]	-	-	Day: Earthworks	NA	2	R	T	-	-	-	-	-	-
13166	Shelton Under Harley Farm, Shelton Under Harley	67/72 [A]	-	-	Day: Demolitions	A	1	R	T	-	-	D18	CT	-	~
13168	Common Lane, Stone	55/60 [A]	-	-	Day: Earthworks	NA	1	R	T	-	-	-	-	-	-
13169	Eccleshall Road, Stone	63/68 [A]	-	-	Day: Underground utility diversion	A	1	R	T	-	-	D2	-	-	~
13171	Common Lane/Eccleshall Road Residential Development, Walton: ~90 Dwellings On B5026, Stone (Cd Ref.: 14/20854/OUT)	54/60 [A]	-	-	Day: Earthworks	NA	90	CD-R	T	-	-	-	-	-	-
13172	Walton Hill Residential Development, Walton (Cd Ref.: 13/19002/OUT)	56/60 [A]	-	-	Day: Earthworks	NA	1	CD-R	T	-	-	-	-	-	-

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]			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											
13173	Home Farm Buildings, Swynnerton (Cd Ref.: 12/16697/FUL)	53/59 [A]	-	-	Day: Earthworks	NA	1	CD-R	T	-	-	-	-	-	
13174	1 Home Farm Cottage, Swynnerton (Cd Ref.: 12/16593/FUL)	58/62 [B]	-	-	Day: Road construction	NA	22	CD-R	T	-	-	-	-	-	
13193	Early Lane, Swynnerton	44/49 [A]	-	-	Day: On-site traffic	NA	1	R	T	-	-	-	-	-	
13194	Pirehill Cottage Farm, Pirehill, Stone	56/60 [A]	-	-	Day: On-site traffic	NA	2	R	T	-	-	-	-	-	
13195	Residential Development at Yarnfield Park CD 09/12911/OUT	53/58 [A]	-	-	Day: On-site traffic	NA	300	CD-R	T	-	-	-	-	-	
13196	Residential Development at Cold Norton (CD Ref: 05/03889/OUT)	54/58 [A]	-	-	Day: On-site traffic	NA	20	CD-R	T	-	-	-	-	-	

Table 7: 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											
13014(N)	Staffordshire Fire and Rescue Service HQ	51/55	-	7	-	Day: Earthworks	B	1	G5	T	-	-	-	-	-	
13070(N)	Days Inn, Southbound M6 Stafford Services Near Stone	46/50	-	0	-	Day: On-Site Traffic	B	1	G4	T	-	-	-	-	-	
13084(N)	Travelodge, M6 Northbound Stafford Services	54/60	-	3	-	Day: Demolitions	B	1	G4	T	-	-	-	-	-	
13131(N)	St. Mary's Church, Swynnerton	48/53	-	5	-	Day: On-Site Traffic	B	1	G3	T	-	-	-	-	-	
13138(N)	Our Lady of The Assumption Church, Swynnerton	46/50	-	3	-	Day: On-Site Traffic	B	1	G3	T	-	-	-	-	-	
13143(N)	Swynnerton Village Hall	44/49	-	4	-	Day: On-Site Traffic	B	1	G3	T	-	-	-	-	-	

Airborne sound: indirect effects

- 4.2.10 Construction road traffic associated with the construction phases of the Proposed Scheme would generate airborne noise. Based upon traffic information for the Proposed 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 9.
- 4.2.11 Explanation of the information within Table 9 is provided in Volume 5: Appendix SV-001-000, with the following additional notes in Table 8.

Table 8: 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 9: Assessment of construction traffic noise levels

Road name	Portion of road affected	Number of dwellings affected (approx.)	Daytime traffic sound levels $L_{A_{10},1.8hr}$ 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		
Dog Lane	From the junction with the A51 at Stableford Bridge through Swynnerton Old Park to the junction with the A519	4	53	55	57	2	4	-	
Yarnfield Lane	From the Proposed Scheme to the A34 west of Stone	4	63	65	66	2	3	-	
Pirehill Lane / Green Lane	From the junction with Whitgreave Lane in Whitgreave to the main body of Walton	45	44	51	54	7	10	-CSV02-Co6 / CSV03-Co1	

Airborne sound levels used in other assessments

- 4.2.12 The construction sound results contained in this document have been used by other disciplines, namely agriculture, cultural heritage, landscape and visual, communities and socio economics, in their assessments. This includes the information in Table 6 and Table 7. Locations of interest to these other disciplines which may not appear in Table 6 or Table 7 are presented in Table 10.

Table 10: Construction airborne sound levels for use in cross discipline assessments

Assessment location		Sound level 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 & visual	Socio-economic
		Day 0700-1900	Night 2300-0700	Day 0700-1900	Night 2300-0700						
8239(N)	North Pirehill Farm, Walton	58/64	-	17	-	Day: Earthworks	-	-	Y	-	-
8240(N)	Walton House Farm, Walton	73/76	-	13	-	Day: Demolitions	Y	-	-	-	-
8251(N)	Micklow House Farm, Walton	63/67	-	3	-	Day: Planting	Y	-	Y	-	-
8268(N)	Sandyford Farm, Sandyford	64/68	-	9	-	Day: Earthworks	Y	-	-	-	-
8274(N)	Swynnerton Heath Farm, Swynnerton	65/70	-	22	-	Day: Earthworks	Y	-	-	-	-
8361(N)	Clement House / Walton Heath Farm, Stone	57/60	-	2	-	Day: On-site traffic	Y	-	Y	-	-
8369(N)	Plants Alive Limited, Swynnerton Grange, Swynnerton	58/62	-	7	-	Day: Earthworks	-	-	-	-	-
13014(N)	Shelton Under Harley Farm, Shelton Under Harley	68/72	-	13	-	Day: Earthworks	Y	-	Y	-	-
13070(N)	Staffordshire Fire And Rescue Service HQ	51/55	-	7	-	Day: Earthworks	-	-	-	-	Y

Assessment location		Sound level 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 & visual	Socio-economic
		Day 0700-1900	Night 2300-0700	Day 0700-1900	Night 2300-0700						
13084(N)	Days Inn, Southbound M6 Stafford Services Near Stone	46/50	-	0	-	Day: On-site traffic	-	-	-	-	Y
13113	Blakelow Farm, Swynnerton	64/68 [A]	-	11		Day: Earthworks	-	-	Y	-	-
13131(N)	Travelodge, M6 Northbound Stafford Services	54/60	-	3	-	Day: Demolitions	-	-	-	-	Y
13136	The Water Tower, Swynnerton	60/66 [A]	-	16	-	Day: Earthworks					
13138(N)	St. Mary's Church, Swynnerton	48/53	-	5	-	Day: On-site traffic	-	Y	Y	-	-
13143(N)	Our Lady Of The Assumption Church, Swynnerton	46/50	-	3	-	Day: On-site traffic	-	Y	Y	-	-
13167(N)	Swynnerton Village Hall	44/49	-	4	-	Day: On-site traffic	-	Y	-	-	-
13175(N)	Pirehill, Stone	53/56	-	9	-	Day: Earthworks	-	-	-	Y	-
13176(N)	Green Lane, Whitgreave	57/62	-	8	-	Day: Pond construction/planting	-	-	-	Y	-
13177(N)	Common Lane, Stone	53/58	-	6	-	Day: Earthworks	-	-	-	Y	-
13178(N)	Hall Lane, Swynnerton	54/58	-	8	-	Day: Earthworks	-	-	-	Y	-
13179(N)	Swynnerton Grange, Swynnerton	51/56	-	8	-	Day: Haul road setup	-	-	-	Y	-

Assessment location		Sound level 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 & visual	Socio-economic
		Day 0700-1900	Night 2300-0700	Day 0700-1900	Night 2300-0700						
13182(N)	Cliffords Wood, Swynnerton	57/60	-	11	-	Day: Earthworks	-	-	-	Y	-
13183(N)	Top Lane, Beech	59/61	-	8	-	Day: Planting	-	-	-	Y	-
13185(N)	The Hattons, Cotes Heath	58/64	31/31	24	-	Day: Site set-up/takedown Eve: Site set-up/takedown	-	-	-	Y	-
13186(N)	Drayton Road, Hanchurch	46/50	-	10	-	Day: Vegetation clearance	-	-	-	Y	-
13187(N)	Camelot Cottage, Shelton Under Harley	47/51	-	11	-	Day: Demolitions	-	-	-	Y	-
13188(N)	Drayton Road, Hanchurch	46/50	-	10	-	Day: Demolitions	-	-	-	Y	-
13189(N)	Camelot Cottage, Shelton Under Harley	49/53	-	13	-	Day: Site set-up/takedown	-	-	-	Y	-
13190(N)	New House Farmhouse, Acton	43/49	-	9	-	Day: On-site traffic	-	-	-	Y	-
13191(N)	Drayton Road, Hanchurch	44/48	-	8	-	Day: Earthworks	-	-	-	Y	-
13192(N)	The Rowe, Stableford	47/53	-	7	-	Day: On-site traffic	-	-	-	Y	-

5 Operational

5.1 Evaluation of impacts and effects

- 5.1.1 This appendix provides a quantitative assessment of operational noise and vibration impacts and effects and a qualitative assessment of likely significant effects, based on the impacts and effects identified and other local context information consistent with the scope and methodology defined for the Proposed Scheme.
- 5.1.2 Indirect effects arising from permanent changes in traffic patterns on the existing road and rail networks as a consequence of the Proposed Scheme are also reported in this appendix, where they would occur within the study area as defined in Volume 5: Appendix SV-001-000. Route-wide impacts, effects and significant effects associated with noise or vibration from the operation of the Proposed Scheme are reported in Volume 3¹¹.
- 5.1.3 Off-route effects of noise or vibration arising from the operation of the Proposed Scheme, including those likely to arise from permanent changes in traffic patterns on roads or railways outside of the study area for direct effects are reported in Volume 4¹².
- 5.1.4 In undertaking the assessment of sound, noise and vibration, consistent with EIA Regulations¹³ and National Planning Practice Guidance¹⁴ a differentiation between impacts effects, adverse effects and significant effects is made. Further information is provided in Volume 5: Appendix SV-001-000.
- 5.1.5 The assessment of impacts has been undertaken at assessment locations that are representative of a number of dwellings or other sensitive receptors. The operational assessment locations employed in this assessment are presented on Map Series SV-02 in the Volume 5: Sound, Noise and Vibration Map Book.
- 5.1.6 Baseline sound level data has been collected at locations representative of the airborne sound-sensitive receptors and presented in Table 1, and corrected where applicable using the values in Table 3.

5.2 Effects arising during operation

Introduction

- 5.2.1 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 Volume 2, Stone and Swynnerton (CA report 3), Section 13.

Avoidance and mitigation measures

- 5.2.2 These are set out in Volume 2, Stone and Swynnerton (CA report 3), Section 13.

¹¹ See Environmental Statement Volume 3, Route-wide effects

¹² See Environmental Statement Volume 4, Off-route effects

¹³ European Commission (2014), EC Directive 85/337/EEC, as amended by 97/11/EC, 2003/35/EC, 2011/92/EC and 2014/52/EU ('the EIA Directive')

¹⁴ National Planning Practice Guidance – Noise, <http://planningguidance.planningportal.gov.uk>; refer to the table summarising noise exposure hierarchy

Quantitative identification of impacts and effects

Ground-borne sound and vibration

- 5.2.3 Assessment locations defined for the quantitative assessment of impacts are shown on Map Series SV-02 (Volume 5: Sound, Noise and Vibration Map Book). SV-02 also displays ground-borne noise and vibration impacts and any resultant significant effects.
- 5.2.4 For each assessment location, the assessment results for residential and non-residential receptors are presented in Table 9 and Table 10. Explanation of the information in Table 9 and Table 10 is provided in Appendix SV-001-000, with the following additional notes in Table 11.

Table 11: Explanatory notes for assessment results

Symbol	Explanation
B	For non-residential receptors, further detail about the type of effect is set out in the text of Volume 5: Appendix SV-001-000.
NA	Type of effect - Generally no adverse effect
A	Ground-borne sound or vibration levels from HS2 exceed Lowest Observed Adverse Effect Level (LOAEL): the significance criteria set out in Volume 5: Appendix SV-001-000, Annex A, Section 1.3 are considered when establishing significant effects
S	Ground-borne sound or vibration levels from HS2 exceed Significant Observed Adverse Effect Level (SOAEL):
VDV	Vibration Dose Value
~	When considered under the significance criteria set out in Volume 5: Appendix SV-001-000, Annex A, Section 1.3, these adverse effects are not considered to be significant on a community basis.
	Where the significant effect column is highlighted in pink, then a significant effect is identified at the referenced residential community area, 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

Table 12: Operational ground-borne sound and vibration levels, noise and vibration impacts and effects for residential and non-residential receptors

Assessment location		Impact criteria				Significance criteria									Significant effect
		Groundborne sound level dB L _{pASmax}	VDV m/s ^{-1.75} Daytime (07:00 - 23:00)	VDV m/s ^{-1.75} Night time (23:00 – 07:00)	% increase or decrease in VDV	Number of impacts represented	Type of effect	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Mitigation effect		
Ref	Area represented														
13164	Honeysuckle Cottage, Shelton Under Harley	-	0.08	0.04	-	2	NA	R	T	-	-	-	-	-	
13166	Whisper Barn, Shelton Under Harley	-	0.06	0.03	-	1	NA	R	T	-	-	-	-	-	

Ground-borne sound and vibration impact summary

- 5.2.5 The operational ground-borne noise and vibration impacts identified in Table 12 are summarised in Table 13.

Table 13: Summary of operational ground-borne noise and vibration impacts

Property type	Number of ground-borne noise impacts			
	Low	Medium	High	Very high
Residential properties	0	0	0	0
Non-residential properties				0
	Number of ground-borne vibration impacts			
	Minor	Moderate	Major	Risk of building damage
Residential properties	0	0	0	0
Non-residential properties				0

Airborne sound: direct impacts and effects

- 5.2.6 The direct effects from the operation of the Proposed 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 15 for residential receptors and Table 16 for non-residential receptors.
- 5.2.7 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 15 and Table 16 respectively. Note that all committed developments (including ones for residential developments) are presented in Table 15. The results should be considered in conjunction with the information contained in Map Series SV-02 in the Volume 5: Sound, Noise and Vibration Map Book.
- 5.2.8 Explanation of the information in Table 15 and Table 16 is provided in Volume 5: Appendix SV-001-000, with the following additional notes in Table 14.

Table 14: Explanatory notes for 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 - $L_{pAeq,23:00-07:00}$

Appendix SV-002-003

Symbol	Explanation
***	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 Appendix SV-001-000 (Volume 5).
****	Where the Proposed Scheme modifies an existing source, i.e. road or railway realignments, the <i>Proposed Scheme only</i> and (<i>Opening year baseline + Year 15 traffic</i>) 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 SV001-000, 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.
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 $>65dB_{L_{Aeq, day}}$ and/or $>55dB_{L_{Aeq, night}}$
L	Low existing ambient sound level. Defined as $<42dB_{L_{Aeq, day}}$ and/or $<32dB_{L_{Aeq, night}}$
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 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.
~	When considered under the significance criteria set out in Volume 5: Appendix SV-001-000, Annex A, Section 1.3, 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 and therefore no impact is identified. Further information is provided in Volume 5: Appendix SV-001-000.

Table 15: Operational airborne sound, noise impacts and significant effects: residential receptors

Assessment location		Impact criteria										Significance criteria							Significant effect	
Ref	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 effect
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
13001	Birch Farm, Enson	41	31	58/59	53	43	50	53	43	0	0	A	1	R	T	-	-	-	-	
13007	Wood Farm, Yarlet	45	36	61/62	63	54	67	63	54	0	0	A	1	R	T	-	-	-	-	
13010	New House Farm, Yarlet	52	42	69/71	61	55	67	61	55	0	0	A	3	R	T	H	-	-	-	
13013	Stafford Road, Stone	47	37	63/64	46	42	55	49	43	3	1	A	1	R	T	-	-	-	-	#
13019	Pirehill Lane, Stone	38	28	51/52	44	36	48	45	37	1	1	NA	95	R	T	-	-	-	-	
13024	Pirehill Lane, Stone	47	38	64/65	44	36	44	49	40	5	4	A	1	R	T	-	-	-	-	#
13025	Pirehill Lane, Stone	43	33	57/58	44	37	44	46	38	2	1	A	1	R	T	-	-	-	-	
13026	Pirehill Lane, Stone	54	44	71/72	44	37	44	54	45	10	8	A	1	R	T	-	-	-	-	~
13027	Hawthorn Avenue, Stone	40	30	53/54	40	36	48	43	37	3	1	NA	28	R	T	-	-	-	-	#
13028	Pirehill Lane, Stone	45	36	60/61	45	37	44	48	39	3	2	A	2	R	T	-	-	-	-	#
13029	Tudor Close, Stone	38	28	52/53	40	36	48	42	37	2	1	NA	13	R	T	-	-	-	-	
13031	Redfern Road, Stone	40	30	53/54	41	36	48	43	37	2	1	NA	24	R	T	-	-	-	-	

Assessment location		Impact criteria										Significance criteria							Significant effect	
Ref	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 effect
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
13032	Pirehill Lane, Stone	55	46	72/73	44	36	44	56	46	12	10	A	2	R	T	-	-	-	-	~
13034	Cherry Tree Close, Stone	41	31	54/56	41	36	48	44	37	3	1	NA	40	R	T	-	-	-	-	#
13035	Coombe Park Road, Stone	42	32	55/56	43	36	48	45	37	2	1	NA	25	R	T	-	-	-	-	
13037	Pirehill Lane, Stone	57	47	74/75	46	39	44	57	48	11	9	A	1	R	T	-	-	-	-	~
13039	Cherry Tree Close, Stone	42	32	56/57	42	36	48	45	38	3	2	NA	34	R	T	-	-	-	-	#
13040	Stuart Close North, Stone	40	30	53/55	43	36	48	45	37	2	1	NA	51	R	T	-	-	-	-	
13041	Meadow Way, Stone	39	29	53/54	41	36	48	43	37	2	1	NA	33	R	T	-	-	-	-	
13042	Fraser Close, Stone	42	32	55/56	41	36	48	44	37	3	1	NA	39	R	T	-	-	-	-	#
13045	Coombe Park Road, Stone	43	33	57/58	45	38	48	47	39	2	1	A	11	R	T	-	-	-	-	
13046	Redfern Road, Stone	42	33	56/57	41	36	48	45	38	4	2	NA	23	R	T	-	-	-	-	#
13047	Meadow Way, Stone	39	29	53/54	41	36	48	43	37	2	1	NA	40	R	T	-	-	-	-	
13050	Windsor Close, Stone	44	34	58/59	46	39	48	48	40	2	1	A	39	R	T	-	-	-	-	
13051	Crestwood Drive, Stone	42	33	56/57	41	36	48	45	38	4	2	NA	27	R	T	-	-	-	-	#

Assessment location		Impact criteria										Significance criteria							Significant effect	
Ref	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 effect
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
13052	Crestwood Drive, Stone	41	31	54/56	43	36	48	45	37	2	1	NA	62	R	T	-	-	-	-	
13053	Crestwood Drive, Stone	43	33	56/58	45	39	48	47	40	2	1	A	37	R	T	-	-	-	-	
13055	Coalport Drive, Stone	42	32	56/57	42	36	48	45	38	3	2	NA	49	R	T	-	-	-	-	#
13058	Foxwood Close, Stone	45	36	56/57	50	43	48	50	43	0	0	NA	33	R	T	-	-	-	-	
13059	Tyler Grove, Stone	42	32	59/60	44	38	44	46	39	2	1	A	84	R	T	-	-	-	-	
13062	Wedgwood Avenue, Stone	45	36	57/58	48	41	48	49	41	1	0	A	7	R	T	-	-	-	-	
13067	Fieldsway, Stone	42	32	59/61	56	50	71	56	50	0	0	A	8	R	T	-	-	-	-	
13069	Walton House Farm, Walton	59	49	74/75	61	57	65	63	58	2	1	A	4	R	T	H	-	-	-	
13071	Woodlands Close, Stone	43	33	58/59	46	44	71	48	44	2	0	A	16	R	T	-	-	-	-	
13072	Common Lane, Stone	53	44	68/69	61	57	65	62	57	1	0	A	1	R	T	H	-	-	-	
13073	Woodlands Close, Stone	44	35	61/62	55	44	71	55	44	0	0	A	14	R	T	-	-	-	-	
13075	Common Lane, Stone	56	46	70/71	61	57	65	62	57	1	0	A	1	R	T	H	-	-	-	
13078	Eccleshall Road, Stone	55	45	68/69	62	58	65	63	58	1	0	A	1	R	T	H	-	-	-	

Assessment location		Impact criteria										Significance criteria							Significant effect	
Ref	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 effect
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
13080	Darlaston Park, Stone	37	28	49/50	50	46	62	50	46	0	0	NA	2	R	T	-	-	-	-	
13081	Yarnfield Lane, Stone	50	41	66/67	50	46	62	53	47	3	1	A	1	R	T	-	-	-	-	~
13083	Yarnfield Lane, Stone	56	46	70/71	56	48	62	58	50	2	2	A	3	R	T	-	-	-	-	
13086	Darlaston Park, Stone	39	29	52/53	50	46	62	50	46	0	0	NA	1	R	T	-	-	-	-	
13090	Eccleshall Road, Stone	49	39	63/64	57	48	59	58	49	1	1	A	10	R	T	-	-	-	-	
13095	Eccleshall Road, Stone Test	48	38	64/65	54	47	59	55	48	1	1	A	6	R	T	-	-	-	-	
13097	Eccleshall Road, Stone	46	36	61/62	50	46	59	51	46	1	0	A	15	R	T	-	-	-	-	
13098	Jervis Lane, Meaford	48	38	62/64	46	40	71	50	42	4	2	A	1	R	T	-	-	-	-	#
13099	White Moor Farm, Yarnfield Lane, Yarnfield	66	60	69/70	69	62	71	68	60	-1	-2	S	1	R	T	H	-	-	NI	OSV03-Do1
13100	Yarnfield Lane, Yarnfield	51	43	62/63	53	46	59	54	46	1	0	A	1	R	T	-	-	-	-	
13101	Yarnfield Lane, Yarnfield	53	44	62/63	55	48	59	54	47	-1	-1	A	3	R	T	-	-	-	-	
13102	Bury Bank, Meaford	50	40	65/66	52	45	71	54	46	2	1	A	1	R	T	-	-	-	-	

Assessment location		Impact criteria										Significance criteria							Significant effect	
Ref	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 effect
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
13103	Yarnfield Lane, Yarnfield	48	39	60/61	51	42	59	52	43	1	1	A	1	R	T	-	-	-	-	
13104	Blakelow, Swynnerton	52	42	67/68	53	46	71	55	47	2	1	A	1	R	T	-	-	-	-	
13105	Moss Lane, Yarnfield	53	45	66/67	53	46	59	55	46	2	0	A	8	R	T	-	-	-	-	
13107	Covert Lodge Bungalow, Sandyford	50	40	65/66	54	47	71	56	48	2	1	A	1	R	T	-	-	-	-	
13112	Chase Lane, Tittensor	42	32	58/59	51	45	71	51	45	0	0	A	2	R	T	-	-	-	-	
13113	Blakelow Farm, Swynnerton	66	56	82/83	56	49	71	66	57	10	8	S	1	R	T	-	-	-	NI	OSVo3-Do2
13114	Covert Lodge Bungalow, Sandyford	52	43	68/69	56	49	71	58	50	2	1	A	2	R	T	-	-	-	-	
13115	Highlows Lane, Yarnfield	49	39	62/63	48	41	62	51	43	3	2	A	1	R	T	-	-	-	-	#
13116	Chase Lane, Sandyford	51	42	67/68	56	49	68	57	50	1	1	A	1	R	T	-	-	-	-	
13117	Chase Lane, Sandyford	45	35	59/60	55	49	68	55	49	0	0	A	4	R	T	-	-	-	-	
13118	Swynnerton Grange, Swynnerton	60	50	75/77	51	44	62	60	51	9	7	A	2	R	T	-	-	-	-	~

Assessment location		Impact criteria										Significance criteria							Significant effect	
Ref	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 effect
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
13119	Swynnerton Grange Farm, Swynnerton	53	44	67/68	49	42	62	55	46	6	4	A	1	R	T	-	-	-	-	~
13121	Chase Lane, Sandyford	49	39	64/65	60	53	68	60	53	0	0	A	2	R	T	-	-	-	-	
13122	Chase Lane, Sandyford	51	41	67/68	71	64	68	71	64	0	0	A	1	R	T	H	-	-	-	
13123	Sandyford Cottage, Sandyford	56	46	70/71	61	54	68	62	54	1	0	A	1	R	T	-	-	-	-	
13124	Hall Lane, Swynnerton	59	49	73/75	53	46	68	60	51	7	5	A	3	R	T	-	-	-	-	~
13125	Sandyford Farm, Sandyford	67	57	84/85	56	48	55	67	57	11	9	S	1	R	T	-	-	-	NI	OSV03-Do3
13126	Long Compton, Sandyford	60	52	76/77	60	53	59	60	52	0	-1	A	1	R	T	-	-	-	-	
13127	Hall Lane, Swynnerton	47	37	63/64	46	42	52	49	43	3	1	A	5	R	T	-	-	-	-	#
13128	Glebe House, Swynnerton	56	46	76/77	53	53	61	57	54	4	1	A	2	R	T	-	-	-	-	~
13129	Hall Lane, Swynnerton	48	38	65/66	46	42	52	50	43	4	1	A	3	R	T	-	-	-	-	#
13132	The Barn, Swynnerton	45	35	62/63	46	42	52	48	43	2	1	A	6	R	T	-	-	-	-	
13133	Home Farm Cottage, Swynnerton	48	39	65/66	53	44	56	52	44	-1	0	A	9	R	T	-	-	-	-	

Assessment location		Impact criteria										Significance criteria							Significant effect	
Ref	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 effect
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
13134	The Old School House, Swynnerton	52	42	71/72	50	42	58	53	44	3	2	A	3	R	T	-	-	-	-	~
13135	Home Farm Cottage, Swynnerton	49	39	66/67	56	47	56	52	43	-4	-4	A	1	R	T	-	-	-	-	
13136	The Water Tower, Swynnerton	53	43	73/74	49	44	58	54	46	5	2	A	1	R	T	-	-	-	-	~
13137	The Cottage, Swynnerton	45	35	62/63	59	50	56	59	50	0	0	A	4	R	T	-	-	-	-	
13139	Early Lane, Swynnerton	44	34	58/60	44	41	51	47	42	3	1	A	6	R	T	-	-	-	-	#
13140	Weavers Walk, Swynnerton	42	32	58/59	44	41	51	46	42	2	1	A	31	R	T	-	-	-	-	
13142	Early Lane, Swynnerton	42	32	56/57	44	41	51	46	41	2	0	NA	8	R	T	-	-	-	-	
13144	Cliffords Wood, Swynnerton	52	43	66/67	46	40	51	53	44	7	4	A	1	R	T	-	-	-	-	~
13145	Frobisher Drive, Swynnerton	37	28	51/52	44	41	51	45	41	1	0	NA	44	R	T	-	-	-	-	
13146	Fairbanks Walk, Swynnerton	38	29	51/52	44	41	51	45	41	1	0	NA	26	R	T	-	-	-	-	
13147	Old Lane, Beech	42	32	59/60	53	47	55	53	47	0	0	A	2	R	T	-	-	-	-	
13148	Fairbanks Walk, Swynnerton	35	25	47/48	46	43	53	46	43	0	0	NA	57	R	T	-	-	-	-	

Assessment location		Impact criteria										Significance criteria							Significant effect	
Ref	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 effect
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
13150	Cliffords Wood, Swynnerton	50	40	64/65	50	44	55	51	44	1	0	A	1	R	T	-	-	-	-	
13151	Cliffords Wood, Swynnerton	52	42	67/68	54	48	55	54	47	0	-1	A	2	R	T	-	-	-	-	
13152	Swynnerton Heath Farmhouse, Swynnerton	51	41	66/67	50	45	58	53	46	3	1	A	2	R	T	-	-	-	-	~
13153	Cliffords Wood, Swynnerton	48	38	65/66	44	38	55	49	41	5	3	A	1	R	T	-	-	-	-	#
13155	Lodge Barn, Cotes Heath	47	38	64/66	43	38	51	49	41	6	3	A	2	R	T	-	-	-	-	#
13156	The Hattons, Cotes Heath	51	41	65/67	44	40	48	52	44	8	4	A	1	R	T	-	-	-	-	~
13157	Hatton Manor, Cotes Heath	44	34	59/60	43	38	51	47	40	4	2	A	11	R	T	-	-	-	-	#
13159	1 Hatton Waterworks Cottages, Cotes Heath	40	31	54/55	52	38	51	52	39	0	1	NA	8	R	T	-	-	-	-	
13161	The Rowe, Stableford	43	33	57/58	57	54	63	57	54	0	0	A	5	R	T	-	-	-	-	
13162	The Rowe, Stableford	46	36	63/64	60	56	63	60	56	0	0	A	2	R	T	H	-	-	-	
13163	The Rowe, Stableford	49	39	66/67	57	53	63	58	53	1	0	A	11	R	T	-	-	-	-	

Assessment location		Impact criteria										Significance criteria							Significant effect	
Ref	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 effect
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
13164	Honeysuckle Cottage/Camelot Cottage, Shelton Under Harley	66	56	82/83	43	38	53	66	57	23	19	S	2	R	T	-	-	-	NI	OSV03-Do4
13165	The Rowe, Stableford	50	40	67/68	57	47	63	58	48	1	1	A	2	R	T	-	-	-	-	
13166	Shelton Under Harley Farm, Shelton Under Harley	69	60	86/87	53	46	53	70	60	17	14	S	1	R	T	-	-	-	NI	OSV03-Do4
13168	Common Lane, Stone	48	39	62/63	53	45	48	54	46	1	1	A	1	R	T	-	-	-	-	
13169	Eccleshall Road, Stone	54	45	65/66	58	51	65	56	49	-2	-2	A	1	R	T	-	-	-	-	
13171	Common Lane/Eccleshall Road, Stone (CD Ref.: 14/20854/OUT)	48	39	60/61	52	45	48	51	44	-1	-1	A	92	CD-R	T	-	-	-	-	
13172	Walton Hill Residential Development, Walton (CD Ref.: 13/19002/OUT)	49	40	67/68	50	43	44	53	45	3	2	A	1	CD-R	T	-	-	-	-	#
13173	Home Farm Buildings, Swynnerton (CD Ref.: 12/16697/FUL)	48	38	65/66	51	46	56	52	46	1	0	A	1	CD-R	T	-	-	-	-	
13174	Home Farm Cottage, Swynnerton (Cd Ref.: 12/16593/FUL)	51	41	65/66	59	50	56	55	47	-4	-3	A	22	CD-R	T	-	-	-	-	

Assessment location		Impact criteria										Significance criteria							Significant effect	
Ref	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 effect
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
13193	Early Lane, Swynnerton	41	31	54/55	44	41	51	46	41	2	0	NA	1	R	T	-	-	-	-	
13194	Pirehill Cottage Farm, Pirehill, Stone	58	48	74/75	44	38	55	58	49	14	11	A	2	R	T	-	-	-	-	~
13195	Residential Development at Yarnfield Park, CD ref. 09/12911/OUT	49	40	62/63	48	41	62	51	43	3	2	A	300	CD-R	T	-	-	-	-	#
13196	Residential Development at Cold Norton (CD Ref: 05/03889/OUT)	48	38	64/65	54	47	59	55	48	1	1	A	20	CD-R	T	-	-	-	-	

Table 16: Operational airborne sound, noise impacts and significant effects: non-residential receptors

Assessment Location		Impact criteria										Significance criteria							Significant effect	
Ref	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 effect
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
13014(N)	Staffordshire Fire And Rescue Service HQ	53	43	69/70	46	42	55	54	46	8	4	B	1	G5	T	-	-	-	-	
13070(N)	Days Inn, Southbound M6 Stafford Services Near Stone	50	40	64/65	63	59	65	63	59	0	0	B	1	G4	T	H	-	-	-	
13084(N)	Travelodge, M6 Northbound Stafford Services	51	41	65/66	56	49	71	57	50	1	1	B	1	G4	T	-	-	-	-	
13131(N)	St. Mary's Church, Swynnerton	44	35	61/62	46	42	52	48	43	2	1	B	1	G3	T	-	-	-	-	
13138(N)	Our Lady Of The Assumption Church, Swynnerton	42	32	57/59	46	42	52	47	42	1	0	B	1	G3	T	-	-	-	-	
13143(N)	Swynnerton Village Hall	41	31	54/55	44	41	51	46	41	2	0	B	1	G3	T	-	-	-	-	

Direct impact - Summary

- 5.2.9 The operational airborne noise impacts identified in Table 15 and Table 16 are summarised in Table 17.

Table 17: Summary of operational airborne sound impacts

Receptor type	Numbers of impact (Numbers of impacts excluding those in committed developments)				
	Above LOAEL	Above SOAEL	Impacts		
			Minor	Moderate	Major
Residential properties	492 (375)	8 (8)	8 (8)	9 (9)	11 (11)
Non-residential properties	N/A	N/A	None		
Schools	N/A	N/A	None		
Quiet areas	N/A	N/A	None		

Airborne sound: indirect impacts and effects

- 5.2.10 The transport assessment presented in Volume 5: Appendix TR-000-001, has been used to identify those roads or railways within this study area where the alignment remains as at present, but a change in flow or composition is identified which is greater than the screening criteria defined in Volume 5: Appendix SV-001-000.
- 5.2.11 No roads or railways which exceed the criteria defined in Volume 5: Appendix SV-001-000 have been identified in this study area. The assessment of operational noise and vibration indicates that significant indirect effects on residential receptors are unlikely to occur in this area.

Airborne sound levels used in other assessments

- 5.2.12 The operational sound results contained in this document have been used by other disciplines, namely agriculture, cultural heritage, landscape and visual, communities and socio economics, in their assessments. This includes the information in Table 15 and Table 16. Locations of interest to these other disciplines which may not appear in Table 15 and Table 16 are presented in Table 18.

Table 18: Operational airborne sound level for use in cross discipline assessments

Assessment location		Sound level information										Discipline				
Ref	Area represented	Proposed Scheme only (Year 15 traffic)			Do nothing (Opening year baseline)			Do something (Opening year baseline + Year 15 traffic) ****		Change		Agriculture	Communities	Heritage	Landscape and Visual	Socio-economic
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **					
8239(N)	North Pirehill Farm, Walton	56	47	73/74	44	36	44	57	47	13	11	-	-	Y	-	-
8240(N)	Walton House Farm, Walton	70	60	87/88	61	57	65	70	62	9	5	Y	-	-	-	-
8251(N)	Micklow House Farm, Walton	63	53	78/79	64	60	65	66	61	2	1	Y	-	Y	-	-
8268(N)	Sandyford Farm, Sandyford	68	58	84/85	56	48	55	68	59	12	11	Y	-	-	-	-
8274(N)	Swynnerton Heath Farm, Swynnerton	60	50	76/77	45	41	58	60	50	15	9	Y	-	-	-	-
8361(N)	Clement House / Walton Heath Farm, Stone	57	47	72/73	61	57	65	62	57	1	0	Y	-	Y	-	-
8369(N)	Plants Alive Limited, Swynnerton Grange, Swynnerton	57	47	71/72	52	45	62	58	49	6	4	-	-	-	-	-
13014(N)	Staffordshire Fire And Rescue Service HQ	53	43	69/70	46	42	55	54	46	8	4	-	-	-	-	Y
13070(N)	Days Inn, Southbound M6 Stafford Services Near Stone	50	40	64/65	63	59	65	63	59	0	0	-	-	-	-	Y
13084(N)	Travelodge, M6 Northbound Stafford Services	51	41	65/66	56	49	71	57	50	1	1	-	-	-	-	Y
13113	Blakelow Farm, Swynnerton	66	56	82/83	56	49	71	66	57	10	8	-	-	Y	-	-

Assessment location		Sound level information										Discipline				
Ref	Area represented	Proposed Scheme only (Year 15 traffic)			Do nothing (Opening year baseline)			Do something (Opening year baseline + Year 15 traffic) ****		Change		Agriculture	Communities	Heritage	Landscape and Visual	Socio-economic
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **					
13131(N)	St. Mary's Church, Swynnerton	44	35	61/62	46	42	52	48	43	2	1	-	Y	Y	-	-
13136	The Water Tower, Swynnerton	53	43	73/74	49	44	58	54	46	5	2	-	-	Y	-	-
13138(N)	Our Lady Of The Assumption Church, Swynnerton	42	32	57/59	46	42	52	47	42	1	0	-	Y	Y	-	-
13143(N)	Swynnerton Village Hall	41	31	54/55	44	41	51	46	41	2	0	-	Y	-	-	-
13167(N)	Shelton Under Harley Farm, Shelton Under Harley	70	60	87/88	54	48	53	70	60	16	12	Y	-	Y	-	-
13175(N)	Pirehill, Stone	54	44	70/71	44	38	55	54	45	10	7	-	-	-	Y	-
13176(N)	Green Lane, Whitgreave	61	51	76/78	51	44	59	61	52	10	8	-	-	-	Y	-
13177(N)	Common Lane, Stone	50	40	63/65	50	44	48	53	45	3	1	-	-	-	Y	-
13178(N)	Hall Lane, Swynnerton	52	42	67/68	46	42	52	53	45	7	3	-	-	-	Y	-
13179(N)	Swynnerton Grange, Swynnerton	50	40	65/67	46	40	62	51	43	5	3	-	-	-	Y	-
13182(N)	Cliffords Wood, Swynnerton	49	40	62/63	46	39	51	51	42	5	3	-	-	-	Y	-
13183(N)	Top Lane, Beech	41	32	56/57	50	43	60	51	43	1	0	-	-	-	Y	-
13185(N)	The Hattons, Cotes Heath	62	52	81/82	39	33	44	62	53	23	20	-	-	-	Y	-

Assessment location		Sound level information										Discipline				
Ref	Area represented	Proposed Scheme only (Year 15 traffic)			Do nothing (Opening year baseline)			Do something (Opening year baseline + Year 15 traffic) ****		Change		Agriculture	Communities	Heritage	Landscape and Visual	Socio-economic
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **					
13186(N)	Drayton Road, Hanchurch	48	38	67/68	39	33	44	49	39	10	6	-	-	-	Y	-
13187(N)	Camelot Cottage, Shelton Under Harley	48	38	62/63	39	33	44	48	39	9	6	-	-	-	Y	-
13188(N)	Drayton Road, Hanchurch	42	32	59/60	39	33	44	44	36	5	3	-	-	-	Y	-
13189(N)	Camelot Cottage, Shelton Under Harley	50	41	66/67	39	33	44	51	41	12	8	-	-	-	Y	-
13190(N)	New House Farmhouse, Acton	44	34	58/59	39	33	44	45	37	6	4	-	-	-	Y	-
13191(N)	Drayton Road, Hanchurch	39	29	55/56	39	33	44	42	35	3	2	-	-	-	Y	-
13192(N)	The Rowe, Stableford	50	40	63/64	44	40	48	51	43	7	3	-	-	-	Y	-

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