In Parliament – Session 2022 - 2023

HS2

High Speed Rail (Crewe – Manchester)

Supplementary Environmental Statement 1 and Additional Provision 1 Environmental Statement

Volume 5: Appendix SV-002-00000

Sound, noise and vibration

Baseline and construction sound, noise and vibration report
MA01: Hough to Walley's Green
MA02: Wimboldsley to Lostock Gralam
MA03: Pickmere to Agden and Hulseheath

Q65

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Department for Transport

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1 Introduction

1.1 Structure of this appendix

1.1.1 This report is an appendix to the sound, noise and vibration assessment which forms part of Volume 5 of the Supplementary Environmental Statement (SES1) and Additional Provision Environmental Statement (AP1 ES).

1.1.2 This appendix provides details of changes to the baseline and construction sound, noise and vibration assessment since the production of the High Speed Two (HS2) High Speed Rail (Crewe – Manchester) Environmental Statement (ES)[1] published in 2022 (the main ES).

1.1.3 This report should be read in conjunction with Volume 5, Appendices: SV-001-00000[2], SV-002-0MA01[3] to SV-002-0MA03[4], which formed part of the main ES.

1.1.4 This report covers the following community areas (CA):

- Hough to Walley's Green (MA01);
- Wimboldsley to Lostock Gralam (MA02); and
- Pickmere to Agden and Hulseheath (MA03).

1.1.5 SES1 and AP1 ES changes and amendments are reported separately in this report for each of the above community areas.

1.1.6 As a result of the removal of the HS2 West Coast Mainline (WCML) connection (SES1-004-001), the effects reported in the main ES from construction activities in the Broomedge to Glazebrook area (MA04) and the Risley to Bamfurlong area (MA05) will be removed.

1.1.7 Maps referred to in this appendix are contained in the SES1 and AP1 ES Volume 5, Sound, noise and vibration Map Book, Map Series SV-03.

1.1.8 The SES1 and AP1 ES sound, noise and vibration assessment is detailed in the:

- SES1 and AP1 ES Volume 2, Community Area reports;

[1] High Speed Two Ltd (2022), High Speed Rail (Crewe – Manchester), *Environmental Statement.* Available online at: https://www.gov.uk/government/collections/hs2-phase2b-crewe-manchester-environmental-statement.

[2] High Speed Two Ltd (2022), High Speed Rail (Crewe – Manchester), *Environmental Statement, Sound, noise and vibration methodology, assumptions and assessment*, Volume 5, Appendix: SV-001-00000. Available online at: https://www.gov.uk/government/collections/hs2-phase2b-crewe-manchester-environmental-statement.

[3] High Speed Two Ltd (2022), High Speed Rail (Crewe – Manchester), *Environmental Statement, Sound, noise and vibration report,* Volume 5, Appendix: SV-002-0MA01. Available online at: https://www.gov.uk/government/collections/hs2-phase2b-crewe-manchester-environmental-statement.

[4] High Speed Two Ltd (2022), High Speed Rail (Crewe – Manchester), *Environmental Statement, Sound, noise and vibration report,* Volume 5, Appendix: SV-002-0MA03. Available online at: https://www.gov.uk/government/collections/hs2-phase2b-crewe-manchester-environmental-statement.

- SES1 and AP1 ES Volume 5, Appendix: SV-002-00000 (this report); and
- SES1 and AP1 ES Volume 5, Appendix: SV-003-00000.

1.1.9 In order to differentiate between the original proposals assessed as part of the main ES and subsequent changes, the following terms are used:

- 'the original scheme' – the Bill scheme submitted to Parliament in January 2022, which was assessed in the main ES;
- 'the SES1 scheme' – the original scheme with the changes described in SES1 that are within the existing powers of the Bill; and
- 'the AP1 revised scheme' – the original scheme as amended by the SES1 changes and AP1 amendments.

1.2 Scope of the assessment

1.2.1 This assessment is split into two parts for each community area and presents:

- SES1:
  - the baseline sound, noise and vibration; and
  - construction sound, noise and vibration where materially altered.
- AP1 ES:
  - construction sound, noise and vibration where materially altered.

1.3 Methodology, data sources, assumptions and limitations

1.3.1 The assessment scope, key assumptions and limitations are as set out in the main ES Environmental Impact Assessment (EIA) Scope and Methodology Report (SMR)[5] (see main ES Volume 5, Appendix: CT-001-00001).

1.3.2 The following SES1changes have the potential to lead to new or different likely significant construction noise and/or vibration effects from those assessed in the main ES:

- MA01, MA02, MA03: additional environmental baseline information;
- MA02, MA03: changes to the construction design programme;
- MA02: enhancement of landscape mitigation at Walley's Green embankment (SES1-002-001);
- MA02: removal of MA02 Borrow Pit D, north of Moss Lane (SES1-002-002);

[5] High Speed Two Ltd (2022), High Speed Rail (Crewe – Manchester), *Environmental Statement, Environmental Impact Assessment Scope and Methodology Report,* Volume 5, Appendix: CT-001-00001. Available online at: https://www.gov.uk/government/collections/hs2-phase2b-crewe-manchester-environmental-statement.

- MA03: changes to the Peacock Lane realignment (SES1-003-002); and
- MA03: removal of the HS2 West Coast Main Line connection (SES1-004-001).

1.3.3 The following AP1 amendments have the potential to lead to new or different likely significant construction noise and/or vibration effects from those assessed in the main ES:

- MA01: additional land permanently required for the realignment and extension of Crewe tunnel (AP1-001-001);
- MA01: additional land temporarily required for modifications to Warmingham Road and Groby Road junction (AP1-001-004);
- MA02: additional land permanently required for modifications to the A54 Middlewich Road and Chester Road junction (AP1-002-009); and
- MA02: additional land required for modifications to the A54 Chester Road/A530 Croxton Lane junction (AP1-002-007).

1.3.4 In some cases, these SES1 changes and AP1 amendments have resulted in a change in traffic flow on roads within the relevant community area. The in-combination effects of SES1 changes and AP1 amendments are presented in the AP1 section.

1.3.5 An assessment of these changes and amendments is presented in this appendix. Details of the standard methodology used for determining significance of effects for sound, noise and vibration are presented in the main ES Volume 5, Appendix: SV-001-00000.

Evaluation of impacts and effects

1.3.6 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 SES1 scheme and AP1 revised scheme.

1.3.7 Indirect effects arising from temporary changes in traffic patterns on the existing road network as a consequence of constructing the SES1 scheme and AP1 revised scheme are reported where they are likely to occur within the study area as defined in the main ES Volume 5, Appendix: SV-001-00000.

1.3.8 In undertaking the assessment of sound, noise and vibration, consistent with the Environmental Impact Assessment (EIA) Directive and planning practice on noise a differentiation between impacts, effects, adverse effects and significant effects is made. Further information is provided in the main ES Volume 5, Appendix: SV-001-00000.

1.3.9 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 in the SES1 and AP1 ES Volume 5, Sound, noise and vibration Map Book: Map Series SV-03.

2 Community area assessments

2.1 Hough to Walley's Green (MA01)

Supplementary Environmental Statement 1

Baseline

Existing acoustic environment

2.1.1 Road traffic information, such as flows and speeds, is used to determine baseline sound levels. Since the production of the main ES, additional road traffic information has been obtained for the SES1 scheme and AP1 revised scheme. Where relevant, this road traffic information has been used to update the existing baseline sound modelling. This has led to updates to the existing baseline sound levels at receptors in the community of Coppenhall within the Hough to Walley's Green area (MA01).

Existing baseline data collection methodology

2.1.2 The baseline collection methodology as outlined in Volume 5, Appendix: SV-001-00000 of the main ES is not required to be modified by the SES1 changes.

Existing baseline sound measurement locations

2.1.3 No additional baseline sound measurement locations were identified as required by the design changes identified in the SES1 scheme.

Existing baseline sound modelling

2.1.4 Road traffic information, such as flows and speeds, is used to determine the baseline sound levels. Since the production of the main ES, additional road traffic information has been obtained for the SES1 scheme and AP1 revised scheme. Where relevant, this road traffic information has been used to update the existing baseline sound modelling. Where no updates to baseline sound levels are required, the baseline sound modelling information is as described in Section 13 of the main ES Volume 2, Community Area report: Hough to Walley's Green area (MA01).

Future baseline methodology

2.1.5 No changes to the future baseline methodology were required by the design changes identified in the SES1 scheme though additional road traffic information has been used to update the future baseline sound modelling.

Baseline sound levels

2.1.6 Baseline sound levels which have been updated for the SES1 scheme are presented for assessment locations in terms of the following key sound indicators:

- baseline levels used for the operational sound assessment:
  - $L_{pAeq,16hour}$ daytime (07:00–23:00) sound pressure level;
  - $L_{pAeq,8hour}$ 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 and Sunday 07:00–23:00); and
  - night-time L_{pAeq} sound pressure level (Monday to Sunday 23:00–07:00).

2.1.7 These values are presented in Table 1. All values are free-field. 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 the main ES Volume 5, Appendix: SV-001-00000. Codes contained within brackets relate to the derivation of night-time baseline noise levels where they are different to the daytime derivation method.

2.1.8 For all other assessment locations not presented in Table 1, the baseline sound levels used in the original scheme remain relevant based on the changes identified in the SES1 scheme.

Table 1: MA01 Baseline sound levels

Assessment location		Measurement location	Baseline sound levels (dB)							Data source coding
			For construction sound assessment (2025)			For operational sound assessment (2038)				
Reference	Area represented		Daytime L_{pAeq}	Evening/ weekend L_{pAeq}	Night-time L_{pAeq}	Daytime $L_{pAeq,16hr}$	Night-time $L_{pAeq,8hr}$	Arithmetic average $L_{pAFmax,5min}$	Highest night-time $L_{pAFmax,5min}$	
610041	Orbitas Bereavement Services (Offices), Market Close, Crewe	–	56	55	53	55	53	56	83	5,C,0,i
610075	Broughton Road, Crewe	–	54	52	49	54	50	51	78	5,C,0,i
610079	Bidvale Way, Crewe	–	44	42	39	44	39	41	68	5,C,0,i
610083	Broughton Road, Crewe	–	52	50	46	52	47	48	75	5,C,0,i
610087	Broughton Road, Crewe	–	46	46	43	47	43	46	73	5,C,0,i
610090	Broughton Road, Crewe	–	45	45	42	45	42	44	71	5,C,0,i
610091	Wareham Drive, Crewe	–	56	56	54	56	54	57	84	4,C,0,i
610093	Somerley Close, Crewe	–	55	55	52	55	52	55	82	4,C,0,i
610101	Broughton Road, Crewe	–	49	47	44	49	44	46	73	5,C,0,i
610104	Bowland Croft, Crewe	–	63	62	60	63	61	63	90	4,C,0,i
610105	Broughton Road, Crewe	–	50	47	43	50	44	46	70	5,C,0,i
610107	Waldrons Lane, Crewe	–	47	43	39	51	43	48	63	3,C,0,i
610110	Waldrons Lane, Crewe	–	45	42	39	46	40	42	66	5,C,0,i
610113	Haweswater Avenue, Crewe	–	63	63	61	63	61	64	91	4,C,0,i
610114	Warmingham Road, Crewe	–	47	44	41	47	41	44	68	5,C,0,i
610115	Buttermere Drive, Crewe	–	63	63	61	63	61	64	91	4,C,0,i
610116	Kents Lane, Crewe	–	43	41	38	44	38	40	66	5,C,0,i

Assessment location		Measurement location	Baseline sound levels (dB)							Data source coding
Reference	Area represented		For construction sound assessment (2025)			For operational sound assessment (2038)				
			Daytime L_{pAeq}	Evening/ weekend L_{pAeq}	Night-time L_{pAeq}	Daytime $L_{pAeq,16hr}$	Night-time $L_{pAeq,8hr}$	Arithmetic average $L_{pAFmax,5min}$	Highest night-time $L_{pAFmax,5min}$	
610118	White Lion Hotel, Warmingham Road, Crewe	–	46	43	39	47	40	44	65	5,C,0,i
610125	Aysgarth Avenue, Crewe	–	63	63	62	63	62	65	92	4,C,0,i
610127	Groby Road, Crewe	ML710014	47	42	46	46	46	51	80	1,C,0,i
610128	Groby Road, Crewe	–	59	55	51	61	54	59	64	3,C,0,i
610130	Oakfield Lodge School, Warmingham Road, Crewe	–	50	46	42	51	44	49	62	3,C,0,i
610162	Park Hall Farm, Wimboldsley, Middlewich and committed development (Map book ref.: MA01/145)[6]	–	47	46	45	47	44	47	74	5,C,0,i
610341	Hythe Avenue, Crewe	–	55	54	52	55	52	54	81	5,C,0,i
610342	Bowland Croft, Crewe	–	65	65	63	65	63	66	93	4,C,0,i
610343	Wharfedale Avenue, Crewe	–	50	50	48	51	48	50	77	5,C,0,i
610344	Haweswater Avenue, Crewe	–	63	63	61	63	61	64	91	4,C,0,i
610345	Wharfedale Avenue, Crewe	–	60	60	58	60	58	61	88	4,C,0,i
610346	Haweswater Avenue, Crewe	–	52	52	49	52	49	52	79	4,C,0,i
610347	Buttermere Drive, Crewe	–	63	63	61	63	61	64	91	4,C,0,i

[6] See SES1 and AP1 ES Volume 5, Sound, noise and vibration Map Book: Map Series SV-03.

Assessment location		Measurement location	Baseline sound levels (dB)							Data source coding
Reference	Area represented		For construction sound assessment (2025)			For operational sound assessment (2038)				
			Daytime L_{pAeq}	Evening/ weekend L_{pAeq}	Night-time L_{pAeq}	Daytime $L_{pAeq,16hr}$	Night-time $L_{pAeq,8hr}$	Arithmetic average $L_{pAFmax,5min}$	Highest night-time $L_{pAFmax,5min}$	
610348	Bleasdale Road, Crewe	–	59	59	57	59	57	60	87	4,C,0,i
610349	Aysgarth Avenue, Crewe	–	63	63	61	63	61	64	91	4,C,0,i
610351	Haweswater Avenue, Crewe	–	50	50	48	50	48	51	78	4,C,0,i
610385	Perry Fields, Crewe	–	52	52	50	52	50	53	80	4,C,0,i
610400	Bridge Farm Kennels (Lower Sensitivity Offices), Parkers Road, Crewe	–	59	57	54	59	54	56	83	5,C,0,i
610404	Warmingham Road, Crewe	–	43	41	38	44	38	39	66	5,C,0,i
610509	Maplins Moss Place, Crewe	–	53	53	50	53	50	53	80	4,C,0,i
610512	Barn Meadow Way, Crewe	–	51	51	48	51	48	51	78	4,C,0,i
610513	Kays Croft Drive, Crewe	–	49	49	47	49	47	50	77	4,C,0,i
610532	Crewe Cemetery and Crematorium (Place of Worship), Market Close, Crewe	–	47	46	44	47	44	47	74	5,C,0,i
610678	Oakfield Lodge School, Warmingham Road, Crewe and committed development (Map book ref.: MA01/448S)	–	44	41	37	45	38	42	62	5,C,0,i
610740	Cemetery Lodge (Offices), Market Close, Crewe	–	59	59	57	59	57	60	87	4,C,0,i

Assessment location		Measurement location	Baseline sound levels (dB)							Data source coding
Reference	Area represented		For construction sound assessment (2025)			For operational sound assessment (2038)				
			Daytime L_{pAeq}	Evening/ weekend L_{pAeq}	Night-time L_{pAeq}	Daytime $L_{pAeq,16hr}$	Night-time $L_{pAeq,8hr}$	Arithmetic average $L_{pAFmax,5min}$	Highest night-time $L_{pAFmax,5min}$	
610745	Aysgarth Avenue, Crewe	–	50	50	48	50	48	51	78	4,C,0,i
610750	Broughton Road, Crewe and committed development (Map book ref.: MA01/210)	–	42	39	36	42	37	39	64	5,C,0,i
610854	Stoneley Avenue, Crewe	–	46	44	41	46	41	43	70	5,C,0,i
610855	Stoneley Avenue, Crewe	–	43	41	38	43	38	40	67	5,C,0,i
610856	Stoneley Avenue, Crewe	–	42	39	36	42	37	38	65	5,C,0,i
610858	Selsey Close, Crewe	–	51	51	49	52	49	52	79	4,C,0,i
610859	Bidvale Way, Crewe	–	42	40	37	42	37	38	65	5,C,0,i
610860	Bidvale Way, Crewe	–	41	39	36	42	36	38	64	5,C,0,i
610979	Oakfield Lodge School, Warmingham Road, Crewe	–	50	46	42	51	44	49	54	3,A,0,i
610980	Groby Road, Crewe	–	59	55	50	60	53	58	63	3,A,0,i
610981	Warmingham Road, Warmingham	–	67	63	58	68	61	66	71	3,A,0,i
610982	Oakfield Lodge School, Warmingham Road, Crewe	–	45	42	38	47	40	44	61	3,A,0,i
610984	Warmingham Road, Crewe	–	62	58	53	63	55	60	65	3,A,0,i
610986	Warmingham Road, Crewe	–	64	60	56	65	58	63	68	3,A,0,i
610987	Warmingham Road, Crewe	–	62	58	54	63	56	61	66	3,A,0,i

Assessment location		Measurement location	Baseline sound levels (dB)							Data source coding
Reference	Area represented		For construction sound assessment (2025)			For operational sound assessment (2038)				
			Daytime L_{pAeq}	Evening/ weekend L_{pAeq}	Night-time L_{pAeq}	Daytime $L_{pAeq,16hr}$	Night-time $L_{pAeq,8hr}$	Arithmetic average $L_{pAFmax,5min}$	Highest night-time $L_{pAFmax,5min}$	
611020	Broughton Road, Crewe and committed development (Map book ref.: MA01/210)	–	42	39	38	42	38	40	67	5,C,0,i
611021	Broughton Road, Crewe and committed development (Map book ref.: MA01/210)	–	41	39	37	42	38	39	66	5,C,0,i
611022	Warmingham Road, Crewe	–	65	61	56	65	58	63	71	3,C,0,i
611023	Warmingham Road, Crewe	–	64	60	56	65	58	63	68	3,C,0,i
611024	Warmingham Road, Crewe	–	66	62	57	67	59	64	69	3,C,0,i
611025	Groby Road, Crewe	–	49	45	41	51	44	49	58	3,C,0,i
611026	Coppenhall Stables (Lower Sensitivity Offices), Groby Road, Crewe	–	44	40	36	46	38	43	58	3,C,0,i

Table 2: Data source coding key

Code	Data source type
1	Long-term measurement location (typically seven days).
2	Short-term (typically unattended 24 hours or attended measurements of several 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.
7	Predictions from other sources (e.g. Defra noise maps).
Code	**Corrections applied**
A	Data from above source applied directly.
B	Correction applied based upon location of assessment location.
C	Minimum level cut-off applied.
Code	**Distance from measurement**
i	Data applied from a measurement/prediction 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.

Construction

Effects during construction

Introduction

2.1.9 The assessment is reported first for ground-borne vibration and then for airborne sound. Under each of these headings, the results of the quantitative identification of impacts, effects and significant effects are presented. The significant effects and the evidence used to support these conclusions are presented in the SES1 and AP1 ES Volume 2, Community Area report: Hough to Walley's Green (MA01).

Avoidance and mitigation measures

2.1.10 The avoidance and mitigation measures are set out as updated by the SES1 and AP1 ES Volume 2, Community Area report: Hough to Walley's Green (MA01).

Identification of impacts and effects

2.1.11 Assessment locations defined for the quantitative assessment of construction impacts are shown on SES1 and AP1 ES Volume 5, Sound, noise and vibration Map Book: Map Series SV-03.

2.1.12 For each assessment location, the assessment results are presented in Table 4. Explanation of the information in Table 4 is provided in Volume 5, Appendix: SV-001-00000, with the following additional notes in Table 3.

Table 3: Explanatory notes for assessment results – direct construction effects

Symbol	Explanation
	Where the significant effect column is highlighted in pink, then a significant effect is identified at the referenced residential community area.
	For residential receptors yellow denotes a minor ground-borne vibration impact.
	For residential receptors orange denotes a moderate ground-borne vibration impact.
	For residential receptors red denotes a major ground-borne vibration impact.
*	For residential receptors this indicates a potentially significant effect where 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. For non-residential receptors this indicates the predicted noise levels are above screening criteria 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-001-00000, Annex A, Section 1.3 of the main ES, these adverse effects are not considered to be significant on a community basis.
A	For residential Assessment Locations (AL) – Construction sound or vibration levels from the SES1 revised scheme and AP1 amendments exceed Lowest Observed Adverse Effect Level (LOAEL): the significance criteria set out in Volume 5, Appendix: SV-001-00000, Annex A, Section 1.3 of the main ES are considered when establishing significant effects. For non-residential AL and external amenity spaces – Construction sound or vibration levels from the AP1 revised scheme exceed the screening criteria in the SMR Section 18.
S	Sound levels from the AP1 revised scheme exceed Significant Observed Adverse Effect Level (SOAEL): noise insulation (or temporary rehousing at higher noise levels) therefore provided.
NA	Sound or vibration levels from the AP1 revised scheme do not exceed LOAEL, therefore generally no adverse effect.
R	Type of receptor – residential.
A1-A4	Type of receptor (airborne sound) – (A1) large and small auditoria; concert halls, sound recording and broadcast studios and theatres, (A2) places of meeting for religious worship, courts, cinemas, lecture theatres, museums and small auditoria or halls, (A3) schools; colleges; hospitals, hotels and libraries, (A4) offices and amenity spaces.
V1-V4	Type of receptor (ground-borne vibration) – (V1) vibration sensitive research and manufacturing; hospitals with vibration sensitive equipment/operations; universities with vibration sensitive research equipment/operations, (V2) hotels, hospital wards and education dormitories, (V3) offices, schools and places of worship, (V4) workshops.
T	Receptor design – typical.
SP	Receptor design – special.

Symbol	Explanation
+	The use and sensitivity of this non-residential receptor or land use is very sensitive to noise and has been included in the detailed assessment (presented in Volume 2, Community Area reports) where there is a change less than 3dB. In each case specific information is presented in an associated footnote.
$	The impact methodology for non-residential receptors includes a screening criterion for A2 building use of 50dB$L_{pAeq,07:00 - 23:00,}$ A3 building use of 50dB$L_{pAeq,07:00 - 23:00}$, and 45dB$L_{pAeq,23:00 - 07:00}$ and for A4 building. use 55dB$L_{pAeq,07:00 - 23:00}$ (except for A4 buildings containing lower sensitivity offices, in which case the relevant A and B categories from the BS5228 ABC method will be used to assess the noise impact). At the receptor denoted, the screening criteria is met but a change of 3dB or greater has not been identified and therefore no impact is identified. Further information is provided in Volume 5, Appendix: SV-001-00000 of the main ES.
H	Existing environment – high existing airborne ambient noise levels, day >75dB, evening >65dB or night >55dBL_{pAeq} at the façade.
L	Existing environment – low existing airborne ambient noise levels, day and evening ≤45dB, or night ≤35dBL_{pAeq} at the façade.
D,E,N	Impact duration (months) – duration of impact during the day (D), evening (E) or night (N).
O-CT-V	Combined Impact: If noise or vibration impacts from other construction activities occur at this location: on-site 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) Volume 5, Appendix: CT-002-00000 of the main ES.
TR	Mitigation effect – identified as likely to qualify for temporary rehousing under the draft CoCP.

Ground-borne sound and vibration

2.1.13 The SES1 changes do not change the likely significant ground-borne sound and vibration effects identified in the main ES.

Airborne sound: direct impacts and effects

2.1.14 Activities associated with the construction phases of the SES1 scheme will generate airborne sound. The assessment of the likely impacts and significant effects as a result of construction noise has considered the effects on:

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

2.1.15 For each type of receptor, the typical and highest monthly $L_{Aeq,T}$ noise levels from construction activities have been calculated at the façade of all assessment locations. This is subject to the screening distances identified and based upon supplied plant information from engineers.

2.1.16 The results, impact criteria and significance criteria for the assessment of the SES1 scheme at residential receptors are presented in Table 4. Explanation of the information within Table 4 is provided in Volume 5, Appendix: SV-001-00000 of the main ES, with additional notes presented in Table 3.

2.1.17 The principal SES1 changes responsible for changes in construction noise effects at the specific assessment locations, as reported in the following tables, are identified in the associated footnotes.

2.1.18 No non-residential receptors are affected by the SES1 changes.

Table 4: MA01 Assessment of construction noise at residential receptors (SES1 scheme)

Assessment location		Impact criteria				Significance criteria									Significant effect
Reference	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 properties represented	Type of receptor	Receptor design	Existing environment	Unique feature	Impact duration (months)	Combined impact	Mitigation effect	
		Day 07:00 – 19:00	Evening 19:00 – 23:00	Night 23:00 – 07:00											
610075	Broughton Road, Crewe	63/68[A]	56/56[B]	56/56[C]	Day: bored tunnel works Evening: general site works Night: general site works	S	5	R	T	-	-	D11 N28	-	NI	MA01-C-C2[7]
610077	Broughton Road, Crewe	59/66[B]	54/54[C]	54/54[C]	Day: bored tunnel works Evening: general site works Night: general site works	NA	23	R	T	H	-	-	-	-	[8]
610079	Bidvale Way, Crewe	57/62[A]	49/49[A]	49/49[A]	Day: bored tunnel works Evening: general site works Night: general site works	A	6	R	T	-	-	N29	-	-	MA01-C-C2[7]
610083	Broughton Road, Crewe	70/74[A]	62/62[B]	62/62[C]	Day: general site works Evening: general site works Night: general site works	S	22	R	T	-	-	D66 E28 N30	V	NI	MA01-C-C2[7]
610087	Broughton Road, Crewe	61/66[A]	55/55[A]	55/55[B]	Day: bored tunnel works Evening: general site	A	2	R	T	-	-	D3 N29	-	-	MA01-C-C2[7]

[7] Different likely significant effect at Coppenhall (as a result of change in baseline in the SES1 scheme).

[8] Likely significant effect removed at assessment location (as a result of change in baseline in the SES1 scheme).

Assessment location		Impact criteria				Significance criteria									Significant effect
Reference	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 properties represented	Type of receptor	Receptor design	Existing environment	Unique feature	Impact duration (months)	Combined impact	Mitigation effect	
		Day 07:00 – 19:00	Evening 19:00 – 23:00	Night 23:00 – 07:00											
					works Night: general site works										
610090	Broughton Road, Crewe	59/63[A]	50/52[A]	50/52[B]	Day: bored tunnel works Evening: general site works Night: general site works	A	17	R	T	-	-	N28	-	-	MA01-C-C2[7]
610101	Broughton Road, Crewe	64/68[A]	51/53[A]	51/53[B]	Day: bored tunnel works Evening: general site works Night: general site works	A	3	R	T	-	-	D30 N28	V	-	MA01-C-C2[7]
610509	Maplins Moss Place, Crewe	69/76[A]	55/56[B]	55/56[C]	Day: earthworks Evening: general site works Night: general site works	S	42	R	T	H	-	D38 N25	V	NI	MA01-C-C2[7]
610512	Barn Meadow Way, Crewe	66/73[A]	49/50[B]	49/50[C]	Day: earthworks Evening: bored tunnel works Night: bored tunnel works	A	29	R	T	-	-	D11	V	-	MA01-C-C2[7]
610513	Kays Croft Drive, Crewe	65/71[A]	49/50[A]	49/50[C]	Day: earthworks Evening: bored tunnel works	A	19	R	T	-	-	D19	V	-	MA01-C-C2[7]

Assessment location		Impact criteria				Significance criteria									Significant effect
Reference	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 properties represented	Type of receptor	Receptor design	Existing environment	Unique feature	Impact duration (months)	Combined impact	Mitigation effect	
		Day 07:00 – 19:00	Evening 19:00 – 23:00	Night 23:00 – 07:00											
					Night: bored tunnel works										
610854	Stoneley Avenue, Crewe	61/67[A]	55/55[A]	55/55[B]	Day: bored tunnel works Evening: general site works Night: general site works	A	12	R	T	-	-	D5 N29	-	-	MA01-C-C2[7]
610855	Stoneley Avenue, Crewe	56/60[A]	48/48[A]	48/48[A]	Day: general site works Evening: general site works Night: general site works	A	12	R	T	-	-	N28	-	-	MA01-C-C2[7]
610856	Stoneley Avenue, Crewe	55/60[A]	48/48[A]	48/48[A]	Day: bored tunnel works Evening: general site works Night: general site works	A	24	R	T	-	-	N28	-	-	MA01-C-C2[7]
610859	Bidvale Way, Crewe	56/61[A]	48/48[A]	48/48[A]	Day: bored tunnel works Evening: general site works Night: general site works	A	8	R	T	-	-	N28	-	-	MA01-C-C2[7]
610860	Bidvale Way, Crewe	54/58[A]	44/46[A]	44/46[A]	Day: bored tunnel works Evening: general site works Night: general site works	A	22	R	T	-	-	N24	-	-	MA01-C-C2[7]

Airborne sound levels used in other assessments

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

Additional Provision 1 Environmental Statement

Construction

Effects during construction

Introduction

2.1.20 The assessment is reported first for ground-borne vibration and then for airborne sound. Under each of these headings, the results of the quantitative identification of impacts, effects and significant effects are presented. The significant effects and the evidence used to support these conclusions are presented in the SES1 and AP1 ES Volume 2, Community Area report: Hough to Walley's Green (MA01).

Avoidance and mitigation measures

2.1.21 The avoidance and mitigation measures are set out in the main ES Volume 2, Community Area report: Hough to Walley's Green (MA01), Section 13.

Identification of impacts and effects

2.1.22 Assessment locations defined for the quantitative assessment of construction impacts are shown on SES1 and AP1 ES, Volume 5, Sound, noise and vibration Map Book: Map Series SV-03.

Ground-borne sound and vibration

2.1.23 There is no change in the ground-borne sound, noise and vibration compared to the main ES or, where relevant, the SES1.

Airborne sound: direct impacts and effects

2.1.24 Activities associated with the construction phases of the AP1 revised scheme will generate ground-borne sound and vibration. 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.

2.1.25 For each type of receptor, the typical and highest monthly $L_{Aeq,T}$ noise levels from construction activities have been calculated at the façade of all assessment locations. This is

subject to the screening distances identified and based upon supplied plant information from engineers.

2.1.26 The results, impact criteria and significance criteria for the assessment of the AP1 revised scheme at residential and non-residential receptors are presented in Table 5 and Table 6. Explanation of the information within Table 5 and Table 6 is provided in Volume 5, Appendix: SV-001-00000 of the main ES, with the additional notes presented in Table 3.

2.1.27 The amendments responsible for the change in construction ground-borne sound and vibration effect at the specific assessment locations reported in the following tables, are identified in the associated footnotes.

Table 5: MA01 Assessment of construction noise at residential receptors (AP1 revised scheme)

Assessment location		Impact criteria				Significance criteria									Significant effect
Reference	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 properties represented	Type of receptor	Receptor design	Existing environment	Unique feature	Impact duration (Months)	Combined impact	Mitigation effect	
		Day 07:00 – 19:00	Evening 19:00 – 23:00	Night 23:00 – 07:00											
610075	Broughton Road, Crewe	47/50[A]	35/36[B]	35/36[C]	Day: earthworks Evening: general site works Night: general site works	NA	5	R	T	-	-	-	-	-	[9]
610077	Broughton Road, Crewe	44/47[B]	35/37[C]	35/37[C]	Day: General site works Evening: General site works Night: General site works	NA	23	R	T	H	-	-	-	-	[9]
610079	Bidvale Way, Crewe	47/50[A]	38/40[A]	38/40[A]	Day: earthworks Evening: general site works Night: general site works	NA	6	R	T	-	-	-	-	-	[9]
610083	Broughton Road, Crewe	48/51[A]	39/41[B]	39/41[C]	Day: earthworks Evening: general site works Night: general site works	NA	22	R	T	-	-	-	-	-	[9]
610087	Broughton Road, Crewe	49/52[A]	40/42[A]	40/42[B]	Day: bored tunnel works Evening: general site	NA	2	R	T	-	-	-	-	-	[9]

[9] Likely significant effect removed at Coppenhall (as a result of the Crewe tunnel realignment and extension (AP1-001-001)).

Assessment location		Impact criteria				Significance criteria									Significant effect
Reference	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 properties represented	Type of receptor	Receptor design	Existing environment	Unique feature	Impact duration (Months)	Combined impact	Mitigation effect	
		Day 07:00 – 19:00	Evening 19:00 – 23:00	Night 23:00 – 07:00											
					works Night: general site works										
610090	Broughton Road, Crewe	49/52[A]	40/42[A]	40/42[B]	Day: bored tunnel works Evening: general site works Night: general site works	NA	17	R	T	-	-	-	-	-	[9]
610091	Wareham Drive, Crewe	51/55[A]	41/42[C]	41/42[C]	Day: earthworks Evening: general site works Night: general site works	NA	10	R	T	H	-	-	-	-	[10]
610093	Somerley Close, Crewe	53/56[A]	41/43[C]	41/43[C]	Day: earthworks Evening: general site works Night: general site works	NA	15	R	T	H	-	-	-	-	[10]
610101	Broughton Road, Crewe	56/60[A]	48/49[A]	48/49[B]	Day: bored tunnel works Evening: general site works Night: general site works	NA	3	R	T	-	-	-	-	-	[9]
610104	Bowland Croft, Crewe	63/69[B]	53/54[C]	53/54[C]	Day: bored tunnel works Evening: general site	NA	7	R	T	H	-	-	-	-	[10]

[10] Likely significant effect removed at Crewe (North) (as a result of the Crewe tunnel realignment and extension (AP1-001-001)).

Assessment location		Impact criteria				Significance criteria									Significant effect
Reference	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 properties represented	Type of receptor	Receptor design	Existing environment	Unique feature	Impact duration (Months)	Combined impact	Mitigation effect	
		Day 07:00 – 19:00	Evening 19:00 – 23:00	Night 23:00 – 07:00											
					works Night: general site works										
610105	Broughton Road, Crewe	56/60[A]	48/50[A]	48/50[B]	Day: bored tunnel works Evening: general site works Night: general site works	NA	1	R	T	-	-	-	-	-	[9]
610110	Waldron's Lane, Crewe	53/58[A]	46/47[A]	46/47[A]	Day: bored tunnel works Evening: general site works Night: general site works	A	1	R	T	-	-	N28	CT	-	MA01-C-C10[11]
610114	Warmingham Road, Crewe	59/65[A]	53/53[A]	53/53[B]	Day: Bored tunnel works Evening: General site works Night: General site works	A	4	R	T	-	-	N29	-	-	MA01-C-C10[11]
610118	White Lion Hotel, Warmingham Road, Crewe	55/58[A]	45/47[A]	45/47[A]	Day: bored tunnel works Evening: general site works Night: general site works	A	1	R	T	-	-	N28	-	-	MA01-C-C10[11]

[11] New likely significant effect at Coppenhall Moss (as a result of the Crewe tunnel realignment and extension (AP1-001-001)).

Assessment location		Impact criteria				Significance criteria									Significant effect
Reference	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 properties represented	Type of receptor	Receptor design	Existing environment	Unique feature	Impact duration (Months)	Combined impact	Mitigation effect	
		Day 07:00 – 19:00	Evening 19:00 – 23:00	Night 23:00 – 07:00											
610341	Hythe Avenue, Crewe	56/60[A]	48/49[B]	48/49[C]	Day: bored tunnel works Evening: general site works Night: general site works	NA	12	R	T	H	-	-	-	-	[10]
610404	Warmingham Road, Crewe	57/62[A]	51/51[A]	51/51[A]	Day: bored tunnel works Evening: general site works Night: general site works	A	3	R	T	-	-	N29	-	-	MA01-C-C10[11]
610509	Maplins Moss Place, Crewe	49/53[A]	34/35[B]	34/35[C]	Day: earthworks Evening: general site works Night: general site works	NA	42	R	T	H	-	-	-	-	[9]
610512	Barn Meadow Way, Crewe	46/50[A]	36/37[B]	36/37[C]	Day: general site works Evening: general site works Night: general site works	NA	29	R	T	-	-	-	-	-	[9]
610513	Kays Croft Drive, Crewe	46/50[A]	33/35[A]	33/35[C]	Day: earthworks Evening: general site works Night: general site works	NA	19	R	T	-	-	-	V	-	[9]
610854	Stoneley Avenue, Crewe	46/49[A]	36/38[A]	36/38[B]	Day: earthworks Evening: general site	NA	12	R	T	-	-	-	-	-	[9]

Assessment location		Impact criteria				Significance criteria									Significant effect
Reference	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 properties represented	Type of receptor	Receptor design	Existing environment	Unique feature	Impact duration (Months)	Combined impact	Mitigation effect	
		Day 07:00 – 19:00	Evening 19:00 – 23:00	Night 23:00 – 07:00											
					works Night: general site works										
610855	Stoneley Avenue, Crewe	45/48[A]	35/37[A]	35/37[A]	Day: earthworks Evening: general site works Night: general site works	NA	12	R	T	-	-	-	-	-	[9]
610856	Stoneley Avenue, Crewe	44/47[A]	35/37[A]	35/37[A]	Day: earthworks Evening: general site works Night: general site works	NA	24	R	T	-	-	-	-	-	[9]
610858	Selsey Close, Crewe	51/54[A]	40/42[B]	40/42[C]	Day: earthworks Evening: general site works Night: general site works	NA	18	R	T	-	-	-	-	-	[9]
610859	Bidvale Way, Crewe	47/51[A]	38/40[A]	38/40[A]	Day: earthworks Evening: general site works Night: general site works	NA	8	R	T	-	-	-	-	-	[9]
610860	Bidvale Way, Crewe	47/50[A]	37/39[A]	37/39[A]	Day: earthworks Evening: general site works Night: general site works	NA	22	R	T	-	-	-	-	-	[9]

Assessment location		Impact criteria				Significance criteria									Significant effect
Reference	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 properties represented	Type of receptor	Receptor design	Existing environment	Unique feature	Impact duration (Months)	Combined impact	Mitigation effect	
		Day 07:00 – 19:00	Evening 19:00 – 23:00	Night 23:00 – 07:00											
610980	Groby Road, Crewe	68/69[A]	32/33[C]	32/33[C]	Day: utility works Evening: general site works Night: general site works	A	4	R	T	H	-	D18	-	-	MA01-C-C11[12]
610986	Warmingham Road, Crewe	71/72[B]	-/-[C]	-/-[C]	Day: utility works	A	3	R	T	H	-	D13	-	NI	MA01-C-C11[12]
611020	Broughton Road, Crewe and committed development (Map book ref.: MA01/210)	48/52[A]	37/39[A]	37/39[A]	Day: Bored tunnel works Evening: General site works Night: General site works	NA	28	R	T	-	-	-	-	-	-
611021	Broughton Road, Crewe and committed development (Map book ref.: MA01/210)	46/50[A]	37/38[A]	37/38[A]	Day: General site works Evening: General site works Night: General site works	NA	38	R	T	-	-	-	-	-	-
611022	Warmingham Road, Crewe	56/62[C]	50/50[C]	50/50[C]	Day: Bored tunnel works Evening: General site	NA	4	R	T	H	-	-	-	-	-

[12] New likely significant effect at Coppenhall Moss (as a result of junction modifications to Warmingham Road and Groby Road junction, Crewe (AP1-001-004)).

Assessment location		Impact criteria				Significance criteria									Significant effect
Reference	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 properties represented	Type of receptor	Receptor design	Existing environment	Unique feature	Impact duration (Months)	Combined impact	Mitigation effect	
		Day 07:00 – 19:00	Evening 19:00 – 23:00	Night 23:00 – 07:00											
					works Night: General site works										
611023	Warmingham Road, Crewe	54/60[B]	41/42[C]	41/42[C]	Day: Bored tunnel works Evening: General site works Night: General site works	NA	10	R	T	H	-	-	-	-	-
611024	Warmingham Road, Crewe	61/62[C]	-/31[C]	-/31[C]	Day: Highway works Evening: General site works Night: General site works	NA	4	R	T	H	-	-	-	-	-
611025	Groby Road, Crewe	51/57[A]	37/38[A]	37/38[B]	Day: Highway works Evening: General site works Night: General site works	NA	4	R	T	-	-	-	-	-	-

Table 6: MA01 Assessment of construction noise at non-residential receptors (AP1 revised scheme)

Assessment location		Impact criteria					Significance criteria								Significant effect
Reference	Area represented	Typical/highest monthly outdoor L_{pAeq} [dB] at the façade		Change during month with highest noise level		Construction activity resulting in highest forecast noise levels	Number of properties represented	Type of receptor	Receptor design	Existing environment	Unique feature	Impact duration (months)	Combined impact	Mitigation effect	
		Day 07:00 – 19:00	Night 23:00 – 07:00	Day 07:00 – 19:00	Night 23:00 – 07:00										
610041	Orbitas Bereavement Services (Offices), Market Close, Crewe	58/65	48/49	7	1	Day: general site works Night: vent shaft construction	1	A4	T	H	-	D8	-	-	MA01-C-N6[13]
610532	Crewe Cemetery and Crematorium (Place Of Worship), Market Close, Crewe	51/57	40/41	8	1	Day: general site works Night: vent shaft construction	1	A2	T	-	-	D2	-	-	MA01-C-N7[13]
610678	Oakfield Lodge School, Warmingham Road, Crewe and committed development (Map book ref.: MA01/448S)	53/59	42/43	11	5	Day: utility works Night: general site works	1	A3	T	-	-	D54	-	-	MA01-C-N9[14]

[13] Different likely significant effect (as a result of the Crewe tunnel realignment and extension (AP1-001-001)).

[14] Different likely significant effect at Oakfield Lodge School (as a result of junction modifications to Warmingham Road and Groby Road junction, Crewe (AP1-001-004)).

Assessment location		Impact criteria					Significance criteria								Significant effect
Reference	Area represented	Typical/highest monthly outdoor L_{pAeq} [dB] at the façade		Change during month with highest noise level		Construction activity resulting in highest forecast noise levels	Number of properties represented	Type of receptor	Receptor design	Existing environment	Unique feature	Impact duration (months)	Combined impact	Mitigation effect	
		Day 07:00 – 19:00	Night 23:00 – 07:00	Day 07:00 – 19:00	Night 23:00 – 07:00										
610740	Cemetery Lodge (Offices), Market Close, Crewe	60/65	49/50	5	-	Day: general site works Night: vent shaft construction	1	A4	T	H	-	D2	-	-	MA01-C-N5[13]
610979	Oakfield Lodge School, Warmingham Road, Crewe	62/64	30/31	11	-	Day: utility works Night: general site works	1	A3	T	-	-	D19	-	-	MA01-C-N9[14]
611026	Coppenhall Stables (Lower Sensitivity Offices), Groby Road, Crewe	50/54	37/38	8	3	Day: Highway works Night: General site works	1	A4	T	-	-	-	-	-	-

Airborne sound: indirect effects

2.1.28 Construction road traffic associated with the construction phases of the SES1 scheme and AP1 amendments would generate airborne noise. Given that the construction traffic model information is not available for the SES1 changes and AP1 amendments separately, the in-combination effects of SES1 changes and AP1 amendments is presented in the AP1 section. 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 8.

2.1.29 Explanation of the information within Table 8 is provided in Table 7 and Volume 5, Appendix: SV-001-00000 of the main ES.

Table 7: 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
	Yellow denotes a minor impact – a change is of ≥ 3dB to <5dB, or ≥ 1dB to <3dB where a high existing sound level is identified
	Orange denotes a moderate impact – a change is of ≥5dB to <10dB, or ≥3dB to <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
~	When considered under the significance criteria set out in Volume 5, Appendix: SV-001-00000, Annex A, Section 1.3 of the main ES, these adverse effects are not considered to be significant on a community basis
*	For non-residential receptors this indicates the predicted noise levels are above screening criteria which, based upon further qualitative receptor information, (see footnote) does not give rise to a significant effect
O-CT-V	Combined Impact: If noise or vibration impacts from other construction activities occur at this location: on-site activities (O), off-site construction traffic activities (CT), or construction Vibration (V)
R, NR	Number of properties affected (approx.) – identified by type of receptor: R: total number of residential (total number of residential in community) NR: total number of non-residential

Table 8: MA01 Assessment of construction traffic noise levels – indirect effects (SES1 scheme and AP1 revised scheme)

Road name	Portion of road affected	Number of properties affected (approx.)	Daytime traffic sound levels LAeq,16hr dB			Change compared to current traffic sound level (dB)		Combined impact	Significant effect
			Without the SES1revised scheme and AP1 revised scheme (2026)	Typical month during construction	Peak month during construction	Typical month during construction	Peak month during construction		
Sydney Road	Between Crewe Green Roundabout and railway overbridge	R: 25 (25)	65.8	66.2	66.5	0.4	0.7	-	[15]
Landsdowne Road	Between Sydney Road and Coleridge Way	R: 100 (100)	48.1	48.4	48.5	0.1	0.4	-	[15]
Limetree Avenue	Between Elm Drive and Acer Avenue	R: 67 (67)	53.5	55.3	55.4	1.8	1.9	-	[15]
Broughton Road	Between 99 Broughton Road and Warmingham Road	R: 69 (69)[16]	54.6	55.6	55.6	1.0	1.0	-	[15]
A530 Middlewich Road	Between B5076 Flowers Lane Bradfield Road and St Peter's Church	R: 27 (27)	64.0	64.8	66.7	0.8	2.7	-	[15]
Waldron's Lane	Between Warmingham Road and Stoneley Road	R: 10 (10)	55.3	58.2	58.3	2.9	3.0	O[17]	MA01-C-C12[18]

[15] Likely significant effect removed along road (as a result of changes to construction traffic in the SES1/AP1).

[16] Includes 11 properties associated with committed development Planning ref. 19/3356N.

[17] One property predicted to experience a combined likely significant effect (from on-site construction activities associated with the Crewe tunnel realignment and extension (AP1-001-001)).

[18] New likely significant effect along road (as a result of changes to construction traffic in the SES1/AP1).

Road name	Portion of road affected	Number of properties affected (approx.)	Daytime traffic sound levels LAeq,16hr dB			Change compared to current traffic sound level (dB)		Combined impact	Significant effect
			Without the SES1revised scheme and AP1 revised scheme (2026)	Typical month during construction	Peak month during construction	Typical month during construction	Peak month during construction		
Stoneley Road	Between Groby Road and Waldron's Lane	R: 15 (15)	47.6	51.8	51.9	4.2	4.3	-	MA01-C-C12[18]

2.1.30 There are no non-residential properties that are likely to be affected by changes in traffic noise.

Airborne sound levels used in other assessments

2.1.31 There is no change in the airborne sound levels used in other assessments compared to the main ES or, where relevant, the SES1.

2.2 Wimboldsley to Lostock Gralam (MA02)

Supplementary Environmental Statement 1

Baseline

Existing acoustic environment

2.2.1 Road traffic information, such as flows and speeds, is used to determine the baseline sound levels. Since the production of the main ES, additional road traffic information has obtained for the SES1 scheme and AP1 revised scheme. Where relevant, this road traffic information has been used to update the existing baseline sound modelling. This has led to updates to the existing baseline sound levels at receptors in the community of Stanthorne within the Wimboldsley to Lostock Gralam area (MA02).

Existing baseline data collection methodology

2.2.2 The baseline collection methodology as outlined in Volume 5, Appendix: SV-001-00000 of the main ES is not required to be modified by the SES1 changes.

Existing baseline sound measurement locations

2.2.3 No additional baseline sound measurement locations were identified as required by the design changes identified in the SES1 scheme.

Existing baseline sound modelling

2.2.4 Road traffic information, such as flows and speeds, is used to determine the baseline sound levels. Since the production of the main ES, additional road traffic information has been obtained for the SES1 scheme. Where relevant, this road traffic information has been used to update the existing baseline sound modelling. Where no updates to baseline sound levels are required, the baseline sound modelling information is as described in Section 13 of the main ES Volume 2, Community Area report: Wimboldsley to Lostock Gralam area (MA02).

Future baseline methodology

2.2.5 No changes to the future baseline methodology were required by the design changes identified in the SES1 scheme though additional road traffic information has been used to update the future baseline sound modelling.

Baseline sound levels

2.2.6 Baseline sound levels which have been updated for the SES1 scheme are presented for assessment locations in terms of the following key sound indicators:

- baseline levels used for the operational sound assessment:
  - $L_{pAeq,16hour}$ daytime (07:00–23:00) sound pressure level;
  - $L_{pAeq,8hour}$ 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 and Sunday 07:00–23:00); and
  - night-time L_{pAeq} sound pressure level (Monday to Sunday 23:00–07:00).

2.2.7 These values are presented in Table 9. All values are free-field. 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 the main ES Volume 5, Appendix: SV-001-00000. Codes contained within brackets relate to the derivation of night-time baseline noise levels where they are different to the daytime derivation method.

2.2.8 For all other assessment locations not presented in, the baseline sound levels used in the original scheme remain relevant based on the changes identified in the SES1 scheme.

Table 9: MA02 Baseline sound levels

Assessment location		Measurement location	Baseline sound levels (dB)							Data source coding
Reference	Area represented		For construction sound assessment (2025)			For operational sound assessment (2038)				
			Daytime L_{pAeq}	Evening/ weekend L_{pAeq}	Night-time L_{pAeq}	Daytime $L_{pAeq,16hr}$	Night-time $L_{pAeq,8hr}$	Arithmetic average $L_{pAFmax,5min}$	Highest night-time $L_{pAFmax,5min}$	
610220	Coalpit Lane, Stanthorne	–	57	52	49	56	50	55	60	3,C,0,i
610224	Earl's Cottage, Birch Lane, Stanthorne	–	54	49	46	54	47	52	57	3,C,0,i
610226	Birch Lane, Stanthorne	–	48	43	41	48	41	46	51	3,C,0,i
610230	Birch Lane, Stanthorne	–	50	46	43	50	44	49	54	3,C,0,i
610405	Nantwich Road, Stanthorne	–	71	67	64	71	65	70	75	3,C,0,i
610408	Birch Lane, Stanthorne	–	55	51	48	55	49	54	59	3,C,0,i
610950	Chester Road, Middlewich	–	68	63	61	68	61	66	71	3,A,0,i
610951	Croxton Lane, Middlewich	–	66	61	59	65	59	64	69	3,A,0,i
610952	Chester Road, Middlewich	–	70	65	63	70	63	68	73	3,A,0,i
610953	Middlewich Cemetery (Place of Worship), Chester Road, Middlewich	–	50	45	43	50	43	48	55	3,A,0,i
610954	Middlewich Town Football Club (Offices), Finney's Lane, Middlewich	–	46	41	39	45	39	44	49	3,A,0,i
610955	Meadow View, Middlewich	–	48	43	41	47	41	46	57	3,A,0,i
610956	Paddock View, Middlewich	–	48	44	41	48	41	46	58	3,A,0,i
610957	Glastonbury Drive, Middlewich	–	45	40	38	45	38	43	50	3,A,0,i

Assessment location		Measurement location	Baseline sound levels (dB)							Data source coding
Reference	Area represented		For construction sound assessment (2025)			For operational sound assessment (2038)				
			Daytime L_{pAeq}	Evening/ weekend L_{pAeq}	Night-time L_{pAeq}	Daytime $L_{pAeq,16hr}$	Night-time $L_{pAeq,8hr}$	Arithmetic average $L_{pAFmax,5min}$	Highest night-time $L_{pAFmax,5min}$	
610958	Mococo House (Offices), Wheelock Street, Middlewich	–	52	48	45	52	45	50	55	3,A,0,i
610959	Lambourne Grove, Middlewich	–	52	48	45	51	45	50	56	3,A,0,i
610960	Russet Close, Middlewich	–	51	46	44	50	44	49	54	3,A,0,i
610961	Chester Road, Middlewich	–	69	65	62	69	63	68	73	3,A,0,i
610962	Chester Road, Middlewich	–	70	66	63	70	63	68	73	3,A,0,i
610964	St Michael's Way, Middlewich and committed development (Mapbook ref.: MA02/322)	–	68	63	61	68	61	66	71	3,A,0,i
610965	Newton Court Care Home, St Ann's Road, Middlewich	–	49	45	42	48	41	46	51	3,A,0,i
610967	Wheelock Street, Middlewich	–	56	52	50	55	49	54	59	3,A,0,i
610968	Meadow View, Middlewich	–	61	57	54	60	54	59	64	3,A,0,i
610969	Newton Heath, Middlewich	–	55	51	48	54	48	53	58	3,A,0,i
610970	Laurel Close, Middlewich	–	49	45	42	49	42	47	53	3,A,0,i
610971	Croxton Lane, Middlewich	–	61	56	54	60	54	59	64	3,A,0,i
610973	Lindisfarne Close, Middlewich	–	48	44	41	48	42	47	52	3,A,0,i
610974	The Crescent, Middlewich	–	52	48	45	52	45	50	55	3,A,0,i

Assessment location		Measurement location	Baseline sound levels (dB)							Data source coding
Reference	Area represented		For construction sound assessment (2025)			For operational sound assessment (2038)				
			Daytime L_{pAeq}	Evening/ weekend L_{pAeq}	Night-time L_{pAeq}	Daytime $L_{pAeq,16hr}$	Night-time $L_{pAeq,8hr}$	Arithmetic average $L_{pAFmax,5min}$	Highest night-time $L_{pAFmax,5min}$	
610975	Goodwood Rise, Middlewich	–	61	56	53	60	54	59	64	3,A,0,i
610976	Grange Lea, Middlewich	–	50	45	43	50	43	48	53	3,A,0,i
610977	Beechfield Drive, Middlewich	–	45	41	38	45	38	43	54	3,A,0,i
610978	Wheelock Street, Middlewich and committed developments (Map book ref.: MA02/221, MA02/222 and MA02/298)	–	49	45	42	48	42	47	52	3,A,0,i
610988	Manley Close, Holmes Chapel	–	63	59	56	62	56	61	66	3,C,0,i
610989	Chester Road, Holmes Chapel	–	57	53	51	56	51	56	61	3,C,0,i
610990	Helton Close, Holmes Chapel	–	58	54	51	58	51	56	61	3,C,0,i
610991	Derwent Close, Holmes Chapel	–	49	45	43	49	43	48	53	3,C,0,i
610992	Coniston Drive, Holmes Chapel	–	48	44	42	48	42	47	52	3,C,0,i
610993	Middlewich Road, Holmes Chapel	–	66	62	60	65	60	65	70	3,C,0,i
610994	Middlewich Road, Holmes Chapel	–	65	61	59	64	59	64	69	3,C,0,i

Assessment location		Measurement location	Baseline sound levels (dB)							Data source coding
Reference	Area represented		For construction sound assessment (2025)			For operational sound assessment (2038)				
			Daytime L_{pAeq}	Evening/ weekend L_{pAeq}	Night-time L_{pAeq}	Daytime $L_{pAeq,16hr}$	Night-time $L_{pAeq,8hr}$	Arithmetic average $L_{pAFmax,5min}$	Highest night-time $L_{pAFmax,5min}$	
610995	Manley Close, Holmes Chapel	–	53	49	47	53	47	52	57	3,C,0,i
610996	Jodrell Close, Holmes Chapel	–	49	45	42	49	43	48	53	3,C,0,i
610997	Manley Close, Holmes Chapel	–	48	44	42	48	42	47	52	3,C,0,i
610998	Bramhall Drive, Holmes Chapel	–	44	40	38	43	38	43	48	3,C,0,i
610999	Middlewich Road, Holmes Chapel	–	66	63	61	66	61	66	71	3,C,0,i
611000	Chester Road, Holmes Chapel	–	45	41	38	45	39	44	49	3,C,0,i
611001	Grasmere Drive, Holmes Chapel	–	45	41	38	45	38	43	48	3,C,0,i
611002	Helton Close, Holmes Chapel	–	59	55	52	59	52	57	62	3,C,0,i
611003	Ravenscroft, Holmes Chapel	–	60	56	53	60	53	58	63	3,C,0,i
611004	Coniston Drive, Holmes Chapel	–	49	44	42	49	43	48	53	3,C,0,i
611005	Coniston Drive, Holmes Chapel	–	43	39	37	44	38	43	48	3,C,0,i
611006	Chester Road, Holmes Chapel	–	44	40	37	44	38	43	48	3,C,0,i
611007	Grasmere Drive, Holmes Chapel	–	41	37	35	42	36	41	46	3,C,0,i

Assessment location		Measurement location	Baseline sound levels (dB)							Data source coding
Reference	Area represented		For construction sound assessment (2025)			For operational sound assessment (2038)				
			Daytime L_{pAeq}	Evening/ weekend L_{pAeq}	Night-time L_{pAeq}	Daytime $L_{pAeq,16hr}$	Night-time $L_{pAeq,8hr}$	Arithmetic average $L_{pAFmax,5min}$	Highest night-time $L_{pAFmax,5min}$	
611008	Chester Road, Holmes Chapel	–	43	39	36	44	38	43	48	3,C,0,i
611009	Hillcrest Avenue, Holmes Chapel	–	46	42	40	46	40	45	50	3,C,0,i
611010	Oakfield Rise, Holmes Chapel	–	45	41	39	45	40	45	50	3,C,0,i
611011	Middlewich Road, Holmes Chapel	–	46	42	40	46	41	46	51	3,C,0,i
611012	Bramhall Drive, Holmes Chapel	–	52	48	46	51	46	51	56	3,C,0,i
611013	Hadfield Court, Holmes Chapel	–	45	42	39	46	40	45	50	3,C,0,i
611014	Beeston Close, Holmes Chapel	–	45	41	38	46	40	45	50	3,C,0,i
611015	Ravenscroft, Holmes Chapel	–	65	60	57	64	57	62	67	3,C,0,i
611016	Sedbergh Close, Holmes Chapel	–	44	40	37	44	38	43	48	3,C,0,i
611017	Ravenscoft, Holmes Chapel	–	50	46	43	50	43	48	53	3,C,0,i
611018	The Cedars (Care Home), Brookfield Drive, Holmes Chapel	–	48	45	43	48	43	48	53	3,C,0,i
611019	Elmore Close, Holmes Chapel	–	48	44	42	48	43	48	53	3,C,0,i
611027	Newton Bank, Middlewich	–	71	67	64	71	64	69	74	3,C,0,i

Assessment location		Measurement location	Baseline sound levels (dB)							Data source coding
Reference	Area represented		For construction sound assessment (2025)			For operational sound assessment (2038)				
			Daytime L_{pAeq}	Evening/ weekend L_{pAeq}	Night-time L_{pAeq}	Daytime $L_{pAeq,16hr}$	Night-time $L_{pAeq,8hr}$	Arithmetic average $L_{pAFmax,5min}$	Highest night-time $L_{pAFmax,5min}$	
611028	Newton Bank, Middlewich	–	70	65	63	70	63	68	73	3,C,0,i
611029	Chester Road, Middlewich	–	64	60	57	64	57	62	67	3,C,0,i
611030	Croxton Lane, Middlewich	–	57	52	50	56	50	55	60	3,C,0,i
611031	Chester Road, Middlewich	–	59	54	52	58	52	57	62	3,C,0,i
611032	Chester Road, Middlewich	–	66	61	59	66	59	64	69	3,C,0,i
611033	Croxton Lane, Middlewich	–	64	59	56	63	56	61	66	3,C,0,i
612505	Pear Tree Farm Cottages, Davenham Road, Billenge Green	ML712505	53	47	46	52	46	53	71	1,C,0,i
612600	Holford Hall (Wedding Venue), Chester Road, Plumley	ML712516	49	46	45	49	45	49	78	1,C,0,i

Construction

Effects during construction

Introduction

2.2.9 The assessment is reported first for ground-borne vibration and then for airborne sound. Under each of these headings, the results of the quantitative identification of impacts, effects and significant effects are presented. The significant effects and the evidence used to support these conclusions are presented in the SES1 and AP1 ES Volume 2, Community Area report: Wimboldsley to Lostock Gralam (MA02).

Avoidance and mitigation measures

2.2.10 The avoidance and mitigation measures are set out as updated by the SES1 and AP1 ES Volume 2, Community Area report: Wimboldsley to Lostock Gralam (MA02).

Identification of impacts and effects

2.2.11 Assessment locations defined for the quantitative assessment of construction impacts are shown on SES1 and AP1 ES Volume 5, Sound, noise and vibration Map Book: Map Series SV-03.

Ground-borne sound and vibration

2.2.12 The SES1 changes do not change the likely significant ground-borne sound and vibration effects identified in the main ES.

Airborne sound: direct impacts and effects

2.2.13 Activities associated with the construction phases of the SES1 scheme will generate airborne sound. 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.

2.2.14 For each type of receptor, the typical and highest monthly $L_{Aeq,T}$ noise levels from construction activities have been calculated at the façade of all assessment locations. This is subject to the screening distances identified and based upon supplied plant information from engineers.

2.2.15 The results, impact criteria and significance criteria for the assessment of the SES1 scheme at residential and non-residential receptors are presented in Table 10. Explanation of the information within Table 10 is provided in Volume 5, Appendix: SV-001-00000 of the main ES, with the additional notes presented in Table 3.

2.2.16 The principal SES1 changes responsible for the change in construction noise effect at the specific assessment locations reported in the following tables, are identified in the associated footnotes.

Table 10: MA02 Assessment of construction noise at non-residential receptors (SES1 scheme)

Assessment location		Impact criteria					Significance criteria								Significant effect
Reference	Area represented	Typical/highest monthly outdoor L_{pAeq} [dB] at the façade		Change during month with highest noise level		Construction activity resulting in highest forecast noise levels	Number of properties represented	Type of receptor	Receptor design	Existing environment	Unique feature	Impact duration (months)	Combined impact	Mitigation effect	
		Day 07:00 – 19:00	Night 23:00 – 07:00	Day 07:00 – 19:00	Night 23:00 – 07:00										
612600	Holford Hall (Wedding Venue), Chester Road, Plumley	52/56	-/-	5	-	Day: Highway works	1	A2	T	-	-	D18	-	-	MA02-C-N1[19]

[19] Different likely significant effect at Holford Hall (Wedding Venue) (as a result of SES1 changes to the construction programme).

Airborne sound levels used in other assessments

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

Additional Provision 1 Environmental Statement

Construction

Effects during construction

Introduction

2.2.18 The assessment is reported first for ground-borne vibration and then for airborne sound. Under each of these headings, the results of the quantitative identification of impacts, effects and significant effects are presented. The significant effects and the evidence used to support these conclusions are presented in the SES1 and AP1 ES Volume 2, Community Area report: Wimboldsley to Lostock Gralam (MA02).

Avoidance and mitigation measures

2.2.19 The avoidance and mitigation measures are set out in the main ES Volume 2, Community Area report: Wimboldsley to Lostock Gralam (MA02), Section 13.

Identification of impacts and effects

2.2.20 Assessment locations defined for the quantitative assessment of construction impacts are shown on SES1 and AP1 ES, Volume 5, Sound, noise and vibration Map Book: Map Series SV-03.

Ground-borne sound and vibration

2.2.21 There is no change in the ground-borne sound, noise and vibration compared to the main ES or where relevant the SES1.

Airborne sound: direct impacts and effects

2.2.22 Activities associated with the construction phases of the AP1 revised scheme will generate ground-borne sound and vibration. 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.

2.2.23 For each type of receptor, the typical and highest monthly $L_{Aeq,T}$ noise levels from construction activities have been calculated at the façade of all assessment locations. This is

subject to the screening distances identified and based upon supplied plant information from engineers.

2.2.24 The results, impact criteria and significance criteria for the assessment of the AP1 revised scheme at residential and non-residential receptors are presented in Table 11 and Table 12. Explanation of the information within Table 11 and Table 12 is provided in Volume 5, Appendix: SV-001-00000 of the main ES, with additional notes presented in Table 3.

2.2.25 The amendment responsible for the change in construction ground-borne sound and vibration effect at the specific assessment locations reported in the following tables, are identified in the associated footnotes.

Table 11: MA02 Assessment of construction noise at residential receptors (AP1 revised scheme)

Assessment location		Impact criteria				Significance criteria									Significant effect
Reference	Area represented	Typical/highest monthly outdoor LpAeq [dB] at the facade [Assessment category A/B/C]			Construction activity resulting in highest forecast noise levels	Type of effect	Number of properties represented	Type of receptor	Receptor design	Existing environment	Unique feature	Impact duration (months)	Combined impact	Mitigation effect	
		Day 07:00 – 19:00	Evening 19:00 – 23:00	Night 23:00 – 07:00											
610950	Chester Road, Middlewich	73/75[C]	-/-[C]	-/-[C]	Day: Highway works	NA	13	R	T	H	-	-	-	-	-
610951	Croxton Lane, Middlewich	67/68[C]	-/-[C]	-/-[C]	Day: Highway works	NA	15	R	T	H	-	-	-	-	-
610952	Chester Road, Middlewich	63/64[C]	-/-[C]	-/-[C]	Day: Highway works	NA	16	R	T	H	-	-	-	-	-
610955	Meadow View, Middlewich	49/53[A]	-/-[A]	-/-[B]	Day: Highway works	NA	27	R	T	-	-	-	-	-	-
610956	Paddock View, Middlewich	49/52[A]	-/-[A]	-/-[B]	Day: Highway works	NA	29	R	T	-	-	-	-	-	-
610957	Glastonbury Drive, Middlewich	49/51[A]	-/-[A]	-/-[A]	Day: Utility works	NA	145	R	T	-	-	-	-	-	-
610959	Lambourne Grove, Middlewich	49/55[A]	-/-[A]	-/-[C]	Day: Utility works	NA	35	R	T	-	-	-	-	-	-
610960	Russet Close, Middlewich	60/63[A]	-/-[A]	-/-[B]	Day: Utility works	NA	20	R	T	-	-	-	-	-	-

Assessment location		Impact criteria				Significance criteria									Significant effect
Reference	Area represented	Typical/highest monthly outdoor LpAeq [dB] at the facade [Assessment category A/B/C]			Construction activity resulting in highest forecast noise levels	Type of effect	Number of properties represented	Type of receptor	Receptor design	Existing environment	Unique feature	Impact duration (months)	Combined impact	Mitigation effect	
		Day 07:00 – 19:00	Evening 19:00 – 23:00	Night 23:00 – 07:00											
610961	Chester Road, Middlewich	75/76[C]	-/-[C]	-/-[C]	Day: Highway works	S	10	R	T	H	-	D13	-	NI	MA02-C-C7[20]
610962	Chester Road, Middlewich	62/63[C]	-/-[C]	-/-[C]	Day: Highway works	NA	33	R	T	H	-	-	-	-	-
610964	St Michael's Way, Middlewich and committed development (Mapbook ref.: MA02/322)	48/51[C]	-/-[C]	-/-[C]	Day: Earthworks	NA	35	R	T	H	-	-	-	-	
610965	Newton Court Care Home, St Ann's Road, Middlewich	45/48[A]	-/-[A]	-/-[B]	Day: Earthworks	NA	1	R	T	-	-	-	-	-	-
610967	Wheelock Street, Middlewich	48/50[A]	-/-[B]	-/-[C]	Day: Highway works	NA	25	R	T	H	-	-	-	-	-
610968	Meadow View, Middlewich	49/52[B]	-/-[C]	-/-[C]	Day: Earthworks	NA	26	R	T	H	-	-	-	-	-
610969	Newton Heath, Middlewich	48/53[A]	-/-[B]	-/-[C]	Day: Highway works	NA	80	R	T	-	-	-	-	-	-

[20] New likely significant effect at Middlewich (as a result of modifications to the A54 Chester Road/A530 Croxton Lane junction (AP1-002-007)).

Assessment location		Impact criteria				Significance criteria									Significant effect
Reference	Area represented	Typical/highest monthly outdoor LpAeq [dB] at the facade [Assessment category A/B/C]			Construction activity resulting in highest forecast noise levels	Type of effect	Number of properties represented	Type of receptor	Receptor design	Existing environment	Unique feature	Impact duration (months)	Combined impact	Mitigation effect	
		Day 07:00 – 19:00	Evening 19:00 – 23:00	Night 23:00 – 07:00											
610970	Laurel Close, Middlewich	49/52[A]	-/-[A]	-/-[B]	Day: Earthworks	NA	21	R	T	-	-	-	-	-	-
610971	Croxton Lane, Middlewich	50/53[B]	-/-[C]	-/-[C]	Day: Earthworks	NA	24	R	T	H	-	-	-	-	-
610973	Lindisfarne Close, Middlewich	57/58[A]	-/-[A]	-/-[B]	Day: Highway works	NA	41	R	T	-	-	-	-	-	-
610974	The Crescent, Middlewich	56/61[A]	-/-[A]	-/-[C]	Day: Highway works	NA	14	R	T	-	-	-	-	-	-
610975	Goodwood Rise, Middlewich	50/53[B]	-/-[C]	-/-[C]	Day: General site works	NA	6	R	T	H	-	-	-	-	-
610976	Grange Lea, Middlewich	48/55[A]	-/-[A]	-/-[B]	Day: Highway works	NA	28	R	T	-	-	-	-	-	-
610977	Beechfield Drive, Middlewich	42/45[A]	-/-[A]	-/-[A]	Day: Earthworks	NA	179	R	T	-	-	-	-	-	-
610978	Wheelock Street, Middlewich and committed development (Mapbook ref.: MA02/221, MA02/222 and MA02/298)	48/51[A]	-/-[A]	-/-[B]	Day: Earthworks	NA	89	R	T	-	-	-	-	-	-

Assessment location		Impact criteria				Significance criteria									Significant effect
Reference	Area represented	Typical/highest monthly outdoor LpAeq [dB] at the facade [Assessment category A/B/C]			Construction activity resulting in highest forecast noise levels	Type of effect	Number of properties represented	Type of receptor	Receptor design	Existing environment	Unique feature	Impact duration (months)	Combined impact	Mitigation effect	
		Day 07:00 – 19:00	Evening 19:00 – 23:00	Night 23:00 – 07:00											
610988	Manley Close, Holmes Chapel	70/72[B]	-/-[C]	-/-[C]	Day: Highway works	A	6	R	T	H	-	D1	-	-	MA02-C-C8[21]
610989	Chester Road, Holmes Chapel	72/75[A]	-/-[B]	-/-[C]	Day: Highway works	A	5	R	T	H	-	D4	-	-	MA02-C-C8[21]
610990	Helton Close, Holmes Chapel	66/68[A]	-/-[B]	-/-[C]	Day: Highway works	A	7	R	T	H	-	D3	-	-	MA02-C-C8[21]
610991	Derwent Close, Holmes Chapel	66/68[A]	-/-[A]	-/-[B]	Day: Highway works	A	6	R	T	-	-	D3	-	-	MA02-C-C8[21]
610992	Coniston Drive, Holmes Chapel	58/60[A]	-/-[A]	-/-[B]	Day: Highway works	NA	5	R	T	-	-	-	-	-	-
610993	Middlewich Road, Holmes Chapel	65/67[C]	-/-[C]	-/-[C]	Day: Highway works	NA	8	R	T	H	-	-	-	-	-
610994	Middlewich Road, Holmes Chapel	56/58[C]	-/-[C]	-/-[C]	Day: Highway works	NA	11	R	T	H	-	-	-	-	-
610995	Manley Close, Holmes Chapel	64/66[A]	-/-[A]	-/-[C]	Day: Highway works	A	8	R	T	-	-	D1	-	-	MA02-C-C8[21]
610996	Jodrell Close, Holmes Chapel	55/58[A]	-/-[A]	-/-[B]	Day: Highway works	NA	8	R	T	-	-	-	-	-	-
610997	Manley Close, Holmes Chapel	59/61[A]	-/-[A]	-/-[B]	Day: Highway works	NA	6	R	T	-	-	-	-	-	-

[21] New likely significant effect at Holmes Chapel (as a result of junction modifications of the A54 Middlewich Road and Chester Road junction (AP1-002-009)).

Assessment location		Impact criteria				Significance criteria									Significant effect
Reference	Area represented	Typical/highest monthly outdoor LpAeq [dB] at the facade [Assessment category A/B/C]			Construction activity resulting in highest forecast noise levels	Type of effect	Number of properties represented	Type of receptor	Receptor design	Existing environment	Unique feature	Impact duration (months)	Combined impact	Mitigation effect	
		Day 07:00 – 19:00	Evening 19:00 – 23:00	Night 23:00 – 07:00											
610998	Bramhall Drive, Holmes Chapel	40/42[A]	-/-[A]	-/-[A]	Day: Highway works	NA	14	R	T	-	-	-	-	-	-
610999	Middlewich Road, Holmes Chapel	53/55[C]	-/-[C]	-/-[C]	Day: Highway works	NA	11	R	T	H	-	-	-	-	-
611000	Chester Road, Holmes Chapel	55/57[A]	-/-[A]	-/-[A]	Day: Highway works	NA	8	R	T	-	-	-	-	-	-
611001	Grasmere Drive, Holmes Chapel	53/56[A]	-/-[A]	-/-[A]	Day: Highway works	NA	7	R	T	-	-	-	-	-	-
611002	Helton Close, Holmes Chapel	57/60[A]	-/-[C]	-/-[C]	Day: Highway works	NA	5	R	T	H	-	-	-	-	-
611003	Ravenscroft, Holmes Chapel	53/55[B]	-/-[C]	-/-[C]	Day: Highway works	NA	6	R	T	H	-	-	-	-	-
611004	Coniston Drive, Holmes Chapel	50/52[A]	-/-[A]	-/-[B]	Day: Highway works	NA	12	R	T	-	-	-	-	-	-
611005	Coniston Drive, Holmes Chapel	52/54[A]	-/-[A]	-/-[A]	Day: Highway works	NA	12	R	T	-	-	-	-	-	-
611006	Chester Road, Holmes Chapel	52/54[A]	-/-[A]	-/-[A]	Day: Highway works	NA	21	R	T	-	-	-	-	-	-
611007	Grasmere Drive, Holmes Chapel	45/47[A]	-/-[A]	-/-[A]	Day: Highway works	NA	55	R	T	-	-	-	-	-	-
611008	Chester Road, Holmes Chapel	46/48[A]	-/-[A]	-/-[A]	Day: Highway works	NA	13	R	T	-	-	-	-	-	-

Assessment location		Impact criteria				Significance criteria									Significant effect
Reference	Area represented	Typical/highest monthly outdoor LpAeq [dB] at the facade [Assessment category A/B/C]			Construction activity resulting in highest forecast noise levels	Type of effect	Number of properties represented	Type of receptor	Receptor design	Existing environment	Unique feature	Impact duration (months)	Combined impact	Mitigation effect	
		Day 07:00 – 19:00	Evening 19:00 – 23:00	Night 23:00 – 07:00											
611009	Hillcrest Avenue, Holmes Chapel	54/57[A]	-/-[A]	-/-[B]	Day: Highway works	NA	6	R	T	-	-	-	-	-	-
611010	Oakfield Rise, Holmes Chapel	44/46[A]	-/-[A]	-/-[A]	Day: Highway works	NA	12	R	T	-	-	-	-	-	-
611011	Middlewich Road, Holmes Chapel	42/44[A]	-/-[A]	-/-[B]	Day: Highway works	NA	25	R	T	-	-	-	-	-	-
611012	Bramhall Drive, Holmes Chapel	43/45[A]	-/-[A]	-/-[C]	Day: Highway works	NA	40	R	T	-	-	-	-	-	-
611013	Hadfield Court, Holmes Chapel	42/45[A]	-/-[A]	-/-[A]	Day: Highway works	NA	18	R	T	-	-	-	-	-	-
611014	Beeston Close, Holmes Chapel	50/53[A]	-/-[A]	-/-[A]	Day: Highway works	NA	31	R	T	-	-	-	-	-	-
611015	Ravenscroft, Holmes Chapel	50/53[C]	-/-[C]	-/-[C]	Day: Highway works	NA	15	R	T	H	-	-	-	-	-
611016	Sedbergh Close, Holmes Chapel	44/46[A]	-/-[A]	-/-[A]	Day: Highway works	NA	15	R	T	-	-	-	-	-	-
611017	Ravenscoft, Holmes Chapel	44/46[A]	-/-[A]	-/-[B]	Day: Highway works	NA	48	R	T	-	-	-	-	-	-
611018	The Cedars (Care Home), Brookfield Drive, Holmes Chapel	38/40[A]	-/-[A]	-/-[B]	Day: Highway works	NA	1	R	T	-	-	-	-	-	-
611019	Elmore Close, Holmes Chapel	54/56[A]	-/-[A]	-/-[B]	Day: Highway works	NA	6	R	T	-	-	-	-	-	-

Assessment location		Impact criteria				Significance criteria									Significant effect
Reference	Area represented	Typical/highest monthly outdoor LpAeq [dB] at the facade [Assessment category A/B/C]			Construction activity resulting in highest forecast noise levels	Type of effect	Number of properties represented	Type of receptor	Receptor design	Existing environment	Unique feature	Impact duration (months)	Combined impact	Mitigation effect	
		Day 07:00 – 19:00	Evening 19:00 – 23:00	Night 23:00 – 07:00											
611027	Newton Bank, Middlewich	60/62[C]	-/-[C]	-/-[C]	Day: Highway works	NA	5	R	T	H	-	-	-	-	-
611028	Newton Bank, Middlewich	38/44[C]	-/-[C]	-/-[C]	Day: Highway works	NA	5	R	T	H	-	-	-	-	-
611029	Chester Road, Middlewich	71/73[B]	-/-[C]	-/-[C]	Day: Highway works	A	5	R	T	H	-	D15	-	-	MA02-C-C7[21]
611030	Croxton Lane, Middlewich	65/67[A]	-/-[B]	-/-[C]	Day: Highway works	A	6	R	T	H	-	D13	-	-	MA02-C-C7[21]
611031	Chester Road, Middlewich	67/68[A]	-/-[B]	-/-[C]	Day: Highway works	A	1	R	T	H	-	D17	-	-	MA02-C-C7[21]
611032	Chester Road, Middlewich	71/72[C]	-/-[C]	-/-[C]	Day: Highway works	NA	4	R	T	H	-	-	-	-	-
611033	Croxton Lane, Middlewich	70/71[B]	-/-[C]	-/-[C]	Day: Highway works	A	6	R	T	H	-	D13	-	-	MA02-C-C7[21]

Table 12: MA02 Assessment of construction noise at non-residential receptors (AP1 revised scheme)

Assessment location		Impact criteria					Significance criteria								Significant effect
Reference	Area represented	Typical/highest monthly outdoor L_{pAeq} [dB] at the façade		Change during month with highest noise level		Construction activity resulting in highest forecast noise levels	Number of properties represented	Type of receptor	Receptor design	Existing environment	Unique feature	Impact duration (months)	Combined impact	Mitigation effect	
		Day 07:00 – 19:00	Night 23:00 – 07:00	Day 07:00 – 19:00	Night 23:00 – 07:00										
610953	Middlewich Cemetery (Place of Worship), Chester Road, Middlewich	55/59	-/-	7	-	Day: Highway works	1	A2	T	-	-	D18	-	-	MA02-C-N4[22]
610954	Middlewich Town Football Club (Offices), Finney's Lane, Middlewich	49/52	-/-	5	-	Day: Highway works	1	A4	T	-	-	-	-	-	-
610958	Mococo House (Offices), Wheelock Street, Middlewich	40/44	-/-	1	-	Day: Highway works	1	A4	T	-	-	-	-	-	-
610963	Weaver and Bomfords (Offices), Chester Road, Middlewich	53/59	-/-	-	-	Day: Highway works	1	A4	T	H	-	-	-	-	-
610966	Cheshire Lasers Clinic, Wheelock Street, Middlewich	47/55	-/-	1	-	Day: Highway works	1	A3	T	H	-	-	-	-	$

[22] New likely significant effect at Middlewich Cemetery (as a result of modifications to the A54 Chester Road/A530 Croxton Lane junction (AP1-002-007)).

Airborne sound: indirect effects

2.2.26 Construction road traffic associated with the construction phases of the SES1 scheme and AP1 amendments would generate airborne noise. Given that the construction traffic model information is not available for the SES1 changes and AP1 amendments separately, the in-combination effects of SES1 changes and AP1 amendments is presented in the SES1 section. 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 13 as well as road links which have effects removed as a result of the SES1 scheme and AP1 amendments.

2.2.27 Explanation of the information within Table 13 is provided in Table 7 and Volume 5, Appendix: SV-001-00000 of the main ES.

Table 13: MA02 Assessment of construction traffic noise levels – indirect effects (SES1 scheme and AP1 revised scheme)

Road name	Portion of road affected	Number of properties affected (approx.)	Daytime traffic sound levels $L_{Aeq,16hr}$ dB			Change compared to current traffic sound level (dB)		Combined impact	Significant effect
			Without the AP1 revised scheme (2030)	Typical month during construction	Peak month during construction	Typical month during construction	Peak month during construction		
Darnhall School Lane, Winsford	Between B5074 Swanlow Lane and Glebe Green Drive	R:50 (240) NR:2	55.6	58.6	59.1	3.0	3.5	-	MA02-C-C4[23] MA02-C-N2 MA02-C-N3
Glebe Green Drive/Durham Drive, Winsford	Between Darnhall School Lane and Dover Drive	R: 80 (240)	58.6	60.5	60.6	1.9	2.0	-	[24]
Dover Drive/Mount Pleasant Drive, Winsford	Between Durham Drive and Woodford Lane West	R: 110 (240)	59.1	60.6	60.9	1.5	1.8	-	[24]
B5309 Centurion Way, Middlewich	Between B5081 Byley Lane and roundabout at White Park Close	R: 10 (35)	67.7	66.9	68.0	-0.8	0.3	-	[24]
B5309 Centurion Way, Middlewich	Between roundabout at White Park Close and B5309 King Street	R: 25 (35)	67.0	65.9	66.6	-1.1	-0.4	-	[24]

[23] Different likely significant effect along road (as a result of changes to construction traffic in the SES1/AP1 resulting in fewer impacted properties).

[24] Removed likely significant effect along road (as a result of changes to construction traffic in the SES1/AP1).

Road name	Portion of road affected	Number of properties affected (approx.)	Daytime traffic sound levels $L_{Aeq,16hr}$ dB			Change compared to current traffic sound level (dB)		Combined impact	Significant effect
			Without the AP1 revised scheme (2030)	Typical month during construction	Peak month during construction	Typical month during construction	Peak month during construction		
B5081, Byley Road	Between Lily Lane and B5082 Northwich Road	R: 30 (30)	66.6	67.4	67.4	0.8	0.8	-	[24]
Birches Lane/Lostock Green/Lostock Hollow/Station Road	Between A556 and School Lane	R:6 (5) NR:2	58.4	59.1	62.0	0.3	3.6	-	MA02-C-N5[25] MA02-C-N6
A556 Shurlach Road	Between Birches Lane and Manchester Road	R:46 (38) NR:1	73.4	73.9	74.5	0.5	1.1	-	MA02-C-C9[25] MA02-C-N7
A556	Between Manchester Road and Linnards Lane	R:12 (12) NR:0	74.4	74.9	75.6	0.5	1.2	-	~

[25] New likely significant effect along road (as a result of changes to construction traffic in the SES1/AP1).

Airborne sound levels used in other assessments

2.2.28 There is no change in the airborne sound levels used in other assessments compared to the main ES or, where relevant, the SES1.

2.3 Pickmere to Agden and Hulseheath (MA03)

Supplementary Environmental Statement 1

Baseline

Existing acoustic environment

2.3.1 Road traffic information, such as flows and speeds, is used to determine the baseline sound levels. Since the main ES, additional road traffic information has been obtained for the SES1 scheme and AP1 revised scheme. Where relevant, this road traffic information has been used to update the existing baseline sound modelling. This has led to updates to the existing baseline sound levels at receptors in the following locations within the Pickmere to Agden and Hulseheath area:

- adjacent to the B5391 Pickmere Lane and in the community of Pickmere;
- adjacent to Budworth road and in the community of Tabley; and
- in the community of Hulseheath.

Existing baseline data collection methodology

2.3.2 The baseline collection methodology as outlined in Volume 5, Appendix: SV-001-00000 of the main ES is not required to be modified by the SES1 changes.

Existing baseline sound measurement locations

2.3.3 No additional baseline sound measurement locations were identified as required by the changes identified in the SES1 scheme.

Existing baseline sound modelling

2.3.4 Road traffic information, such as flows and speeds, is used to determine the baseline sound levels. Since the production of the main ES, additional road traffic information has been used in the development of the updated baseline and future baseline road traffic modelling. Where relevant, this road traffic information has been used to update the existing baseline sound modelling. Where no updates to baseline sound levels are required, the baseline sound modelling information is as described in Section 13 of the main ES Volume 2, Community Area report: Pickmere to Agden and Hulseheath area (MA03).

Future baseline methodology

2.3.5 No changes to the future baseline methodology were required by the design changes identified in the SES1 scheme though additional road traffic information has been used to update the future baseline sound modelling.

Baseline sound levels

2.3.6 Baseline sound levels which have been updated for the SES1 scheme are presented for assessment locations in terms of the following key sound indicators:

- baseline levels used for the operational sound assessment:
  - $L_{pAeq,16hour}$ daytime (07:00–23:00) sound pressure level;
  - $L_{pAeq,8hour}$ 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 and Sunday 07:00–23:00); and
  - night-time L_{pAeq} sound pressure level (Monday to Sunday 23:00–07:00).

2.3.7 These values are presented in Table 14. All values are free-field. 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 the main ES Volume 5, Appendix: SV-001-00000. Codes contained within brackets relate to the derivation of night-time baseline noise levels where they are different to the daytime derivation method.

2.3.8 For all other assessment locations not presented in Table 14, the baseline sound levels used in the original scheme remain relevant based on the changes identified in the SES1 scheme.

Table 14: MA03 Baseline sound levels

Assessment location		Measurement location	Baseline sound levels (dB)							Data source coding
Reference	Area represented		For construction sound assessment (2025)			For operational sound assessment (2038)				
			Daytime L_{pAeq}	Evening/ weekend L_{pAeq}	Night-time L_{pAeq}	Daytime $L_{pAeq,16hr}$	Night-time $L_{pAeq,8hr}$	Arithmetic average $L_{pAFmax,5min}$	Highest night-time $L_{pAFmax,5min}$	
612615	Pickmere Lane, Knutsford	–	47	43	41	46	40	45	50	3,C,0,i
612616	Tanyard Farm, Pickmere Lane, Pickmere	–	50	46	44	49	44	49	54	3,C,0,i
612618	Roses Farm, Pickmere Lane, Pickmere	ML712603	52	49	48	52	48	51	84	1,C,0,i
612619	Dunholme Farm, Pickmere Lane, Pickmere	ML712603	52	49	48	52	48	51	84	1,C,0,i
612622	Pickmere Lane, Pickmere	ML712603	52	49	48	52	48	51	84	1,C,0,i
612623	Pickmere Lane, Pickmere	–	54	50	48	53	48	53	58	3,C,0,i
612624	Pickmere Lane, Pickmere	–	51	47	45	50	45	50	55	3,C,0,i
612625	Pickmere Hall Farm, Pickmere Lane, Pickmere	–	47	41	41	46	41	46	51	3,C,0,i
612628	Pickmere Lane, Pickmere	–	59	56	54	58	53	58	63	3,C,0,i
612629	Churches Farm, School Lane, Pickmere	–	43	40	37	43	37	42	47	3,C,0,i
612632	Frog Lane, Pickmere	ML712609	52	50	49	52	49	52	80	1,C,0,i
612633	Pickmere Lane, Pickmere	–	51	47	45	50	45	50	55	3,C,0,i
612638	Budworth Road, Tabley	–	48	44	41	48	43	48	53	3,C,0,i
612656	Winterbottom Farm, Winterbottom Lane, Mere	–	49	46	44	50	45	50	55	3,C,0,i

Assessment location		Measurement location	Baseline sound levels (dB)							Data source coding
			For construction sound assessment (2025)			For operational sound assessment (2038)				
Reference	Area represented		Daytime L_{pAeq}	Evening/ weekend L_{pAeq}	Night-time L_{pAeq}	Daytime $L_{pAeq,16hr}$	Night-time $L_{pAeq,8hr}$	Arithmetic average $L_{pAFmax,5min}$	Highest night-time $L_{pAFmax,5min}$	
612657	Winterbottom Lane, Mere	–	51	47	45	51	46	51	56	3,C,0,i
612700	Chapel Lane, Mere	ML712611	51	49	46	51	46	51	69	1,C,0,i
612706	Chapel Lane, Mere	ML712611	51	49	46	51	46	51	69	1,C,0,i
612712	Broom Manor, Peacock Lane, High Legh	ML712611	51	49	46	51	46	51	69	1,C,0,i
612732	Runnymede, Thowler Lane, Millington	ML712611	51	49	46	51	46	51	69	1,C,0,i
612736	Five Acres, Peacock Lane, High Legh	ML712611	51	49	46	51	46	51	69	1,C,0,i
612745	Little Moss Farm, Peacock Lane, High Legh	–	51	47	45	51	45	50	55	3,C,0,i
612747	Moss Farm, Peacock Lane, High Legh	–	47	44	42	47	41	46	51	3,C,0,i
612751	Thowler Lane, Millington	ML712611	51	49	46	51	46	51	69	1,C,0,i
612861	Brook Cottage, Pickmere Lane, Pickmere	–	62	58	56	60	55	60	65	3,C,0,i

Construction

Effects during construction

Introduction

2.3.9 The assessment is reported first for ground-borne vibration and then for airborne sound. Under each of these headings, the results of the quantitative identification of impacts, effects and significant effects are presented. The significant effects and the evidence used to support these conclusions are presented in the SES1 and AP1 ES Volume 2, Community Area report: Pickmere to Agden and Hulseheath (MA03).

Avoidance and mitigation measures

2.3.10 The avoidance and mitigation measures are set out in the main ES Volume 2, Community Area report: Pickmere to Agden and Hulseheath (MA03).

Identification of impacts and effects

2.3.11 Assessment locations defined for the quantitative assessment of construction impacts are shown on SES1 and AP1 ES Volume 5, Sound, noise and vibration Map Book: Map Series SV-03.

Ground-borne sound and vibration

2.3.12 The SES1 changes do not change the likely significant ground-borne sound and vibration effects identified in the main ES.

Airborne sound: direct impacts and effects

2.3.13 Activities associated with the construction phases of the SES1 scheme will generate airborne sound. 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.

2.3.14 For each type of receptor, the typical and highest monthly $L_{Aeq,T}$ noise levels from construction activities have been calculated at the façade of all assessment locations. This is subject to the screening distances identified and based upon supplied plant information from engineers.

2.3.15 The results, impact criteria and significance criteria for the assessment of the SES1 scheme at residential receptors are presented in Table 15. Explanation of the information within Table 15 is provided in Volume 5, Appendix: SV-001-00000 of the main ES, with the additional notes presented in Table 3.

2.3.16 The principal SES1 changes responsible for the change in construction noise effect at the specific assessment locations reported in the following tables, are identified in the associated footnotes.

2.3.17 No non-residential receptors are affected by the SES1 changes.

Table 15: MA03 Assessment of construction noise at residential receptors (SES1 scheme)

Assessment location		Impact criteria				Significance criteria									Significant effect
Reference	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 properties represented	Type of receptor	Receptor design	Existing environment	Unique feature	Impact duration (months)	Combined impact	Mitigation effect	
		Day 07:00 – 19:00	Evening 19:00 – 23:00	Night 23:00 – 07:00											
612628	Pickmere Lane, Pickmere	62/68[A]	-/-[C]	-/-[C]	Day: Highway works	A	2	R	T	H	-	D2	-	-	MA03-C-C4[26]
612629	Churches Farm, School Lane, Pickmere	60/67[A]	-/-[A]	-/-[A]	Day: Highway works	A	1	R	T	-	-	D1	-	-	MA03-C-C4[26]
612632	Frog Lane, Pickmere	66/69[A]	-/-[B]	-/-[C]	Day: Highway works	A	2	R	T	-	-	D10	-	-	MA03-C-C4[26],
612633	Pickmere Lane, Pickmere	66/71[A]	-/31[A]	-/31[C]	Day: Earthworks Evening: Earthworks Night: Earthworks	A	3	R	T	-	-	D20	V, CT	-	MA03-C-C4[26]
612638	Budworth Road, Tabley	64/68[A]	-/-[A]	-/-[B]	Day: General site works	A	5	R	T	-	-	D13	V, CT	-	MA03-C-C1[27]

[26] New significant effect at Pickmere (as a result of change in baseline in the SES1 scheme).

[27] Different significant effect at Tabley Superior (as a result of changes to the existing baseline sound levels and the construction programme in the SES1 scheme).

Assessment location		Impact criteria				Significance criteria									Significant effect
Reference	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 properties represented	Type of receptor	Receptor design	Existing environment	Unique feature	Impact duration (months)	Combined impact	Mitigation effect	
		Day 07:00 – 19:00	Evening 19:00 – 23:00	Night 23:00 – 07:00											
612700	Chapel Lane, Mere	61/68[A]	-/31[A]	-/31[C]	Day: Culvert construction Evening: Culvert construction Night: Culvert construction	A	5	R	T	-	-	D5	CT	-	MA03-C-C2[28,29]
612706	Chapel Lane, Mere	68/73[A]	-/32[A]	-/32[C]	Day: Highway works Evening: Culvert construction Night: Culvert construction	A	2	R	T	-	-	D7	-	-	MA03-C-C2[28,29]
612712	Broom Manor, Peacock Lane, High Legh	65/71[A]	-/33[A]	-/33[C]	Day: Earthworks Evening: Earthworks Night: Earthworks	A	1	R	T	-	-	D17	-	-	MA03-C-C2[28,29]

[28] This community extends across the boundary between the Pickmere to Agden and Hulseheath area (MA03), and the Hulseheath to Manchester Airport area (MA06), with approximately 10 properties being in the Pickmere to Agden and Hulseheath area (MA03), and approximately five properties in the Hulseheath to Manchester Airport area (MA06). For further information, see Volume 2, Community Area report: Hulseheath to Manchester Airport (MA06), Section 13 and Volume 5, Appendix: SV-002-0MA06.

[29] Different significant effect at Hulseheath (as a result of the removal of the HS2 WCML connection (SES1-004-001) in the SES1 scheme).

Assessment location		Impact criteria				Significance criteria									Significant effect
Reference	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 properties represented	Type of receptor	Receptor design	Existing environment	Unique feature	Impact duration (months)	Combined impact	Mitigation effect	
		Day 07:00 – 19:00	Evening 19:00 – 23:00	Night 23:00 – 07:00											
612730	Moss House Farm, Thowler Lane, Millington	71/76[A]	34/37[A]	34/37[C]	Day: Overbridge construction Evening: Overbridge construction Night: Overbridge construction	S	1	R	T	-	-	D35	V	NI	MA03-C-C2[28,29]
612732	Runnymede, Thowler Lane, Millington	65/70[A]	-/30[A]	-/30[C]	Day: Highway works Evening: Highway works Night: Highway works	A	1	R	T	-	-	D28	-	-	MA03-C-C2[28,29]
612736	Five Acres, Peacock Lane, High Legh	66/73[A]	-/-[A]	-/-[C]	Day: Highway works	A	1	R	T	-	-	D15	V	-	MA03-C-C2[28,29]
612745	Little Moss Farm, Peacock Lane, High Legh	63/69[A]	-/-[A]	-/-[C]	Day: Highway works	A	1	R	T	-	-	D17	-	-	MA03-C-C2[28,29]
612747	Moss Farm, Peacock Lane, High Legh	67/73[A]	30/33[A]	30/33[B]	Day: General site works Evening: General site works Night: General site works	A	1	R	T	-	-	D40	V	-	MA03-C-C2[28,29]

Airborne sound levels used in other assessments

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

Additional Provision 1 Environmental Statement

Construction

Effects during construction

Ground-borne sound and vibration

2.3.19 There are no amendments in this community area that have the potential to lead to changes in the ground-borne sound, noise and vibration effects from those assessed in the main ES or where relevant the SES1.

Airborne sound: direct impacts and effects

2.3.20 There are no amendments in this community area that have the potential to lead to changes in the likely significant airborne effects from those assessed in the main ES or, where relevant, the SES1.

Airborne sound: indirect effects

2.3.21 Construction road traffic associated with the construction phases of the SES1 scheme and AP1 amendments would generate airborne noise. Given that the construction traffic model information is not available for the SES1 changes and AP1 amendments separately, the in-combination effects of SES1 changes and AP1 amendments is presented in the SES1 section. 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 16 as well as road links which have effects removed as a result of the SES1 scheme and AP1 amendments.

2.3.22 Explanation of the information within Table 16 is provided in Table 7 and Volume 5, Appendix: SV-001-00000 of the main ES.

Table 16: MA03 Assessment of construction traffic noise levels – indirect effects (SES1 scheme and AP1 revised scheme)

Road name	Portion of road affected	Number of properties affected (approx.)	Daytime traffic sound levels $L_{Aeq,16hr}$ dB			Change compared to current traffic sound level (dB)		Combined impact	Significant effect
			Without the AP1 revised scheme (2030)	Typical month during construction	Peak month during construction	Typical month during construction	Peak month during construction		
Pickmere Lane	Between Budworth Lane and School Lane	R:7 (3) NR:0	60.8	62.9	64.9	2.1	4.1	O, V	~
Budworth Road	Between Frog Lane and Old Hall Lane	R:7 (7) NR:0	54.2	57.5	60.5	3.3	6.3	O, V	MA03-C-C1[30]
Budworth Road	Between Old hall Lane and B5391 Pickmere Lane	R:2 (2) NR:0	60.1	60.1	64.0	0	3.9	-	-
B5391 Pickmere Lane	Between Budworth Road and A556	R:5 (5) NR:0	62.2	63.6	65.9	1.4	3.7	-	~
A50 Warrington Road	Between A5034 Mereside Road Clamhunger Lane	R:3 (3) NR:0	69.6	70.0	70.6	0.4	1.0	-	~
A50 Warrington Road	Between Clamhunger Lane and Chester Road	R:15 (15) NR:0	70.3	70.9	71.4	0.6	1.1	-	~
Hulseheath Lane	Between Bucklow Hill Lane and Chapel Lane	R:3 (3) NR:0	27.7	50.4	56.6	22.7	30.9	O	~
A50	Between West Lane and Swineyard Lane	R:3 (3) NR:0	68.5	68.7	69.5	0.2	1.0	-	~

[30] New significant effect at Budworth Road (as a result of changes to construction traffic in the SES1 scheme/AP1revised scheme).

Road name	Portion of road affected	Number of properties affected (approx.)	Daytime traffic sound levels $L_{Aeq,16hr}$ dB			Change compared to current traffic sound level (dB)		Combined impact	Significant effect
			Without the AP1 revised scheme (2030)	Typical month during construction	Peak month during construction	Typical month during construction	Peak month during construction		
A50	Between Swineyard Lane and Heath Lane	R:1 (1) NR:0	67.4	67.7	68.4	0.3	1.0	-	~
Heath Lane	Between Swineyard Lane and A50	R:2 (2) NR:0	55.7	58.3	59.3	2.6	3.6	-	~
A50	Between Heath Lane and M6 J20	R:4 (4) NR:0	67.8	68.3	68.9	0.5	1.1	-	~
B5569 Chester Road	Between the A50 and A5304 Mereside Road	R: 0 (0) NR:0	57.1	58.9	59.7	1.8	2.6		~[31]
Chapel Lane	Between B5569 Chester Road and Hulseheath Lane	R: 0 (0) NR:0	59.3	58.9	61.9	-0.4	2.9		~[31]
Chapel Lane/Peacock Lane (existing)[32]	Between Hulseheath Lane and Back Lane	R: 0 (0) NR:0	59.3	56.8	58.5	-2.5	-0.8		~[31]

[31] Significant effect removed along road (as a result of changes to construction traffic in the SES1 scheme/AP1 revised scheme).

[32] Note this road is realigned during a later phase of construction. The results presented are representative of the phase which results in the greatest change in noise level to the community.

2.3.23 There are no non-residential properties that are likely to be affected by changes in traffic noise.

Airborne sound levels used in other assessments

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

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