

HIGH SPEED RAIL (LONDON - WEST MIDLANDS)

Supplementary Environmental Statement 3 and Additional Provision 4 Environmental Statement

Volume 5 | Technical appendices

Sound, noise and vibration

(SV-002-004, SV-002-007, SV-003-004, SV-003-005,
SV-003-007, SV-003-009, SV-003-023, SV-003-025,
SV-003-026, SV-004-009, SV-004-013)

October 2015

SES3 and AP4 ES 3.5.1.9

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CFA ₅ , Northolt Corridor	SV-003-005
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SES3 and AP4 ES Appendix SV-002-004

Environmental topic:	Sound, noise and vibration	SV
Appendix name:	Baseline report	002
Community forum area:	Kilburn (Brent) to Old Oak Common	004

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1 Introduction

- 1.1.1 This appendix provides an update to Appendix SV-002-004 baseline sound, noise and vibration report for community forum area 4 (CFA₄) from the main Environmental Statement (ES) as a result of the Supplementary Environmental Statement (SES₃) and the Additional Provision 4 Environmental Statement (AP₄ ES). This update should be read in conjunction with Appendix SV-002-004 baseline sound, noise and vibration report from the main ES.
- 1.1.2 Surrounding the Canterbury Works vent shaft site, a number of additional baseline sound measurements have been undertaken.

1.2 Existing acoustic environment

- 1.2.1 The existing baseline sound environment around the vent shaft site at Canterbury Works site includes contributions from local road traffic on Canterbury Road; rail traffic on the North London Line (NLL) and West Coast Main Line (WCML) and more distant road traffic on Kilburn High Road. Daytime sound levels are typically 55 to 60dB surrounding the site but fall to around 50dB in some screened locations. Night-time sound levels in this area are typically 5 to 10dB lower than those during the day.

2 Scope, assumptions and limitations

2.1 Changes of relevance to this assessment

- 2.1.1 The assessment of construction and operational sound, noise and vibration for the Canterbury Works vent shaft site amendment involves assessment in a new geographical area to those previously assessed in the main ES. This appendix includes details of the existing and future baseline sound environment within the area of the Canterbury Works vent shaft site.
- 2.1.2 Maps showing the baseline sound monitoring locations and assessment locations within this area are included in SES 3 and AP₄ ES Map Series SV-03 and SV-04 (Volume 5, Sound, Noise and Vibration Map Book).

3 Environmental baseline

3.1 Existing baseline data collection methodology

- 3.1.1 The overall approach to baseline data collection for sound noise and vibration is described in Volume 5: Appendix SV-001-000 from the main ES.
- 3.1.2 The measurements undertaken over the Kilburn (Brent) to Old Oak Common area are described in Appendix SV-002-004 from the main ES.
- 3.1.3 Surrounding the Canterbury Works vent shaft site, five additional baseline sound measurements have been undertaken including three long term measurements and two short term measurements. These measurements were undertaken at locations representative of local residential properties and St Marys Roman Catholic Primary School.

3.2 Existing baseline sound levels

3.2.1 In accordance with the methodology described in Section 3.1, baseline sound levels have been ascertained for each new assessment location within this area. These levels are presented in terms of the following key sound indicators:

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

3.2.2 The values are presented in Table 1. The data source coding included within this table details how the baseline sound levels allocated to each assessment location have been derived. This coding is summarised in Table 2 and explained in detail in Volume 5: Appendix SV-001-000 from the main ES.

Table 1 : Existing baseline sound levels

Assessment location ID	Area Represented	Measurement location	Existing baseline sound level (dB)							Data source coding[1]
			For operational sound assessment				For construction sound assessment			
			Daytime L _{pAeq,16hr}	Night-time L _{pAeq,8hr}	Arithmetic average of night-time L _{pAFmax,5min}	Highest night-time L _{pAFmax,5min}	Daytime L _{pAeq}	Evening / Weekend L _{pAeq}	Night-time L _{pAeq}	
901182	Canterbury Terrace, London	LM7061	48.4	42.7	53.6	70.7	49.0	48.3	41.3	1,A,i,a
901183	Canterbury Terrace, London	LM7077	58.5	53.6	70.0	85.8	59.0	54.5	52.9	2,A,i,a
901184	Canterbury Road, London	LM7062	55.6	47.0	58.6	74.4	56.1	51.6	46.3	1,A,i,a
901185	St Marys RC Primary School	LM7091	56.5	50.9	59.9	79.2	55.5	54.3	50.0	1,A,i,a
901186	Brondesbury Villas, London	LM7064	59.1	55.0	62.9	82.9	59.2	60.6	53.7	1,A,i,a
901187	Chichester Road, London	LM7062	55.6	47.0	58.6	74.4	56.1	51.6	46.3	1,A,ii,b
901188	Canterbury House	LM7061	48.4	42.7	53.6	70.7	49.0	48.3	41.3	1,A,ii,b

Table 2 : Data source coding key

Code	Data source type
1	Long-term measurement location
2	Short-term (linked to simultaneous long-term)
3	Short-term (using profile from non-simultaneous long-term)
4	Short-term using standard (National Noise Incidence Study ¹ or other) 24hr profile
5	Specific validated prediction
6	Predictions from other sources (Defra noise maps ² , etc.).
7	Generic levels

Code	Corrections applied
A	Data from above source applied directly
B	Correction applied for screening
C	Correction applied for distance from source
D	Minimum level cut-off applied.

Code	Distance from measurement
i	Data applied from a measurement at or very close to the assessment location.
ii	Data applied from a local measurement location at a greater distance but noted to have equivalent acoustic climate.
iii	Data applied from a distant measurement location where sound levels would be expected to be similar.

Code	Uncertainty
a	Data are considered highly representative of the prevailing sound climate
b	Data are considered representative of the prevailing sound climate, but 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, (e.g. taken from Defra noise maps, etc.).

3.3 Future baseline methodology

Construction

- 3.3.1 The assessment of noise from construction activities assumes a baseline year of 2017. As a conservative assumption, it has been assumed that no change in baseline sound levels will occur between the existing baseline (2015) and the future baseline year of 2017.
- 3.3.2 Due to the duration of the construction work and as the precise timing of the highest sound levels would be different in each location, using baseline sound levels for 2017 as the start of the construction period provides a reasonable worst case assessment.

¹ Building Research Establishment, (2002), *National Noise Incidence Study 2000/2001*.

² Defra, Noise Mapping England, <http://services.defra.gov.uk/wps/portal/noise/>; accessed 26 July 2013.

- 3.3.3 The assessment of construction traffic is based on future baseline traffic flows for 2021, as a year which is representative of the middle of the construction period.

Operation

- 3.3.4 There is potential for future baseline sound levels for operation (2026) to change when compared to the existing baseline sound levels (2015) as a result of changes in baseline sound sources.
- 3.3.5 In the vast majority of cases where change might occur it is expected that baseline sound levels will increase at assessment locations due to increases in vehicle movements on roads. It is therefore considered that the use of the 2015 baseline levels in the operational assessment will result in a worst case assessment of the impact of changes in the future baseline sound levels in the majority of locations.
- 3.3.6 Therefore for the purposes of this assessment future baseline levels have been assumed to be identical to those identified in Table 1 of this appendix for 2015.
- 3.3.7 In addition, based on available road traffic information a screening exercise has been undertaken to identify any areas in which a reduction in baseline sound level might be likely. Where reductions in baseline sound level have been identified a further screening assessment has been completed to identify if these changes would be likely to materially affect the operational sound assessment.
- 3.3.8 The screening assessment has not identified any locations in this area where a decrease in future baseline (2026), compared to existing baseline (2015), is likely to materially affect the operational sound assessment.

SES₃ and AP₄ ES Appendix SV-002-007

Environmental topic:	Sound, noise and vibration	SV
Appendix name:	Baseline report	002
Community forum area:	Colne Valley	007

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1 Introduction

- 1.1.1 This appendix provides an update to Appendix SV-002-007 baseline sound, noise and vibration report for community forum area (CFA) 07 from the main Environmental Statement (ES) as a result of design change AP₄-006-004 as part of the Supplementary Environmental Statement (SES 3) and the Additional Provision 4 Environmental Statement (AP₄ ES). This update should be read in conjunction with Appendix SV-002-007 baseline sound, noise and vibration report from the main ES.
- 1.1.2 Surrounding the Haul Route through Uxbridge Golf Course, a number of additional assessment locations have been identified and baseline sound values determined.

Existing acoustic environment

- 1.1.3 The existing baseline sound environment around the haul road site at Uxbridge Golf Course includes contributions from road traffic on Western Ave (A₄₀), local road traffic on B₄₆₇ Swakeleys Road and Harvil Road; rail traffic on the Chiltern Rail Line and occasional overflying aircraft. Daytime sound levels are typically 60 to 65dB close to the A₄₀ but fall to around 50 to 55dB in some screened locations.

2 Scope, assumptions and limitations

2.1 Changes of relevance to this assessment

- 2.1.1 The assessment of construction and operational sound, noise and vibration for the haul road through Uxbridge Golf Course amendment (AP₄-006-004) involves assessment in a new geographical area to those previously assessed in the main ES. This appendix includes details of the existing and future baseline sound environment within the area.
- 2.1.2 Maps showing the baseline sound monitoring locations and assessment locations within this area are included in SES₃ and AP₄ ES Map Series SV-03 and SV-04 (Volume 5, Sound, Noise and Vibration Map Book).

3 Environmental baseline

3.1 Existing baseline data collection methodology

- 3.1.1 The overall approach to baseline data collection for sound noise and vibration is described in Volume 5: Appendix SV-001-000 from the main ES.
- 3.1.2 The measurements undertaken within the Colne Valley area are described in Appendix SV-002-007 from the main ES.
- 3.1.3 Surrounding the haul road through Uxbridge Golf Course, nineteen additional assessment locations were identified and their baseline sound levels determined using pre-existing baseline information where available. At locations where no baseline information is available, and where additional baseline sound surveys were unable to be completed, 'precautionary' (low) baseline sound levels have been allocated to assessment locations. In the tables these sound levels are referred to as "precautionary construction" and produce a worst case assessment of construction

noise. In a limited number of situations, where use of these 'precautionary' (low) baseline sound levels has led to the identification of unrealistic effects (particularly close to the A₄₀), further analysis has been undertaken and appropriate baseline sound levels allocated.

3.2 Existing baseline sound levels

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

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

3.2.2 The values above are presented in Table 1. The data source coding included within this table details how the baseline sound levels allocated to each assessment location have been derived. This coding is summarised in Table 2 and explained in detail in Volume 5: Appendix SV-001-000 from the main ES.

Table 1 : Existing baseline sound levels

Assessment location ID	Area Represented	Measurement location	Existing baseline sound level (dB)							Data source coding[1]
			For operational sound assessment				For construction sound assessment			
			Daytime LpAeq,16hr	Night-time LpAeq,8hr	Arithmetic average of night-time LpAFmax,5min	Highest night-time LpAFmax,5min	Daytime LpAeq	Evening / Weekend LpAeq	Night-time LpAeq	
720432	The Drive (south) facing A40	London_Urban	64.0	56.0	71.1	75.0	64.0	60.0	56.0	7,A,iii,b
720433	The Drive (south) facing A40	Precautionary construction	47.0	42.0	N/A	N/A	47.0	42.0	42.0	7,A,iii,b
720434	Georgian Close, facing A40	Precautionary construction	47.0	42.0	N/A	N/A	47.0	42.0	42.0	7,A,iii,b
720435	Georgian Close, facing Gold Course	Precautionary construction	47.0	42.0	N/A	N/A	47.0	42.0	42.0	7,A,iii,b
720436	Salt Hill Close, facing A40	Precautionary construction	47.0	42.0	N/A	N/A	47.0	42.0	42.0	7,A,iii,b
720437	Woodhall Close, facing A40	London_Urban	64.0	56.0	71.1	75.0	64.0	60.0	56.0	7,A,iii,b
720438	Park Road (north) facing A40	London_Urban	64.0	56.0	71.1	75.0	64.0	60.0	56.0	7,A,iii,b
720439	The Drive, Ickenham	Precautionary construction	47.0	42.0	N/A	N/A	47.0	42.0	42.0	7,A,iii,b
720440	The Drive, Ickenham	Precautionary construction	47.0	42.0	N/A	N/A	47.0	42.0	42.0	7,A,iii,b
720441	The Drive, Ickenham	Precautionary construction	47.0	42.0	N/A	N/A	47.0	42.0	42.0	7,A,iii,b

Assessment location ID	Area Represented	Measurement location	Existing baseline sound level (dB)							Data source coding[1]
			For operational sound assessment				For construction sound assessment			
			Daytime LpAeq,16hr	Night-time LpAeq,8hr	Arithmetic average of night-time LpAFmax,5min	Highest night-time LpAFmax,5min	Daytime LpAeq	Evening / Weekend LpAeq	Night-time LpAeq	
720442	The Drive, Ickenham	Precautionary construction	47.0	42.0	N/A	N/A	47.0	42.0	42.0	7,A,iii,b
720443	The Drive, Ickenham	LM1070	49.3	41.9	60.2	71.2	49.9	48.6	41.9	1,C,ii,b
720444	Fairways Cavery Restaurant	LM1070	48.6	41.9	60.2	71.2	49.1	47.8	41.9	1,D,ii,b
720445	Uxbridge Golf Club House	LM1070	50.7	42.7	60.2	71.2	51.3	50.0	43.1	1,C,ii,b
720446	The Cottages, The Drive	LM1070	50.4	42.4	60.2	71.2	51.0	49.7	42.8	1,C,ii,b
720447	Pine Trees Drive	Precautionary construction	47.0	42.0	N/A	N/A	47.0	42.0	42.0	7,A,iii,b
720448	The Drive, Ickenham	Precautionary construction	47.0	42.0	N/A	N/A	47.0	42.0	42.0	7,A,iii,b
720449	The Drive, Ickenham	Precautionary construction	47.0	42.0	N/A	N/A	47.0	42.0	42.0	7,A,iii,b
720450	Fray's Farm	Precautionary construction	47.0	42.0	N/A	N/A	47.0	42.0	42.0	7,A,iii,b

Table 2 : Data source coding key

Code	Data source type
1	Long-term measurement location
2	Short-term (linked to simultaneous long-term)
3	Short-term (using profile from non-simultaneous long-term)
4	Short-term using standard (National Noise Incidence Study ¹ or other) 24hr profile
5	Specific validated prediction
6	Predictions from other sources (Defra noise maps ² , etc.).
7	Generic levels

Code	Corrections applied
A	Data from above source applied directly
B	Correction applied for screening
C	Correction applied for distance from source
D	Minimum level cut-off applied.

Code	Distance from measurement
i	Data applied from a measurement at or very close to the assessment location.
ii	Data applied from a local measurement location at a greater distance but noted to have equivalent acoustic climate.
iii	Data applied from a distant measurement location where sound levels would be expected to be similar.

Code	Uncertainty
a	Data are considered highly representative of the prevailing sound climate
b	Data are considered representative of the prevailing sound climate, but 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, (e.g. taken from Defra noise maps, etc.).

3.3 Future baseline methodology

Construction

- 3.3.1 The assessment of noise from construction activities assumes a baseline year of 2017. As a conservative assumption, it has been assumed that no change in baseline sound levels will occur between the existing baseline (2015) and the future baseline year of 2017.
- 3.3.2 Due to the duration of the construction work and as the precise timing of the highest sound levels would be different in each location, using baseline sound levels for 2017 as the start of the construction period, provides a reasonable worst case assessment.

¹ Building Research Establishment, (2002), *National Noise Incidence Study 2000/2001*.

² Defra, Noise Mapping England, <http://services.defra.gov.uk/wps/portal/noise/>; accessed 26 July 2013.

- 3.3.3 The assessment of construction traffic is based on future baseline traffic flows for 2021, as a year which is representative of the middle of the construction period.

Operation

- 3.3.4 There is potential for future baseline sound levels for operation (2026) to change when compared to the existing baseline sound levels (2015) as a result of changes in baseline sound sources.
- 3.3.5 In the vast majority of cases where change might occur it is expected that baseline sound levels will increase at assessment locations due to increases in vehicle movements on roads. It is therefore considered that the use of the 2015 baseline levels in the operational assessment will result in a worst case assessment of the impact of changes in the future baseline sound levels in the majority of locations.
- 3.3.6 Therefore for the purposes of this assessment future baseline levels have been assumed to be identical to those identified in Table 1 of this appendix for 2015.
- 3.3.7 In addition, based on available road traffic information a screening exercise has been undertaken to identify any areas in which a reduction in baseline sound level might be likely. Where reductions in baseline sound level have been identified a further screening assessment has been completed to identify if these changes would be likely to materially affect the operational sound assessment.
- 3.3.8 The screening assessment has not identified any locations in this area where a decrease in future baseline (2026), compared to existing baseline (2015), is likely to materially affect the operational sound assessment

SES3 and AP4 ES Appendix SV-003-004

Environmental topic:	Sound, noise and vibration	SV
Appendix name:	Construction assessment report	003
Community forum area:	Kilburn (Brent) to Old Oak Common	004

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1 Introduction

- 1.1.1 This appendix provides an update to Appendix SV-003-004 construction assessment report for community forum area 4 (CFA₄) from the main Environmental Statement (ES) as a result of the Supplementary Environmental Statement (SES₃) and the Additional Provision 4 Environmental Statement (AP₄ ES). This update should be read in conjunction with Appendix SV-003-004 construction assessment report from the main ES.

2 Scope, assumptions and limitations

2.1 Changes of relevance to this assessment

- 2.1.1 The assessment scope, key assumptions and limitations for sound, noise and vibration are as set out in Volume 1, the Scope and Methodology Report (SMR) (Volume 5: Appendix CT-001-000/1) and the SMR Addendum (Volume 5: Appendix CT-001-000/2) of the main ES.
- 2.1.2 The amendment of additional land for a ventilation and intervention shaft (vent shaft) and auto-transformer station (ATS) required at the Canterbury Works vent shaft site has the potential to lead to changes in significant noise effects within CFA₄.

3 Effects arising during construction

3.1 Avoidance and mitigation measures

- 3.1.1 The avoidance and mitigation measures are presented in the main ES, Volume 2: CFA report 4.
- 3.1.2 In addition to this mitigation, taller acoustic screening as described in the draft Code of Construction Practice (CoCP) has been assumed along the edge of the Canterbury Works vent shaft site construction site boundary adjacent to the residential communities.

3.2 Quantitative identification of impacts and effects

Ground-borne vibration

- 3.2.1 No impacts have been predicted as the result of construction ground-borne sound and vibration in this area.

Airborne sound: direct impacts and effects

- 3.2.2 The assessment results, impact criteria and significance criteria for the assessment of the AP₄ amendments listed in Section 2 at residential and non-residential receptors are presented in Table 1 and Table 2 respectively. These tables present only those assessment locations for which the assessment has changed compared with the Supplementary Environmental Statement (SES) and main ES. For additional information see the main ES, Volume 5, CFA₄, Appendix SV-003-004.

Table 1 : Assessment of construction noise at residential receptors

Assessment location		Impact criteria			Significance criteria									Significant effect	
ID	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 impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]		Mitigation effect
		Day 07:00- 19:00	Evening 19:00- 23:00	Night 23:00- 07:00											
901182	Canterbury Terrace, London	74/87 [A]	-	-	Day: Works associated with Canterbury Works site ventilation shaft - demolition and site preparation	S	40	R	T	-	-	-	D 21	NI	CSV04-C11
901183	Canterbury Terrace, London	54/60 [A]	-	-	Day: Works associated with Canterbury Works site ventilation shaft - demolition and site preparation	NA	40	R	T	H	-	-	-	-	
901184	Canterbury Road, London	56/66 [A]	-	-	Day: Works associated with Canterbury Works site ventilation shaft - demolition and site preparation	A	100	R	T	-	-	-	D 1	-	CSV04-C12
901186	Brondesbury Villas, London	67/76 [A]	-	-	Day: Works associated with Canterbury Works site ventilation shaft - demolition and site preparation	S	40	R	T	H	-	-	D 7	NI	CSV04-C13

Assessment location		Impact criteria			Significance criteria									Significant effect	
ID	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 impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]		Mitigation effect
		Day 07:00-19:00	Evening 19:00-23:00	Night 23:00-07:00											
901187	Chichester Road, London	47/55 [A]	-	-	Day: Works associated with Canterbury Works site ventilation shaft - demolition and site preparation	NA	20	R	T	-	-	-	-	-	
901188	Canterbury House	72/86 [A]	-	-	Day: Works associated with Canterbury Works site ventilation shaft - demolition and site preparation	S	20	R	T	-	-	-	D 21	NI	CSV04-C14

Table 2 : Assessment of construction noise at non-residential receptors

Assessment location		Impact criteria			Significance criteria									Significant effect	
ID	Area represented	Typical/highest monthly outdoor LpAeq [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]		Mitigation effect
		Day 07:00- 19:00	Evening 19:00-23:00	Night 23:00- 07:00											
901185	St Marys RC Primary School	65/72	-	-	Day: Works associated with Canterbury Works site ventilation shaft - demolition and site preparation	B	1	G 4	T	H	-	-	D 21	-	CSV04-N09

3.3 Assessment of significance of effects

Residential receptors: direct effects - individual dwellings

3.3.1 Taking account of the avoidance and mitigation measures set out in section 3.1, the following residential buildings additional to those reported in the main ES are forecast to experience noise levels higher than the noise insulation trigger levels as defined in the draft CoCP. For daytime construction the trigger level is 75dB¹ measured outdoors, or the existing ambient if this is already above this level:

- one building (approximately 40 dwellings) on Canterbury Terrace;
- Canterbury House (approximately 20 dwellings); and
- one building (approximately 40 dwellings) on Brondesbury Villas.

3.3.2 The mitigation measures, including noise insulation, will reduce noise inside all dwellings such that it does not reach a level where it will significantly affect residents.

Residential receptors: direct effects - communities

3.3.3 With regard to noise outside dwellings, the assessment of temporary effects takes account of construction noise relative to existing sound levels.

3.3.4 The direct adverse construction noise effects on the areas of the residential communities identified in Table 3 are considered to be significant.

Table 3 : Direct adverse effects on residential communities and shared open areas that are considered to be significant on a community basis

Significant effect number	Type of significant effect	Time of Day	Location	Cause (loudest construction activities)	Assumed duration of impact and details.
CSV04-C11	Construction noise	Daytime	Approximately 40 dwellings on Canterbury Terrace	Canterbury Works ventilation shaft - demolition. Typical and highest monthly noise levels of 75dB and 85dB	One year and nine months
CSV04-C12	Construction noise	Daytime	Approximately 100 dwellings on Canterbury Road	Canterbury Works ventilation shaft - demolition. Typical and highest monthly noise levels of 55dB and 65dB	One month
CSV04-C13	Construction noise	Daytime	Approximately 40 dwellings on Brondesbury Villas	Canterbury Works ventilation shaft - demolition. Typical and highest monthly noise levels of 65dB and 75dB	Seven months
CSV04-C14	Construction noise	Daytime	Approximately 20 dwellings in Canterbury House	Canterbury Works ventilation shaft - demolition. Typical and highest monthly noise levels of 70dB and 85dB	One year and nine months

¹ L_{pAeq,0800-1800} measured at the façade.

Non-residential receptors - direct effects

- 3.3.5 Significant construction noise effects have been identified on a reasonable worst case basis at St Mary's Roman Catholic Primary School (CSV04-N09). Significant noise effects have been identified during the daytime with noise levels rising at times to around 70dB over a period of approximately one year and nine months during the construction of the Canterbury Works vent shaft.

Cumulative effects from the scheme and other committed development

- 3.3.6 This assessment has considered the potential cumulative construction noise effects of the scheme and other committed developments. In this area, no committed developments are due to be built at the same time as the scheme and accordingly, construction noise or vibration from the scheme is unlikely to result in any significant cumulative noise effects.

SES₃ and AP₄ ES Appendix SV-003-005

Environmental topic:	Sound, noise and vibration	SV
Appendix name:	Construction assessment report	003
Community forum area:	Northolt Corridor	005

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1 Introduction

- 1.1.1 This appendix provides an update to Appendix SV-003-005 construction assessment report for community forum area 5 (CFA5) from the main Environmental Statement (ES) as a result of the Additional Provision 4 Environmental Statement (AP4 ES). This update should be read in conjunction with Appendix SV-003-005 construction assessment report from the main ES.

2 Scope, assumptions and limitations

2.1 Changes of relevance to this assessment

- 2.1.1 The assessment scope, key assumptions and limitations for sound, noise and vibration are as set out in Volume 1, the SMR (Volume 5: Appendix CT-001-000/1) and the SMR Addendum (Volume 5: Appendix CT-001-000/2) of the main ES.
- 2.1.2 The relocation of West Gate vent shaft to an existing car park approximately 150m further west of the original scheme (AP4-005-001) has the potential to lead to changes in significant noise effects within CFA5.

3 Effects arising during construction

3.1 Avoidance and mitigation measures

- 3.1.1 The avoidance and mitigation measures are presented in the main ES Volume 2: CFA Report 05.

3.2 Quantitative identification of impacts and effects

Ground-borne vibration

- 3.2.1 No impacts have been predicted as the result of construction ground-borne sound and vibration in this area.

Airborne sound: direct impacts and effects

- 3.2.2 The assessment results, impact criteria and significance criteria for the assessment of the AP4 amendments listed in section 2 at residential and non-residential receptors are presented in Tables 1 and 2 respectively. These tables present only those assessment locations for which the assessment has changed compared with the SES and main ES. For additional information see the Main ES, Volume 5, CFA5, Appendix SV-003-005.

Table 1 : Assessment of construction noise at residential receptors

Assessment location		Impact criteria			Significance criteria										Significant effect
ID	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 impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration (months)	Mitigation effect	
		Day 0700- 1900	Evening 1900- 2300	Night 2300- 0700											
465447	Marsh Road, Wembley	60/66 (B)	-	-	Day: West Gate vent shaft site - M&E fit out	NA	1	R	T	H	-	-	-	-	
466333	Priory Gardens, London	<40/<40 (B)	-	-		NA	38	R	T	H	-	-	-	-	
481104	Brunswick Road, London	46/51 (A)	-	-	Day: West Gate vent shaft site - shaft internal works (inc re-organise site) headhouse construction	NA	19	R	T	H	-	-	-	-	
481355	Brunswick Road, London	47/52 (>C)	-	-	Day: West Gate vent shaft site - shaft internal works (inc re-organise site) headhouse construction	NA	20	R	T	H	-	-	-	-	
481448	Greystoke Park Terrace, London	56/61 (>C)	-	-	Day: West Gate vent shaft site - shaft internal works (inc re-organise site) headhouse construction	NA	12	R	T	H	-	-	-	-	
488860	Burns Road, Wembley	44/50 (A)	-	-	Day: West Gate vent shaft site - shaft internal works (inc re-organise site) headhouse	NA	28	R	T	H	-	-	-	-	

Assessment location		Impact criteria			Significance criteria										Significant effect
ID	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 impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration (months)	Mitigation effect	
		Day 0700- 1900	Evening 1900- 2300	Night 2300- 0700											
					construction										
491973	Hanger Lane (North Circular Road), Hanger Hill	<40/<40 (>C)	-	-		NA	9	R	T	H	-	-	-	-	
491989	Ritz Parade, London	<40/41 (>C)	-	-	Day: West Gate vent shaft site - shaft construction	NA	8	R	T	H	-	-	-	-	
493240	Brunswick Road, London	44/49 (A)	-	-	Day: West Gate vent shaft site - shaft internal works (inc re-organise site) headhouse construction	NA	17	R	T	H	-	-	-	-	
493368	Brunswick Road, London	48/54 (A)	-	-	Day: West Gate vent shaft site - shaft internal works (inc re-organise site) headhouse construction	NA	40	R	T	H	-	-	-	-	
493412	Greystoke Park Terrace, London	47/53 (>C)	-	-	Day: West Gate vent shaft site - shaft internal works (inc re-organise site) headhouse construction	NA	14	R	T	H	-	-	-	-	
493528	Royal Parade, London	<40/44 (>C)	-	-	Day: West Gate vent shaft site - shaft	NA	16	R	T	H	-	-	-	-	

Assessment location		Impact criteria			Significance criteria										Significant effect
ID	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 impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration (months)	Mitigation effect	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
					construction										
494076	Cleveley Crescent, London	<40/<40 (A)	-	-		NA	16	R	T	H	-	-	-	-	
494352	Western Avenue, London	43/48 (>C)	-	-	Day: West Gate vent shaft site - shaft internal works (inc re-organise site) headhouse construction	NA	78	R	T	H	-	-	-	-	
496325	Brunswick Road, London	<40/45 (A)	-	-	Day: West Gate vent shaft site - shaft internal works (inc re-organise site) headhouse construction	NA	19	R	T	H	-	-	-	-	

Table 2 : Assessment of construction noise at non-residential receptors

Assessment location		Impact criteria			Significance criteria										Significant effect
ID	Area represented	Typical/highest monthly outdoor LpAeq (dB) at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration (months)	Mitigation effect	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
465447	Marsh Road, Wembley	60/66	-	-	Day: West Gate vent shaft site - M&E fit out	B	6	G5	T	H	-	-	-	-	
466143	Lapis Close, London	<40/<40	-	-		B	1	G3	T	H	-	-	-	-	
466333	Priory Gardens, London	<40/<40	-	-		B	3	G5	T	H	-	-	-	-	
481355	Brunswick Road, London	47/52	-	-	Day: West Gate vent shaft site - shaft internal works (inc re-organise site) headhouse construction	B	1	G4	T	H	-	-	-	-	
481685	Alperton Lane, Wembley	61/67	-	-	Day: West Gate vent shaft site - M&E fit out	B	6	G5	T	H	-	-	-	-	
482231	Western Avenue, Perivale	<40/41	-	-	Day: West Gate vent shaft site - shaft internal works (inc re-organise site) headhouse construction	B	1	G3	T	H	-	-	-	-	
485704	Meadvale Road, London	41/44	-	-	Day: West Gate vent shaft site - shaft construction	B	1	G3	T	H	-	-	-	-	

Assessment location		Impact criteria			Significance criteria										Significant effect
ID	Area represented	Typical/highest monthly outdoor LpAeq (dB) at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration (months)	Mitigation effect	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
488860	Burns Road, Wembley	44/50	-	-	Day: West Gate vent shaft site - shaft internal works (inc re-organise site) headhouse construction	B	3	G5	T	H	-	-	-	-	
489151	May Gardens, Wembley	<40/44	-	-	Day: West Gate vent shaft site - shaft construction	B	1	G3	T	H	-	-	-	-	
489693	Federal Road, Perivale	<40/<40	-	-		B	1	G3	T	H	-	-	-	-	
491989	Ritz Parade, London	<40/41	-	-	Day: West Gate vent shaft site - shaft construction	B	7	G5	T	H	-	-	-	-	
493240	Brunswick Road, London	44/49	-	-	Day: West Gate vent shaft site - shaft internal works (inc re-organise site) headhouse construction	B	1	G4	T	H	-	-	-	-	
493486	Western Avenue, London	40/45	-	-	Day: West Gate vent shaft site - shaft construction	B	1	G4	T	H	-	-	-	-	
493528	Royal Parade, London	<40/44	-	-	Day: West Gate vent shaft site - shaft construction	B	7	G5	T	H	-	-	-	-	
494208	West Gate,	<40/42	-	-	Day: West Gate vent shaft site -	B	1	G2	T	H	-	-	-	-	

Assessment location		Impact criteria			Significance criteria										Significant effect
ID	Area represented	Typical/highest monthly outdoor LpAeq (dB) at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration (months)	Mitigation effect	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
	London				shaft construction										
494208	West Gate, London	<40/42	-	-	Day: West Gate vent shaft site - shaft construction	B	28	G5	T	H	-	-	-	-	
494242	West Gate, London	61/67	-	-	Day: West Gate vent shaft site - M&E fit out	B	10	G5	T	H	-	-	-	-	
498902	Priory Gardens, London	<40/44	-	-	Day: West Gate vent shaft site - shaft internal works (inc re-organise site) headhouse construction	B	21	G5	T	H	-	-	-	-	
505889	Dukes Road, East Acton	<40/<40	-	-		B	1	G1	T	H	-	-	-	-	
700420	West Gate, London	<40/<40	-	-		B	1	G5	T	H	-	-	-	-	

3.3 Assessment of significance of effects

Residential receptors: direct effects - individual dwellings

- 3.3.1 Taking account of the avoidance and mitigation measures set out in section 3.1, no additional residential buildings to those reported in the main ES are forecast to experience noise levels higher than the noise insulation or temporary rehousing trigger levels as defined in the draft CoCP.

Residential receptors: direct effects - communities

- 3.3.2 With regard to noise outside dwellings, the assessment of temporary effects takes account of construction noise relative to existing sound levels.
- 3.3.3 The works associated with the amendment will not give rise to new or different direct significant effects on residential receptors in comparison with those reported in the main ES.

Non-residential receptors - direct effects

- 3.3.4 On a reasonable worst case basis, temporary significant construction noise effects were identified in the main ES at the following non-residential receptors:
- Westgate House, West Gate, London W5 1UA (CSV05-No1, represented by assessment location 700420, see main ES Volume 5 Sound, Noise and Vibration Map Book – Euston and London Metropolitan, SV-03 maps);
 - Westgate Media and Broadcast Ltd, West Gate, London W5 1UA (CSV05-No2, assessment location 700420);
 - AGB House, West Gate, London W5 1EL (CSV05-No3, assessment location 700420);
 - Commercial operations in Westworld, West Gate, London W5 1EL (CSV05-No4, assessment location 494242); and
 - Manhattan House, Manhattan Business Park (CSV05-No5, assessment location 494242).
- 3.3.5 With the new amendment, significant construction noise effects are no longer likely at non-residential properties. There are no further new or different significant construction noise or vibration effects in comparison with those reported in the main ES.

Cumulative effects from the scheme and other committed development

- 3.3.6 This assessment has considered the potential cumulative construction noise effects of the scheme and other committed developments.
- 3.3.7 There are no new or different likely significant cumulative effects for sound, noise and vibration as a result of the amendments acting in combination with one another in AP₂ or in AP₁, or as a result of any relevant committed development interacting with the AP₄ revised scheme.

SES3 and AP4 ES Appendix SV-003-007

Environmental topic:	Sound, noise and vibration	SV
Appendix name:	Construction assessment report	003
Community forum area:	Colne Valley	007

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1 Introduction

- 1.1.1 This appendix provides an update to Appendix SV-003-007 construction assessment report for community forum area (CFA) 07 from the main Environmental Statement (ES) as a result of the Additional Provision 4 Environmental Statement (AP₄ ES). This update should be read in conjunction with Appendix SV-003-007 Construction assessment report from the main ES.

2 Scope, assumptions and limitations

2.1 Changes of relevance to this assessment

- 2.1.1 The assessment scope, key assumptions and limitations for sound, noise and vibration are as set out in Volume 1, the SMR (Volume 5: Appendix CT-001-000/01) and the SMR Addendum (Volume 5: Appendix CT-001-000/02) of the main ES.
- 2.1.2 The construction of a new haul road through Uxbridge Gold Course (AP₄-006-004) via the A40 Western Avenue, the B467 Swakeleys Road and Harvil Road has the potential to lead to changes in significant noise effects within CFA7. An assessment of these changes is presented below.

3 Effects arising during construction

3.1 Avoidance and mitigation measures

- 3.1.1 The avoidance and mitigation measures are presented in the main ES Volume 2: CFA Report 07. Any additional mitigation measures as a result of the amendment are presented in the SES₃ and AP₄ ES Volume 2 CFA7.

3.2 Quantitative identification of impacts and effects

Ground-borne vibration

- 3.2.1 No impacts have been predicted as the result of construction ground-borne sound and vibration in this area.

Airborne sound: direct impacts and effects

- 3.2.2 The assessment results, impact criteria and significance criteria for the assessment of the AP₄ amendments listed in section 2 at residential and non-residential receptors are presented in Table 1 and Table 2 respectively. These tables present only those assessment locations for which the assessment has changed compared with the SES and main ES. For additional information see the main ES, Volume 5, CFA7, Appendix SV-003-007.

Table 1 : Assessment of construction noise at residential receptors

Assessment location		Impact criteria			Significance criteria										Significant effect
ID	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 impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	
		Day 0700- 1900	Evening 1900- 2300	Night 2300- 0700											
406098	Harvil Road, Ickenham	45/52 [A]	-	-	Day: Uxbridge Golf Course Haul Road - removal & reinstatement - Road demolition removal & reinstatement	NA	2	R	T	H	-	-	-	-	
406180	The Drive, Ickenham	48/54 [A]	-	-	Day: Uxbridge Golf Course Haul Road - removal & reinstatement - Road demolition removal & reinstatement	NA	6	R	T	-	-	-	-	-	
407707	The Drive, Ickenham	<40/46 [A]	-	-	Day: Uxbridge Golf Course Haul Road - removal & reinstatement - Road demolition removal & reinstatement	NA	14	R	T	H	-	-	-	-	
408811	Harvil Road, Ickenham	41/46 [B]	-	-	Day: Uxbridge Golf Course Haul Road - removal & reinstatement - Road demolition removal & reinstatement	NA	1	R	T	H	-	-	-	-	
720432	The Drive (south) facing A40	58/67 [B]	-	-	Day: Uxbridge Golf Course Haul Road - removal & reinstatement - Road demolition removal & reinstatement	NA	4	R	T	H	-	-	-	-	
720433	The Drive (south) facing A40	56/64 [A]	-	-	Day: Uxbridge Golf Course Haul Road - removal & reinstatement - Road demolition removal &	NA	4	R	T	-	-	-	-	-	

Assessment location		Impact criteria			Significance criteria										Significant effect
ID	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 impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
					reinstatement										
720434	Georgian Close, facing A40	53/62 [A]	-	-	Day: Uxbridge Golf Course Haul Road - removal & reinstatement - Road demolition removal & reinstatement	NA	1	R	T	-	-	-	-	-	
720435	Georgian Close, facing Golf Course	53/64 [A]	-	-	Day: Uxbridge Golf Course Haul Road - removal & reinstatement - Road demolition removal & reinstatement	NA	3	R	T	-	-	-	-	-	
720436	Salt Hill Close, facing A40	51/60 [A]	-	-	Day: Uxbridge Golf Course Haul Road - removal & reinstatement - Road demolition removal & reinstatement	NA	10	R	T	-	-	-	-	-	
720437	Woodhall Close, facing A40	49/58 [B]	-	-	Day: Uxbridge Golf Course Haul Road - removal & reinstatement - Road demolition removal & reinstatement	NA	4	R	T	H	-	-	-	-	
720438	Park Road (north) facing A40	53/61 [B]	-	-	Day: Uxbridge Golf Course Haul Road - removal & reinstatement - Road demolition removal & reinstatement	NA	4	R	T	H	-	-	-	-	
720439	The Drive,	50/59	-	-	Day: Uxbridge Golf Course Haul Road - removal & reinstatement -	NA	4	R	T	-	-	-	-	-	

Assessment location		Impact criteria			Significance criteria										Significant effect
ID	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 impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	
		Day 0700- 1900	Evening 1900- 2300	Night 2300- 0700											
	Ickenham	[A]			Road demolition removal & reinstatement										
720440	The Drive, Ickenham	46/55 [A]	-	-	Day: Uxbridge Golf Course Haul Road - removal & reinstatement - Road demolition removal & reinstatement	NA	4	R	T	-	-	-	-	-	
720441	The Drive, Ickenham	55/61 [A]	-	-	Day: Uxbridge Golf Course Haul Road - removal & reinstatement - Road demolition removal & reinstatement	NA	4	R	T	-	-	-	-	-	
720442	The Drive, Ickenham	54/62 [A]	-	-	Day: Uxbridge Golf Course Haul Road - removal & reinstatement - Road demolition removal & reinstatement	NA	4	R	T	-	-	-	-	-	
720443	The Drive, Ickenham	51/62 [A]	-	-	Day: Uxbridge Golf Course Haul Road - removal & reinstatement - Road demolition removal & reinstatement	NA	5	R	T	-	-	-	-	-	
720446	The Cottages, The Drive	46/52 [A]	-	-	Day: Uxbridge Golf Course Haul Road - removal & reinstatement - Road demolition removal & reinstatement	NA	3	R	T	-	-	-	-	-	
720447	Pine Trees Drive	45/51	-	-	Day: Uxbridge Golf Course Haul	NA	4	R	T	-	-	-	-	-	

Assessment location		Impact criteria			Significance criteria									Significant effect	
ID	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 impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]		Mitigation effect
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
		[A]			Road - removal & reinstatement - Road demolition removal & reinstatement										
720448	The Drive, Ickenham	44/49 [A]	-	-	Day: Uxbridge Golf Course Haul Road - removal & reinstatement - Road demolition removal & reinstatement	NA	4	R	T	-	-	-	-	-	
720449	The Drive, Ickenham	43/47 [A]	-	-	Day: Uxbridge Golf Course Haul Road - removal & reinstatement - Road demolition removal & reinstatement	NA	4	R	T	-	-	-	-	-	
720450	Fray's Farm	48/57 [A]	-	-	Day: Uxbridge Golf Course Haul Road - removal & reinstatement - Road demolition removal & reinstatement	NA	1	R	T	-	-	-	-	-	

Table 2 : Assessment of construction noise at non-residential receptors

Assessment location		Impact criteria			Significance criteria										Significant effect
ID	Area represented	Typical/highest monthly outdoor LpAeq [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
720444	Fairways Carvery Restaurant	53/62	-	-	Day: Uxbridge Golf Course Haul Road - removal & reinstatement - Road demolition removal & reinstatement	B	1	G4	T	-	-	-	D 11	-	CSV07-No4
720445	Uxbridge Golf Club House	46/51	-	-	Day: Uxbridge Golf Course Haul Road - removal & reinstatement - Road demolition removal & reinstatement	B	1	G4	T	-	-	-	-	-	

3.3 Assessment of significance of effects

Residential receptors: direct effects - individual dwellings

- 3.3.1 Taking account of the avoidance and mitigation measures set out in section 3.1, no additional residential buildings to those reported in the main ES are forecast to experience noise levels higher than the noise insulation or temporary rehousing trigger levels as defined in the draft CoCP.

Residential receptors: direct effects - communities

- 3.3.2 With regard to noise outside dwellings, the assessment of temporary effects takes account of construction noise relative to existing sound levels.
- 3.3.3 The works associated with the amendment will not give rise to new or different direct significant effects on residential receptors in comparison with those reported in the main ES.

Non-residential receptors - direct effects

- 3.3.4 A significant noise and vibration effect at Fairways Carvery Restaurant (CSV07-No4) has been identified on a reasonably foreseeable worst case basis due to daytime construction noise associated with the works to construct and remove the haul route that are closest to the restaurant. The reasonable worst case forecast noise levels at the restaurant are up to 62dB for a total period of approximately 11 months.

Residential receptors: indirect effects

- 3.3.5 In the main ES, a likely significant indirect noise effect caused by construction traffic was reported at residential receptors immediately adjacent to the following roads. As a result of the amendment, these likely significant indirect noise effects will no longer occur:
- Harvil Road between the junction of Harvil Road and B467 Swakeleys Road and the Proposed Scheme (CSV07-Co1); and
 - B467 Swakeleys Road between the junction with Harvil Road and the A40 (CSV07-Co2).

- 3.3.6 Significant noise effects on non-residential receptors arising from construction traffic are unlikely to occur in this area.

Cumulative effects from the scheme and other committed development

- 3.3.7 This assessment has considered the potential cumulative construction noise effects of the scheme and other committed developments.
- 3.3.8 There are no new or different likely significant cumulative effects for sound, noise and vibration as a result of the amendment acting in combination with another amendment in AP2 or in AP1, or as a result of any relevant committed development interacting with the AP4 revised scheme.

SES3 and AP4 ES Appendix SV-003-009

Environmental topic:	Sound, noise and vibration	SV
Appendix name:	Construction assessment report	003
Community forum area:	Central Chilterns	009

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1 Introduction

- 1.1.1 This appendix provides an update to Appendix SV-003-009 construction assessment report for community forum area 9 (CFA₉) from the main Environmental Statement (ES) as a result of the Additional Provision 4 Environmental Statement (AP₄ ES). This update should be read in conjunction with Appendix SV-003-009 construction assessment report from the main ES.

2 Scope, assumptions and limitations

2.1 Changes of relevance to this assessment

- 2.1.1 The assessment scope, key assumptions and limitations for sound, noise and vibration are as set out in Volume 1, the SMR (Volume 5: Appendix CT-001-000/01) and the SMR Addendum (Volume 5: Appendix CT-001-000/02) of the main ES.

- 2.1.2 The changes are described in detail in SES₃ and AP₄ ES Volume 2 CFA₉, Central Chilterns. For the purposes of this report a summary of the changes is given below:

- extension of the Chiltern Tunnel emerging at a revised Chiltern tunnel portal, north west of South Heath;
- a temporary access from the A₄₁₃ to the Chiltern Tunnel north portal construction compound and a rail fit out compound;
- a new vent shaft located adjacent to Annie Bailey's public house and restaurant with access from B₄₈₅ Chesham Road; and
- landscape earthworks and landscape planting around the new north portal to integrate the feature into the surrounding landform.

- 2.1.3 An assessment of these changes is presented below.

3 Effects arising during construction

3.1 Avoidance and mitigation measures

- 3.1.1 The avoidance and mitigation measures are presented in the main ES Volume 2: CFA Report 09.

3.2 Quantitative identification of impacts and effects

Ground-borne vibration

- 3.2.1 No impacts have been predicted as the result of construction ground-borne sound and vibration in this area.

Airborne sound: direct impacts and effects

- 3.2.2 The assessment results, impact criteria and significance criteria for the assessment of the AP₄ amendments listed in Section 2 at residential and non-residential receptors are presented in Tables 1 and 2 respectively. These tables present only those

SES₃ and AP₄ ES Appendix SV-003-009

assessment locations for which the assessment has changed compared with the SES and main ES. For additional information see the main ES, Volume 5, CFA9, Appendix SV-003-009.

Table 1 : Assessment of construction noise at residential receptors

Assessment location		Impact criteria			Significance criteria										Significant effect
ID	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 impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
351444	Aylesbury Road, Great Missenden	<40/46 [B]	-	-	Day: Haul road movements - On site	NA	2	R	T	-	-	-	-	-	
351452	Aylesbury Road, Great Missenden	<40/48 [B]	-	-	Day: South Heath Cutting - Excavation	NA	2	R	T	H	-	-	-	-	
351515	Aylesbury Road, Great Missenden	44/54 [A]	-	-	Day: South Heath Cutting - Excavation	NA	2	R	T	-	-	-	-	-	
353672	Church Street, Great Missenden	<40/48 [B]	-	-	Day: Chiltern Tunnel - North Portal - Site set up	NA	1	R	T	H	-	-	-	-	
354579	Elmtree Green, Great Missenden	<40/50 [A]	-	-	Day: Chiltern Tunnel - North Portal - Site set up	NA	18	R	T	-	-	-	-	-	
354872	Frith Hill, Great Missenden	<40/48 [A]	-	-	Day: Chiltern Tunnel - North Portal - Site clearance construction of temporary access from A413	NA	2	R	T	-	-	-	-	-	
355246	Aylesbury Road, Great Missenden	<40/43 [B]	-	-	Day: Chiltern Tunnel - North Portal - Site clearance construction of temporary access from A413	NA	3	R	T	H	-	-	-	-	
355252	Aylesbury Road,	<40/46 [A]	-	-	Day: Havenfield Wood Lodge	NA	1	R	T	-	-	-	-	-	

Assessment location		Impact criteria			Significance criteria										Significant effect
ID	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 impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
	Great Missenden				accommodation overbridge - Substructure										
355317	Potter Row, Great Missenden	48/58 [A]	-	-	Day: South Heath Cutting - Excavation	NA	1	R	T	-	-	-	-	-	
355352	Potter Row, Great Missenden	48/58 [A]	-	-	Day: South Heath Cutting - Excavation	NA	2	R	T	-	-	-	-	-	
373949	Hyde Lane, Hyde End	<40/<40 [A]	-	-		NA	1	R	T	-	-	-	-	-	
374004	Hyde End, Great Missenden	<40/<40 [A]	-	-		NA	3	R	T	-	-	-	-	-	
374188	Ballinger Road, South Heath	<40/40 [A]	-	-	Day: South Heath Cutting - Excavation	NA	13	R	T	-	-	-	-	-	
374262	Meadow Lane, South Heath	<40/46 [A]	-	-	Day: South Heath Cutting - Excavation	NA	6	R	T	-	-	-	-	-	
374450	Frith Hill, Great Missenden	<40/<40 [A]	-	-		NA	1	R	T	-	-	-	-	-	
374515	Frith Hill, Great	<40/45 [A]	-	-	Day: South Heath MPATS - Site	NA	3	R	T	-	-	-	-	-	

Assessment location		Impact criteria			Significance criteria										Significant effect
ID	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 impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
	Missenden				preparation										
374531	Chesham Road, Great Missenden	<40/40 [A]	-	-	Day: Little Missenden Tunnel ventilation shaft - Site establishment	NA	1	R	T	-	-	-	-	-	
374552	Cudsdens Court, Great Missenden	<40/44 [A]	-	-	Day: Little Missenden Tunnel ventilation shaft - Site establishment	NA	6	R	T	-	-	-	-	-	
374611	Frith Hill, Great Missenden	43/51 [A]	-	-	Day: Chiltern Tunnel - North Portal - Site clearance construction of temporary access from A413	NA	3	R	T	-	-	-	-	-	
374641	Frith Hill, South Heath	42/50 [A]	-	-	Day: South Heath MPATS - Site preparation	NA	4	R	T	-	-	-	-	-	
374696	Frith Hill, South Heath	47/55 [A]	-	-	Day: South Heath MPATS - Site preparation	NA	3	R	T	-	-	-	-	-	
374715	Frith Hill, South Heath	50/57 [A]	-	-	Day: South Heath Cutting - Excavation	NA	1	R	T	H	-	-	-	-	
374775	Sibleys Rise, South Heath	44/51 [A]	-	-	Day: South Heath Cutting - Excavation	NA	19	R	T	-	-	-	-	-	
374806	Kings Lane, South	<40/45 [A]	-	-	Day: South Heath Cutting - Excavation	NA	8	R	T	-	-	-	-	-	

Assessment location		Impact criteria			Significance criteria										Significant effect
ID	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 impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
	Heath														
374849	Bayleys Hatch, South Heath	47/54 [A]	-	-	Day: South Heath Cutting - Excavation	NA	6	R	T	-	-	-	-	-	
374914	Sibleys Rise, South Heath	45/52 [A]	-	-	Day: South Heath Cutting - Excavation	NA	25	R	T	-	-	-	-	-	
375025	Kings Lane, South Heath	<40/46 [A]	-	-	Day: South Heath Cutting - Excavation	NA	8	R	T	-	-	-	-	-	
375067	Lappetts Lane, South Heath	<40/<40 [A]	-	-		NA	5	R	T	-	-	-	-	-	
375134	Kings Lane, South Heath	<40/49 [A]	-	-	Day: South Heath MPATS - Site preparation	NA	10	R	T	-	-	-	-	-	
375214	Bayleys Hatch, South Heath	43/50 [A]	-	-	Day: South Heath Cutting - Excavation	NA	10	R	T	-	-	-	-	-	
375322	Potter Row, Great Missenden	44/53 [A]	-	-	Day: South Heath Cutting - Excavation	NA	5	R	T	-	-	-	-	-	
375417	Potter Row, Great Missenden	43/51 [A]	-	-	Day: South Heath MPATS - Site preparation	NA	6	R	T	-	-	-	-	-	

Assessment location		Impact criteria			Significance criteria										Significant effect
ID	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 impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
375440	Potter Row, Great Missenden	45/53 [A]	-	-	Day: South Heath Cutting - Excavation	NA	1	R	T	-	-	-	-	-	
375451	Potter Row, Great Missenden	44/52 [A]	-	-	Day: South Heath Cutting - Excavation	NA	1	R	T	-	-	-	-	-	
375485	Potter Row, Great Missenden	49/60 [A]	-	-	Day: Park Farm footpath and private access footbridge - Site clearance	NA	3	R	T	-	-	-	-	-	
375495	Potter Row, Great Missenden	47/59 [A]	-	-	Day: South Heath Cutting - Excavation	NA	1	R	T	-	-	-	-	-	
375508	Potter Row, Great Missenden	44/53 [A]	-	-	Day: South Heath Cutting - Excavation	NA	3	R	T	-	-	-	-	-	
375545	Potter Row, Great Missenden	46/54 [A]	-	-	Day: South Heath Cutting - Excavation	NA	1	R	T	-	-	-	-	-	
375619	Potter Row, Great Missenden	46/55 [A]	-	-	Day: South Heath Cutting - Excavation	NA	2	R	T	-	-	-	-	-	
375630	Potter Row, Great Missenden	48/61 [A]	-	-	Day: South Heath Cutting - Mitigation - earthworks	NA	1	R	T	-	-	-	-	-	
375648	Potter Row, Great	46/57 [A]	-	-	Day: South Heath Cutting - Excavation	NA	4	R	T	-	-	-	-	-	

Assessment location		Impact criteria			Significance criteria										Significant effect
ID	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 impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
	Missenden														
375669	Potter Row, Great Missenden	45/56 [A]	-	-	Day: South Heath Cutting - Excavation	NA	5	R	T	-	-	-	-	-	
376239	Hyde Lane, Hyde End	<40/42 [A]	-	-	Day: Little Missenden Tunnel ventilation shaft - Construct base	NA	1	R	T	-	-	-	-	-	
376310	Hyde Lane, Hyde End	<40/<40 [A]	-	-		NA	2	R	T	-	-	-	-	-	
376359	Hyde Lane, Hyde End	<40/43 [A]	-	-	Day: Little Missenden Tunnel ventilation shaft - Construct base	NA	1	R	T	-	-	-	-	-	
376368	Hyde Lane, Hyde End	<40/45 [A]	-	-	Day: Little Missenden Tunnel ventilation shaft - Construct base	NA	1	R	T	-	-	-	-	-	
376399	Chesham Road, Hyde End	<40/43 [A]	-	-	Day: Little Missenden Tunnel ventilation shaft - Construct base	NA	1	R	T	-	-	-	-	-	
376474	Meadowleigh - Chesham Road	62/66 [A]	-	-	Day: Little Missenden Tunnel ventilation shaft - Construct base	A	1	R	T	-	-	-	D1	-	~
376478	Chesham Road, Hyde End	42/52 [A]	-	-	Day: Little Missenden Tunnel ventilation shaft - Construct base	NA	1	R	T	-	-	-	-	-	

Assessment location		Impact criteria			Significance criteria										Significant effect
ID	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 impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
376498	Chesham Road, Hyde End	<40/<40 [A]	-	-		NA	1	R	T	H	-	-	-	-	
376517	Chesham Road, Hyde End	<40/43 [A]	-	-	Day: Little Missenden Tunnel ventilation shaft - Construct base	NA	1	R	T	-	-	-	-	-	
376522	Chesham Road, Hyde End	<40/41 [B]	-	-	Day: Little Missenden Tunnel ventilation shaft - Construct base	NA	7	R	T	H	-	-	-	-	
376647	Chesham Road, Hyde End	<40/44 [A]	-	-	Day: Little Missenden Tunnel ventilation shaft - Construct base	NA	2	R	T	-	-	-	-	-	
376658	Chesham Road, Hyde End	<40/42 [B]	-	-	Day: Little Missenden Tunnel ventilation shaft - Construct base	NA	2	R	T	H	-	-	-	-	
376704	Kings Lane, South Heath	<40/42 [A]	-	-	Day: Little Missenden Tunnel ventilation shaft - Construct base	NA	10	R	T	-	-	-	-	-	
376750	Kings Lane, South Heath	<40/40 [A]	-	-	Day: South Heath Cutting - Excavation	NA	9	R	T	-	-	-	-	-	
377005	Wood Lane, South Heath	<40/41 [A]	-	-	Day: Little Missenden Tunnel ventilation shaft - Construct base	NA	9	R	T	-	-	-	-	-	
377084	Lappetts Lane,	<40/43 [A]	-	-	Day: South Heath Cutting - Excavation	NA	20	R	T	-	-	-	-	-	

Assessment location		Impact criteria			Significance criteria										Significant effect
ID	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 impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
	South Heath														
377405	Wood Lane, South Heath	<40/43 [A]	-	-	Day: Little Missenden Tunnel ventilation shaft - Construct base	NA	16	R	T	-	-	-	-	-	
377718	Ballinger Road, South Heath	<40/46 [A]	-	-	Day: South Heath Cutting - Excavation	NA	14	R	T	-	-	-	-	-	
377770	Ballinger Road, South Heath	<40/46 [A]	-	-	Day: South Heath Cutting - Excavation	NA	15	R	T	-	-	-	-	-	
377793	Marriotts Avenue, South Heath	<40/42 [A]	-	-	Day: South Heath Cutting - Excavation	NA	17	R	T	-	-	-	-	-	
377835	Marriotts Avenue, South Heath	<40/44 [A]	-	-	Day: South Heath Cutting - Excavation	NA	18	R	T	-	-	-	-	-	
378065	Ballinger Road, South Heath	<40/45 [A]	-	-	Day: South Heath Cutting - Excavation	NA	22	R	T	-	-	-	-	-	
379212	Bullbaiters Lane, Hyde Heath	<40/<40 [A]	-	-		NA	8	R	T	-	-	-	-	-	
379334	Hyde Heath, Amersham	<40/<40 [A]	-	-		NA	4	R	T	-	-	-	-	-	

Assessment location		Impact criteria			Significance criteria										Significant effect
ID	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 impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
379370	Top Common, Hyde End	<40/<40 [A]	-	-		NA	3	R	T	-	-	-	-	-	
379436	Chesham Road, Hyde End	<40/<40 [A]	-	-		NA	9	R	T	-	-	-	-	-	
379500	Browns Road, Hyde End	<40/<40 [A]	-	-		NA	1	R	T	-	-	-	-	-	
379633	Browns Road, Hyde End	<40/<40 [A]	-	-		NA	5	R	T	-	-	-	-	-	
380955	Chalk Lane, Hyde Heath	<40/<40 [A]	-	-		NA	4	R	T	-	-	-	-	-	
382210	Chalk Lane, Hyde Heath	<40/<40 [A]	-	-		NA	1	R	T	-	-	-	-	-	
700360	Potter Row, Great Missenden	48/58 [A]	-	-	Day: South Heath Cutting - Mitigation - Earthworks	NA	1	R	T	-	-	-	-	-	
700363	Hyde Lane, Hyde End	<40/<40 [A]	-	-		NA	1	R	T	-	-	-	-	-	
376681	Kings Lane, South	<40/41 [A]	-	-	Day: South Heath Cutting - Excavation	NA	1	R	T	-	-	-	-	-	

Assessment location		Impact criteria			Significance criteria									Significant effect
ID	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 impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700										
	Heath													
720302	King's Lane, South Heath	<40/47 [A]	-	-	Day: Little Missenden Tunnel ventilation shaft - cConstruct base	NA	1	R	T	-	-	-	-	-
720451	Annie Bailey's PH included dwelling above	55/58 [A]	-	-	Day: Little Missenden Tunnel ventilation shaft - Construct base	NA	1	R	T	H	-	-	-	-
374719	Chiltern Cottage, Frith Hill	51/59 [C]	-	-	Day: South Heath Cutting - Excavation	NA	1	R	T	H	-	-	-	-

Table 2 : Assessment of construction noise at non-residential receptors

Assessment location		Impact criteria			Significance criteria									Significant effect	
ID	Area represented	Typical/highest monthly outdoor LpAeq [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]		Mitigation effect
Day 0700-1900	Evening 1900-2300	Night 2300-0700													
374330	Church Lane, Great Missenden	<40/40	-	-	Day: Chiltern Tunnel - North Portal - Site set up	B	1	G 3	T	H	-	-	-	-	
353672	Church Street, Great Missenden	<40/48	-	-	Day: Chiltern Tunnel - North Portal - Site set up	B	1	G 4	T	H	-	-	-	-	
720451	Annie Bailey's PH included dwelling above	55/58	-	-	Day: Little Missenden Tunnel ventilation shaft - Construct base	B	1	G 4	T	H	o	-	-	-	
350753	London Road, Wendover	42/50	-	-	Day: Haul road movements - On site	B	1	G 5	T	H	-	-	-	-	
351515	Aylesbury Road, Great Missenden	44/54	-	-	Day: South Heath Cutting - Excavation	B	1	G 5	T	-	-	-	-	-	
355246	Aylesbury Road, Great Missenden	<40/43	-	-	Day: Chiltern Tunnel - North Portal - Site clearance construction of temporary access from A413	B	1	G 5	T	H	-	-	-	-	
368702	London Road,	<40/50	-	-	Day: Haul road movements - On site	B	1	G	T	H	-	-	-	-	

Assessment location		Impact criteria			Significance criteria									Significant effect
ID	Area represented	Typical/highest monthly outdoor LpAeq [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700										
	Wendover							5						
374262	Meadow Lane, South Heath	<40/46	-	-	Day: South Heath Cutting - Excavation	B	1	G 5	T	-	-	-	-	-
376647	Chesham Road, Hyde End	<40/44	-	-	Day: Little Missenden Tunnel ventilation shaft - Construct base	B	1	G 5	T	-	-	-	-	-
377770	Ballinger Road, South Heath	<40/46	-	-	Day: South Heath Cutting - Excavation	B	1	G 5	T	-	-	-	-	-
379334	Hyde Heath, Amersham	<40/<40	-	-		B	1	G 5	T	-	-	-	-	-

3.3 Assessment of significance of effects

Residential receptors: direct effects - individual dwellings

- 3.3.1 In the main ES, two residential buildings (a dwelling on King's Lane and a dwelling on the B485 Chesham Road) were forecast to experience noise levels higher than noise insulation trigger levels during construction.
- 3.3.2 Due to the amendment removing works associated with the South Heath green tunnel, these two dwellings are no longer forecast to experience noise levels higher than noise insulation trigger levels during construction.
- 3.3.3 No further dwellings are forecast to experience noise levels higher than noise insulation trigger levels during construction as a result of the amendment.

Residential receptors: direct effects-communities

- 3.3.4 In the main ES, direct adverse effects on residential communities and shared open areas that are considered significant on a community basis were identified in South Heath at approximately 50 dwellings on Sibleys Rise, Bayleys Hatch and Frith Hill (CSV09-Co1) due to construction works associated with the South Heath green tunnel. Due to the amendment removing works associated with the South Heath green tunnel, this significant adverse noise effect is no longer likely to occur.
- 3.3.5 No further new or different significant construction noise effects on residential communities have been identified as a result of the amendment.

Non-residential receptors: direct effects

- 3.3.6 In the main ES, no likely significant construction noise or vibration effects on non-residential receptors were identified in this area.
- 3.3.7 The amendment will not give rise to a new or different significant effect on non-residential receptors in comparison with those reported in the main ES.

Cumulative effects from the scheme and other committed development

- 3.3.8 This assessment has considered the potential cumulative construction noise effects of the scheme and other committed developments.
- 3.3.9 There are no new or different likely significant cumulative effects for sound, noise and vibration as a result of the amendment acting in combination with another amendment in AP2 or in AP1, or as a result of any relevant committed development interacting with the AP4 revised scheme.

SES₃ and AP₄ Appendix SV-003-023

Environmental topic:	Sound, noise and vibration	SV
Appendix name:	Construction assessment report	003
Community forum area:	Balsall Common and Hampton-in-Arden	023

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1 Introduction

- 1.1.1 This appendix provides an update to Appendix SV-003-023 construction assessment report for community forum area (CFA) 23 from the main Environmental Statement (ES) as a result of design changes AP4-023-001 and AP4-023-002 as part of the Supplementary Environmental Statement 3 (SES3) and the Additional Provision 4 Environmental Statement (AP4 ES). This update should be read in conjunction with Appendix SV-003-023 Construction assessment report from the main ES.

2 Scope, assumptions and limitations

2.1 Changes of relevance to this assessment

- 2.1.1 AP4-023-001 - A452 Kenilworth Road/Marsh Lane Junction.
- 2.1.2 AP4-023-002 - relocation of the Island Project School to Jerrings Hall Farm, Solihull.

3 Effects arising during construction

3.1 Avoidance and mitigation measures

- 3.1.1 These are unchanged from those set out in the main ES, Volume 2, Balsall Common and Hampton-in-Arden (CFA Report 23), Section 11.

3.2 Quantitative identification of impacts and effects

Ground-borne vibration

- 3.2.1 Tables 1 and Table 2 set out the changes to the main ES, Volume 5, Appendix, SV-003-023, Sound, noise and vibration Assessment for the relevant assessment locations for AP4-023-001.
- 3.2.2 Explanation of the information within these tables is provided in Appendix SV-001-000 and Appendix SV-003-023 (Volume 5 of the main ES).

Table 1: Assessment of construction ground-borne vibration at residential receptors (AP4-023-001)

Assessment location		Impact criteria			Significance criteria										Significant effect
ID	Area represented	Peak particle velocity (PPV) [mm/s] on foundation	Typical/highest monthly indoor vibration dose value (VDV) [m/s ^{1.75}]		Construction activity resulting in highest forecast vibration levels	Type of effect	Number of impacts	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration	Mitigation effect	
			Day 0700-2300	Night 2300-0700											
181687	Arden House, A452 Kenilworth Road, Hampton-In-Arden, Solihull	0.30	0.13/0.13	-	Earthworks	NA	1	R	T	-	-	N	-	-	
700556	Mercote Lodge and Hornbrook Cottage, A452 Kenilworth Road, Balsall Common	1.12	0.33/0.33	-	Earthworks	S	2	R	T	-	-	Y	6	-	CSV23-C03

Table 2: Assessment of construction ground-borne vibration at non-residential receptors (AP4-023-001)

Assessment location		Impact criteria			Significance criteria										Significant effect
ID	Area represented	PPV [mm/s] on foundation	Typical/highest monthly indoor VDV [m/s ^{1.75}]		Construction activity resulting in highest forecast vibration levels	Type of effect	Number of impacts	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration	Mitigation effect	
			Day 0700-2300	Night 2300-0700											
181687	Lincoln Farm café and offices, A452 Kenilworth Road, Hampton-In-Arden, Solihull	0.30	0.13/0.13	-	Earthworks	B	1	V3	T	-	-	N	-	-	

Airborne sound: direct impacts and effects

- 3.2.3 Table 3 and Table 4 set out the changes to the main ES, Volume 5, Appendix, SV-003-023, Sound, noise and vibration assessment for the relevant assessment locations for AP4-023-001.
- 3.2.4 Table 5 sets out the changes to the main ES, Volume 5, Appendix, SV-003-023, Sound, noise and vibration assessment for the relevant assessment locations for AP4-023-002.
- 3.2.5 Explanation of the information within all these tables is provided in Appendix SV-001-000 and Appendix SV-003-023 (Volume 5 of the main ES).

Table 3: Assessment of construction noise at residential receptors (AP4-023-001)

Assessment location		Impact criteria			Significance criteria										Significant effect
ID	Area represented	Typical/highest monthly outdoor L _{pAeq} [dB] [Assessment category A/B/C]			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts forecast	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [hours]	Mitigation effect	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
700556	Mercote Lodge and Hornbrook Cottage, A452 Kenilworth Road, Balsall Common	64/72 [A]	-	-	Day: Earthworks; Eve: Road construction; Night: Road construction	S	2	R	T	H	-	Y	D 15, N2	-	CSV ₂₃ -C03
181687	Arden House, A452 Kenilworth Road, Hampton-In-Arden, Solihull	62/69 [A]	-	-	Day: Road construction; Eve: Road construction; Night: Road construction	S	1	R	T	-	-	N	D 6	-	CSV ₂₃ -C03
161483	Bibury House & Marsh Cottage, A452 Kenilworth Road, Hampton-In-Arden, Solihull	61/70 [A]	-	-	Day: Road construction; Eve: Road construction; Night: Road construction	S	2	R	T	H	-	N	D 4	-	CSV ₂₃ -C03

Table 4: Assessment of construction noise at non- residential receptors (AP4-023-001)

Assessment location		Impact criteria			Significance criteria									Significant effect	
ID	Area represented	Typical/highest monthly outdoor L _{pAeq} [dB]			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts forecast	Type of receptor	Receptor design	Existing assessment	Unique feature	Combined impact	Impact duration [months]		Mitigation effect
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
181687	Lincoln Farm café and offices, A452 Kenilworth Road, Hampton-In-Arden, Solihull	62/69	-	-	Day: Earthworks	B	1	G5	T	-	-	N	-	-	
161483	Bibury House guest house, A452 Kenilworth Road, Hampton-In-Arden, Solihull	61/70	-	-	Day: Road construction; Eve: Road construction; Night: Road construction	B	1	G4	T	H	-	N	D 5	-	CSV23-No2

Table 5: Assessment of construction noise at residential receptors (AP4-023-002)

Assessment location		Impact criteria			Significance criteria										Significant effect
ID	Area represented	Typical/highest monthly outdoor L _{pAeq} [dB] [Assessment category A/B/C]			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts forecast	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [see table 1]	Mitigation effect	
		Day 0700- 1900	Evening 1900- 2300	Night 2300- 0700											
722023	High Leas Farm Tanworth Lane, Shirley, Solihull	64/70 [A]	-	-	Day: Site clearance	A	1	R	T	-	-	N	D1	-	~
722024	Tanworth Lane (north), Shirley, Solihull	62/68 [A]	-	-	Day: Site clearance	A	1	R	T	-	-	N	D1	-	~
722025	Snowhill Drive, Cheswick Green, Solihull	47/53 [A]	-	-	Day: Site clearance	NA	18	R	T	-	-	N	-	-	
722026	Saxon Wood Road, Cheswick Green, Solihull	47/53 [A]	-	-	Day: Site clearance	NA	10	R	T	-	-	N	-	-	
722027	Tanworth Lane (south) Shirley, Solihull	49/55 [A]	-	-	Day: Site clearance	NA	1	R	T	-	-	N	-	-	
722028	Lady Lane, Shirley, Solihull	50/56 [A]	-	-	Day: Site clearance	NA	4	R	T	-	-	N	-	-	
722029	Hitherside, Dickens Heath, Solihull	50/55 [A]	-	-	Day: Site clearance	NA	10	R	T	-	-	N	-	-	
722030	Baroda House, Tanworth Lane, Shirley, Solihull	55/60 [A]	-	-	Day: Site clearance	NA	5	R	T	-	-	N	-	-	

3.3 Assessment of significance of effects

Residential receptors: direct effects - individual dwellings

AP4-023-002

- 3.3.1 The amendment will introduce additional construction works at the proposed new Island Project School site at Jerrings Hall Farm not included in the original scheme or assessed in the main ES, or the SES and AP2 ES.
- 3.3.2 An assessment has been undertaken to determine whether these new construction works would result in any likely significant effects, using the significance criteria detailed in the main ES (Volume 5 Appendix SV-001-000).
- 3.3.3 At the two closest identified residential properties, located on the opposite side of Tanworth Lane to the east of the new Island Project School site, the daytime construction noise impact screening criterion is exceeded by 3-5dB for one month. When the effects arising from these impacts are assessed on a community basis, a significant effect is not considered likely.

Residential receptors: direct effects - communities

AP4-023-001

- 3.3.4 The proposed amendment to construct a roundabout at the A452 Kenilworth Road/Marsh Lane junction will affect the location and timing of a number of road construction activities in this area. The road construction works include 24hr working for a total of three weekends within an eight month period. In the main ES all works were assumed to be completed during the daytime.
- 3.3.5 The closest residential receptors include Mercote Lodge and Hornbrook Cottage, Arden House, and Bibury House and Marsh Cottage, all located on the A452 Kenilworth Road. The main ES reported a significant effect at Mercote Lodge and Hornbrook Cottage due to daytime construction noise and vibration levels. At Bibury House and Marsh Cottage the main ES reported a significant effect due to daytime construction noise. At Arden House the daytime construction noise impact screening criteria was reported as being exceeded by 1dB for one month, therefore a significant effect was not identified in the main ES at this location.
- 3.3.6 An assessment has been undertaken to determine whether the construction works for this amendment would result in any likely significant effects, using the significance criteria detailed in the main ES (Volume 5: Appendix SV-001-000).
- 3.3.7 At Mercote Lodge and Hornbrook Cottage the highest monthly daytime construction noise level is predicted to increase by 1dB to 72dB, and the duration of the daytime impact is predicted to increase by 2 months to 15 months. The daytime construction vibration effect at this location remains unchanged.
- 3.3.8 At Arden House the typical and highest monthly daytime construction noise levels are predicted to increase by 3dB (to 62dB and 69dB respectively). The duration of the impact at Arden House increases by five months to a total of six months. The magnitude of the daytime construction vibration impact is slightly increased, but remains below the relevant impact screening criterion. The significant residential

community effect in this area identified in the main ES is extended to include Arden House due to the amendment.

- 3.3.9 At Bibury House and Marsh Cottage the typical and highest monthly daytime construction noise levels are predicted to increase by 1dB (to 61dB and 70dB respectively). The duration of the impact increases by one month, to four months.
- 3.3.10 The magnitude of the impact of night time construction works will be high during the three weekends of 24hr working within an eight month period, however the duration of the impact is limited.
- 3.3.11 The proposed amendment to construct a roundabout at the A452 Kenilworth Road/Marsh Lane junction changes the significant construction noise effect identified in the main ES at Mercote Lodge and Hornbrook Cottage, and Bibury House and Marsh Cottage. It also extends the significant construction noise effect in the main ES to include a further assessment location, which is representative of one residential property (Arden House).

AP₄-023-002

- 3.3.12 The amendment will introduce additional construction works at the proposed new Island Project School site at Jerrings Hall Farm not included in the original scheme or assessed in the main ES, or the SES and AP₂ ES.
- 3.3.13 An assessment has been undertaken to determine whether these new construction works would result in any likely significant effects, using the significance criteria detailed in the main ES (Volume 5 Appendix SV-001-000).
- 3.3.14 At all the selected residential properties representative of the closest residential communities to the new Island Project School site, the impact screening criterion is not exceeded and a significant effect is not identified.
- 3.3.15 The proposed amendment relocating the Island Project School will not give rise to a new or different significant effect in the vicinity of the new school site.

Non-residential receptors - direct effects

AP₄-023-001

- 3.3.16 The proposed amendment to construct a roundabout at the A452 Kenilworth Road/Marsh Lane junction will affect the location and timing of a number of road construction activities in this area. The road construction works include 24hr working for a total of three weekends within an eight month period. In the main ES all works were assumed to be completed during the daytime.
- 3.3.17 The closest receptors include Lincoln Farm café and offices, and Bibury House guest house, located on the A452 Kenilworth Road. The main ES reported a significant effect at Bibury House guest house due to daytime construction noise. At Lincoln Farm café and offices the main ES did not record a significant effect.
- 3.3.18 An assessment has been undertaken to determine whether the construction works for this amendment would result in any likely significant effects, using the significance criteria detailed in the main ES (Volume 5: Appendix SV-001-000).

- 3.3.19 At Lincoln Farm café and offices the typical and highest monthly daytime construction noise levels are predicted to increase by 3dB (to 62dB and 69dB respectively). The magnitude of the daytime construction vibration impact is slightly increased, but remains below the relevant impact screening criterion. A new non-residential significant effect at Lincoln farm café and offices is not anticipated.
- 3.3.20 At Bibury House guest house, the typical and highest monthly daytime construction noise levels are predicted to increase by 1dB (to 61dB and 70dB respectively). The duration of the impact increases by two months to five months.
- 3.3.21 The magnitude of the impact of night time construction works will be high during the three weekends of 24hr working within an eight month period, however the duration of the impact is limited.
- 3.3.22 The proposed amendment to construct a roundabout at the A452 Kenilworth Road/Marsh Lane junction changes the significant construction noise effect identified in the main ES at Bibury House guest house. The proposed amendment does not result in a significant effect at Lincoln Farm café and offices.

AP₄-023-002

- 3.3.23 The SES and AP₂ ES identified a significant daytime construction noise effect at the current location of the Island Project School for approximately four months due to vegetation clearance, earthworks and the Diddington Lane realignment. The relocation of the Island Project School from its current premises at Diddington Hall to Jerrings Hall Farm will remove the direct significant effect reported on the school as a non-residential receptor.
- 3.3.24 However, it is assumed that Diddington Hall will have a new tenant in place during the construction works with the potential for the significant effect to remain, subject to the sensitivity of the new occupants as a receptor.

SES3 and AP4 Appendix SV-003-025

Environmental topic:	Sound, noise and vibration	SV
Appendix name:	Construction assessment report	003
Community forum area:	Castle Bromwich and Bromford	025

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1 Introduction

- 1.1.1 This appendix provides an update to Appendix SV-003-025 construction assessment report for community forum area (CFA) 25 from the main Environmental Statement (ES) as a result of design changes SES3-025-001, SES3-025-002 and AP4-025-002 as part of the Supplementary Environmental Statement 3 (SES3) and the Additional Provision 4 Environmental Statement (AP4 ES). This update should be read in conjunction with Appendix SV-003-025 Construction assessment report from the main ES.

2 Scope, assumptions and limitations

2.1 Changes of relevance to this assessment

- 2.1.1 The following changes are of relevance to this assessment:
- SES3-025-001 - utility works at Castle Bromwich Business Park;
 - SES3-025-002 - removal of utility replacement on Chillinghome Road; and
 - AP4-025-002 - additional land required for the relocation of a bottom ash plant to Tyseley.

3 Effects arising during construction

3.1 Avoidance and mitigation measures

- 3.1.1 These are unchanged from those set out in the main ES, Volume 2, Castle Bromwich and Bromford (CFA Report 25), Section 11. In addition, a 2.4m high solid hoarding is proposed around the site boundary of the relocated bottom ash plant to mitigate construction noise impacts at the adjacent commercial/industrial premises.

3.2 Quantitative identification of impacts and effects

Airborne sound: direct impacts and effects

- 3.2.1 Table 1 sets out the changes to the main ES, Volume 5, Appendix, SV-003-025, Sound, noise and vibration assessment for the relevant assessment locations for SES3-025-001.
- 3.2.2 Table 2 and Table 3 set out the changes to the main ES, Volume 5, Appendix, SV-003-025, Sound, noise and vibration assessment for the relevant assessment locations for SES3-025-002.
- 3.2.3 Table 4 and Table 5 set out the changes to the main ES, Volume 5, Appendix, SV-003-025, Sound, noise and vibration assessment for the relevant assessment locations for AP-025-002.
- 3.2.4 Explanation of the information within Tables 1 - 5 is provided in Appendix SV-001-000 and Appendix SV-003-025 (Volume 5 of the main ES).

Table 1: Assessment of construction noise at residential receptors (SES3-025-001)

Assessment location		Impact criteria			Construction activity resulting in highest forecast noise levels	Significance criteria									Significant effect
ID	Area represented	Typical/highest monthly outdoor L _{pAeq} [dB] [Assessment category A/B/C]				Type of effect	Number of impacts	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	
		Day 0700- 1900	Evening 1900- 2300	Night 2300- 0700											
93389	Blenheim Way, Castle Vale, Birmingham	64/76 [B]	53/56 [C]	54/61 [C]	Day: site clearance; Eve: BT east portal tunnel boring machine dismantle; Night: install railway protection barrier	S	19	R	T	H	-	N	D3	-	CSV25-Co1
93223	Blenheim Way, Castle Vale, Birmingham	57/72 [A]	42/44 [C]	42/48 [C]	Day: cable excavation; Eve: BT east portal tunnel boring machine dismantle; Night: install railway protection barrier	S	45	R	T	H	-	N	D2	-	CSV25-Co1
700521	Tameside Drive, Birmingham	65/75 [C]	57/60 [C]	54/60 [C]	Day: resoiling; Eve: BT east portal tunnel boring machine dismantle; Night: BT east portal tunnel boring machine dismantle	NA	15	R	T	H	-	N	-	-	

Table 2: Assessment of construction noise at residential receptors (SES3-025-002)

Assessment location		Impact criteria			Construction activity resulting in highest forecast noise levels	Significance criteria									Significant effect
ID	Area represented	Typical/highest monthly outdoor L _{pAeq} [dB] [Assessment category A/B/C]				Type of effect	Number of impacts	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	
		Day 0700- 1900	Evening 1900- 2300	Night 2300- 0700											
92756	Chillinghome Road, Birmingham	<40/47 [B]	<40/<40 [C]	<35/<35 [C]	Day: site clearance; Eve: BT east portal tunnel finishes; Night: install railway protection barrier	NA	11	R	T	H	-	N	-	-	
92835	Wanderer Walk, Birmingham	<40/45 [B]	<40/<40 [C]	<35/<35 [C]	Day: site clearance; Eve: BT east portal tunnel finishes; Night: install railway protection barrier	NA	6	R	T	H	-	N	-	-	
92902	Wanderer Walk, Birmingham	<40/44 [B]	<40/<40 [C]	<35/<35 [C]	Day: site clearance; Eve: BT east portal tunnel finishes; Night: install railway protection barrier	NA	10	R	T	H	-	N	-	-	

Table 3: Assessment of construction noise at non- residential receptors (SES3-025-002)

Assessment location		Impact criteria			Significance criteria									Significant effect	
ID	Area represented	Typical/highest monthly outdoor L _{pAeq} [dB]			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts	Type of receptor	Receptor design	Existing	Unique feature	Combined impact	Impact duration [months]		Mitigation effect
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
77233	Tame Valley Academy, Chillinghome Road, Birmingham	-	-	-	-	B	3	G 4	T	H	-	N	-	-	

Table 4: Assessment of construction noise at residential receptors (AP4-025-002)

Assessment location		Impact criteria			Significance criteria									Significant effect	
ID	Area represented	Typical/highest monthly outdoor L _{pAeq} [dB] [Assessment category A/B/C]			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]		Mitigation effect
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
722010	Kings Road (north), Tyseley	52/58 [A]	-	-	Day: External works hard landscaping	NA	2	R	T	-	-	N	-	-	
722019	Kings Road (south), Tyseley	54/60 [C]	-	-	Day: Demolition of existing concrete slab	NA	3	R	T	-	-	N	-	-	

Table 5: Assessment of construction noise at non- residential receptors (AP4-025-002)

Assessment location		Impact criteria			Construction activity resulting in highest forecast noise levels	Significance criteria								Significant effect	
ID	Area represented	Typical/highest monthly outdoor L _{pAeq} [dB] [Assessment category A/B/C]				Type of effect	Number of impacts	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]		Mitigation effect
		Day 0700- 1900	Evening 1900- 2300	Night 2300- 0700											
722010	Kings Road (north), Tyseley	52/58	-	-	Day: Demolition of existing concrete slab	B	6	G5	T	-	-	N	-	-	
722011	Speedwell Trading Estate, Tyseley	62/69	-	-	Day: Demolition of existing concrete slab	B	3	G5	T	-	-	N	-	-	
722012	Monarch Industrial Estate, Tyseley	66/72	-	-	Day: Demolition of existing concrete slab	B	7	G5	T	-	-	N	-	-	
722013	Redfern Road, Tyseley	71/79	-	-	Day: Demolition of existing concrete slab	B	2	G5	T	-	-	N	D1	-	CSV25-N05
722014	Atlas Industrial Estate, Tyseley	62/70	-	-	Day: Demolition of existing concrete slab	B	1	G5	T	-	-	N	-	-	
722015	Atlas Industrial Estate, Tyseley	65/73	-	-	Day: Demolition of existing concrete slab	B	2	G5	T	-	-	N	-	-	
722016	Little Steps Nursery, Fairgate House, Kings Road, Tyseley	58/66	-	-	Day: Demolition of existing concrete slab	B	2	G4	T	-	-	N	-	-	
722016	Fairgate House, Kings Road, Tyseley	58/66	-	-	Day: Demolition of existing concrete slab	B	25	G5	T	-	-	N	-	-	

Assessment location		Impact criteria			Significance criteria									Significant effect	
ID	Area represented	Typical/highest monthly outdoor L _{pAeq} [dB] [Assessment category A/B/C]			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]		Mitigation effect
		Day 0700- 1900	Evening 1900- 2300	Night 2300- 0700											
722017	I-Mex Business Park, Kings Road, Tyseley	56/63	-	-	Day: Demolition of existing concrete slab	B	102	G5	T	-	-	N	-	-	
722018	Rovex Business park, Tyseley	60/66	-	-	Day: Demolition of existing concrete slab	B	11	G5	T	-	-	N	-	-	
722019	Kings Road (south), Tyseley	54/60	-	-	Day: Demolition of existing concrete slab	B	9	G5	T	-	-	N	-	-	
722020	Redfern Road, Tyseley	65/70	-	-	Day: Demolition of existing concrete slab	B	2	G5	T	-	-	N	-	-	
722021	Atlas Industrial Estate, Tyseley	60/66	-	-	Day: Demolition of existing concrete slab	B	1	G5	T	-	-	N	-	-	
722022	Atlas Industrial Estate, Tyseley	53/62	-	-	Day: Demolition of existing concrete slab	B	2	G5	T	-	-	N	-	-	

3.3 Assessment of significance of effects

Residential receptors: direct effects - communities

SES₃-025-001

- 3.3.1 In the vicinity of Castle Bromwich Business Park, the main ES identified a significant night time construction noise effect at approximately 25 dwellings in Castle Vale on Blenheim Way and Cadbury Drive, of which approximately 15 dwellings on Blenheim Way (eastern end) were also affected during the day. During the day various works would contribute to the exceedance, including demolition, site clearance, haul route construction, re-soiling, and Dunlop Carrier Channel culvert. At night, installation of the railway protection barrier at Bromford tunnel east portal would be the source of the exceedance. A significant effect was not identified at the Gypsy and Traveller site in Castle Bromwich Business Park. At the southern end of Blenheim Way, an exceedance of the daytime screening criteria was predicted by 1dB for one month; based on the magnitude and duration of the impact a significant effect was not identified at this location.
- 3.3.2 The proposed Western Power utility diversion introduces additional construction works including site clearance, excavation of the reception pit, directional drilling and trenching for cable installation, not assessed in the main ES, AP₁, or SES and AP₂ ES. The diversion is in close proximity to residential properties in Castle Vale (Blenheim Way) and the Gypsy and Traveller Site within Castle Bromwich Business Park.
- 3.3.3 An assessment has been undertaken to determine whether construction noise from the SES₃ scheme will result in any likely significant effects, using the significance criteria detailed in the main ES (Volume 5: Appendix SV-001-000).
- 3.3.4 The proposed Western Power underground utility diversion expands the significant daytime effect identified in the main ES at dwellings in Castle Vale to include a further two assessment locations, which represent a further 64 dwellings. At the southern end of Blenheim Way the typical and worst case monthly daytime construction noise levels are increased by 2dB and 5dB respectively (to 64dB and 76dB). The duration of the impact is increased from one month to three months. At the northern end of Blenheim Way, which is more remote from the construction works considered in the main ES, the typical and worst case monthly daytime construction noise levels are increased by 5dB and 12dB respectively (to 57dB and 72dB). The duration of the impact is approximately two months.
- 3.3.5 At the Gypsy and Traveller site in Castle Bromwich Business Park, the worst case monthly daytime construction noise level is increased by 1dB (to 75dB). No change to the typical daytime construction noise level is anticipated. The relevant screening criterion is not exceeded and a significant effect is not anticipated.
- 3.3.6 The proposed SES₃ change will give rise to a different significant community effect at residential properties on Blenheim Way, Castle Vale.

SES₃-025-002

- 3.3.7 The main ES identified a significant construction noise effect at approximately 30 dwellings on Wanderer Walk and Chillinghome Road, due to short term utility diversions along the route of Bromford Tunnel, including the relaying of a gas main on Chillinghome Road.
- 3.3.8 As the National Grid gas main relaying works on Chillinghome Road are no longer required, the significant effect reported in the main ES will be removed.

AP₄-025-002

- 3.3.9 The proposed amendment to relocate the bottom ash plant to a new site in Tyseley will introduce additional construction works not included in the original scheme or assessed in the main ES, or the SES and AP₂ ES.
- 3.3.10 An assessment has been undertaken to determine whether these construction works would result in any likely significant effects, using the significance criteria detailed in the main ES (Volume 5 Appendix SV-001-000).
- 3.3.11 Maps showing the baseline sound monitoring and assessment locations used in the assessment of construction sound, noise and vibration within this area are included in the SES₃ and AP₄ ES map series SV-03.
- 3.3.12 At the closest identified residential properties, located on Kings Road, the relevant impact screening criteria are not exceeded and a new significant effect is not identified.

Non-residential receptors - direct effects

SES₃-025-002

- 3.3.13 The main ES identified a significant construction noise effect at Tame Valley Academy, Bromford, due to short term utility diversions along the route of Bromford tunnel, including the relaying of a gas main on Chillinghome Road.
- 3.3.14 The removal of the National Grid gas main relaying works on Chillinghome Road will remove the significant effect reported in the main ES.

AP₄-025-002

- 3.3.15 The proposed amendment to relocate the bottom ash plant to a new site in Tyseley will introduce additional construction works not included in the original scheme or assessed in the main ES, or the SES and AP₂ ES.
- 3.3.16 An assessment has been undertaken to determine whether these construction works would result in any likely significant effects, using the significance criteria detailed in the main ES (Volume 5 Appendix SV-001-000).
- 3.3.17 Maps showing the baseline sound monitoring and assessment locations used in the assessment of construction sound, noise and vibration within this area are included in SES₃ and AP₄ ES map series SV-03.
- 3.3.18 At Fairgate House on Kings Road, which contains various educational uses, the relevant impact screening criterion is not exceeded and a significant effect is not

identified. At the closest identified commercial/ industrial premises, which potentially have office uses facing towards the bottom ash plant, a new significant effect is identified. The duration of the impact is one month and the worst case monthly daytime construction noise level is 79dB. At more distant commercial/ industrial premises a significant effect is not identified.

- 3.3.19 The relocation of the bottom ash plant will give rise to a new significant effect at the closest commercial/ industrial premises to the site.

SES3 and AP4 Appendix SV-003-026

Environmental topic:	Sound, noise and vibration	SV
Appendix name:	Construction assessment report	003
Community forum area:	Washwood Heath to Curzon Street	026

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1 Introduction

- 1.1.1 This appendix provides an update to Appendix SV-003-026 construction assessment report for community forum area (CFA) 26 from the main Environmental Statement (ES) as a result of design changes SES-026-001 and AP4-026-001 as part of the Supplementary Environmental Statement 3 (SES3) and the Additional Provision 4 Environmental Statement (AP4 ES). This update should be read in conjunction with Appendix SV-003-026 Construction assessment report from the main ES.

2 Scope, assumptions and limitations

2.1 Changes of relevance to this assessment

- 2.1.1 SES-026-001 - Update to the construction methodology near West Midlands Fire Service.
- 2.1.2 AP4-026-001 - Western Power Distribution utility diversion at Network Park.

3 Effects arising during construction

3.1 Avoidance and mitigation measures

- 3.1.1 These are unchanged from those set out in the main ES, Volume 2, Washwood Heath to Curzon Street (CFA Report 26), Section 11.

3.2 Quantitative identification of impacts and effects

Ground-borne vibration

- 3.2.1 Tables 1 and 2 set out the changes to the main ES, Volume 5, Appendix, SV-003-026, Sound, Noise and Vibration Assessment for the relevant assessment locations for SES-026-001.

SES₃ and AP₄ Appendix SV-003-026

Table 1: Assessment of construction ground-borne vibration at residential receptors (SES-026-001)

Assessment location		Impact criteria			Significance criteria										Significant effect
ID	Area represented	Peak particle velocity (PPV) [mm/s] on foundation	Typical/highest monthly indoor vibration dose value (VDV) [m/s ^{1.75}]		Construction activity resulting in highest forecast vibration levels	Type of effect	Number of impacts	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration	Mitigation effect	
			Day 0700-2300	Night 2300-0700											
51814	Northumberland Street, Birmingham	0.58	0.25/0.25	-	Earthworks	S	51	R	T	-	-	Y	1	-	CSV26-Co4

Table 2: Assessment of construction ground-borne vibration at non-residential receptors (SES-026-001)

Assessment location		Impact criteria			Significance criteria										Significant effect
ID	Area represented	Peak particle velocity (PPV) [mm/s] on foundation	Typical/highest monthly indoor vibration dose value (VDV) [m/s ^{1.75}]		Construction activity resulting in highest forecast vibration levels	Type of effect	Number of impacts	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration	Mitigation effect	
			Day 0700-2300	Night 2300-0700											
37938	Safeside at Eastside, Vauxhall Road, Birmingham	1.21	0.48/0.48	-	Earthworks	B	1	V ₃	T	-	-	Y	1	-	CSV26-No6

Airborne sound: direct impacts and effects

- 3.2.2 Tables 3 and 4 set out the changes to the main ES, Volume 5, Appendix, SV-003-026, Sound, Noise and Vibration Assessment for the relevant assessment locations for SES-026-001 in isolation.
- 3.2.3 Tables 5 and 6 set out the changes to the main ES, Volume 5, Appendix, SV-003-026, Sound, Noise and Vibration Assessment for the relevant assessment locations for SES-026-001, including the cumulative impact of the AP2 scheme.
- 3.2.4 Tables 7 and 8 set out the changes to the main ES, Volume 5, Appendix, SV-003-026, Sound, Noise and Vibration Assessment for the relevant assessment locations for AP4-026-001.
- 3.2.5 Explanation of the information within all these tables is provided in Appendix SV-001-000 and Appendix SV-003-026 (Volume 5 of the main ES).

SES3 and AP4 Appendix SV-003-026

Table 3: Assessment of construction noise at residential receptors (SES-026-001 - in isolation)

Assessment location		Impact criteria			Construction activity resulting in highest forecast noise levels	Significance criteria									Significant effect
ID	Area represented	Typical/highest monthly outdoor L _{pAeq} [dB] [Assessment category A/B/C]				Type of effect	Number of impacts	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
51814	Northumberland Street, Birmingham	62/71 [A]	43/45 [B]	54/60 [C]	Day: demolition; Eve: conventional rail track laying Duddeston Mill Road; Night: Curzon street no.2 viaduct deck	S	51	R	T	-	-	Y	D 9; N 5	NI	CSV26-Co4

Table 4: Assessment of construction noise at non- residential receptors (SES-026-001 - in isolation)

Assessment location		Impact criteria			Construction activity resulting in highest forecast noise levels	Significance criteria									Significant effect
ID	Area represented	Typical/highest monthly outdoor L _{pAeq} [dB]				Type of effect	Number of impacts	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
37938	Safeside at Eastside, Vauxhall Road, Birmingham	66/78	43/45	-	Day: site clearance; Eve: conventional rail track laying Duddeston Mill Road	B	1	G4	T	-	-	Y	D 22	-	CSV26-No6

SES₃ and AP₄ Appendix SV-003-026

Table 5: Assessment of construction noise at residential receptors (SES-026-001 - cumulative impact with AP₂)

Assessment location		Impact criteria			Construction activity resulting in highest forecast noise levels	Significance criteria									Significant effect
ID	Area represented	Typical/highest monthly outdoor L _{pAeq} [dB] [Assessment category A/B/C]				Type of effect	Number of impacts	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
51814	Northumberland Street, Birmingham	63/72 [A]	43/45 [B]	54/60 [C]	Day: demolition; Eve: conventional rail track laying Duddeston Mill Road; Night: Curzon street no.2 viaduct deck	S	51	R	T	-	-	Y	D 14; N 5	NI	CSV26-Co4

Table 6: Assessment of construction noise at non- residential receptors (SES-026-001 - cumulative impact with AP₂)

Assessment location		Impact criteria			Construction activity resulting in highest forecast noise levels	Significance criteria									Significant effect
ID	Area represented	Typical/highest monthly outdoor L _{pAeq} [dB]				Type of effect	Number of impacts	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
37938	Safeside at Eastside, Vauxhall Road, Birmingham	66/78	43/45	-	Day: site clearance; Eve: conventional rail track laying Duddeston Mill Road	B	1	G4	T	-	-	Y	D 24	-	CSV26-No6

SES3 and AP4 Appendix SV-003-026

Table 7: Assessment of construction noise at residential receptors (AP4-026-001)

Assessment location		Impact criteria			Construction activity resulting in highest forecast noise levels	Significance criteria								Significant effect	
ID	Area represented	Typical/highest monthly outdoor LpAeq [dB]				Type of effect	Number of impacts	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration		Mitigation effect
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
61166	Washwood Heath Road, Birmingham	59/70 [C]	<40/43 [C]	43/54 [C]	Day: utility diversions; Eve: conventional rail track recovery Duddeston Mill Road; Night: B4114 Saltley viaduct deck	NA	47	R	T	H	-	N	-	-	
61503	Adderley Gardens, Birmingham	58/74 [C]	43/48 [C]	42/48 [C]	Day: utility diversions; Eve: conventional rail track laying Duddeston Mill Road; Night: B4114 Saltley viaduct deck	NA	34	R	T	H	-	N	-	-	
57363	Lock Keepers Cottage, Crawford Street, Birmingham	56/66 [A]	41/46 [C]	43/51 [C]	Day: Saltley viaduct bridge demolition; Eve: conventional rail track recovery Duddeston Mill Road; Night: B4114 Saltley viaduct deck	A	1	R	T	H	-	N	D 2	-	~
54833	St. Saviours Road, Birmingham	53/68 [A]	44/46 [B]	41/46 [C]	Day: utility diversions; Eve: conventional rail track laying Duddeston Mill Road; Night: conventional rail track recovery Duddeston Mill Road	S	72	R	T	-	-	N	D1	-	CSV26-Co8

SES3 and AP4 Appendix SV-003-026

Assessment location		Impact criteria			Construction activity resulting in highest forecast noise levels	Significance criteria									Significant effect
ID	Area represented	Typical/highest monthly outdoor LpAeq [dB]				Type of effect	Number of impacts	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration	Mitigation effect	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
57289	Adderley Road, Birmingham	62/79 [C]	48/52 [C]	48/55 [C]	Day: utility diversions; Eve: conventional rail track laying Duddeston Mill Road; Night: Duddeston junction viaduct deck	S	49	R	T	H	-	N	D1	NI	CSV26-Co8
57342	Adderley Road, Birmingham	60/78 [B]	46/47 [C]	42/48 [C]	Day: utility diversions; Eve: conventional rail track laying Duddeston Mill Road; Night: conventional rail track laying Duddeston Mill Road	S	36	R	T	-	-	N	D1	NI	CSV26-Co8

SES3 and AP4 Appendix SV-003-026

Table 8: Assessment of construction noise at non-residential receptors (AP4-026-001)

Assessment location		Impact criteria			Construction activity resulting in highest forecast noise levels	Significance criteria								Significant effect	
ID	Area represented	Typical/highest monthly outdoor L _{pAeq} [dB]				Type of effect	Number of impacts	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration		Mitigation effect
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
61166	St Saviours Primary School, Alum Rock Road, Birmingham	59/70	<40/43	-	Day: utility diversions; Eve: conventional rail track recovery Duddeston Mill Road	B	1	G4	T	H	-	N	-	-	
61166	Alum Rock Road, Birmingham	59/70	-	-	Day: utility diversions	B	9	G5	T	H	-	N	-	-	
54833	Adderley Children's Centre, St. Saviours Road, Birmingham	53/68	44/46	-	Day: utility diversions; Eve: conventional rail track laying Duddeston Mill Road	B	1	G4	T	-	-	N	D 2	-	CSV26-N13
57381	Adderley Road, Birmingham	56/63	-	-	Day: Saltley viaduct bridge demolition	B	1	G5	T	H	-	N	-	-	
57289	Madina Masjid, St Saviours Road, Birmingham	62/79	48/52	-	Day: utility diversions; Eve: conventional rail track laying Duddeston Mill Road	B	1	G3	T	H	-	N	D1	-	CSV26-N13
57289	Adderley Children's Centre, Adderley Road, Birmingham	62/79	48/52	-	Day: utility diversions; Eve: conventional rail track laying Duddeston Mill Road	B	1	G4	T	H	-	N	D1	-	CSV26-N13
57289	Adderley Road, Birmingham	62/79	-	-	Day: utility diversions	B	2	G5	T	H	-	N	D1	-	CSV26-N13

SES3 and AP4 Appendix SV-003-026

Assessment location		Impact criteria			Significance criteria									Significant effect	
ID	Area represented	Typical/highest monthly outdoor L _{pAeq} [dB]			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration		Mitigation effect
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
57220	Adderley Trading Estate, Adderley Road, Birmingham	57/63	-	-	Day: demolition	B	13	G5	T	-	-	N	-	-	
57342	7-8 Adderley Road, Birmingham	60/78	46/47	-	Day: utility diversions; Eve: conventional rail track laying Duddeston Mill Road	B	1	G3	T	-	-	N	D1	-	CSV26-N13
36117	Adderley Primary School, Arden Road, Saltley, Birmingham	51/67	42/44	-	Day: utility diversions; Eve: conventional rail track laying Duddeston Mill Road	B	1	G4	T	-	-	N	D2	-	CSV26-N13
36117	Retail unit, Arden Road, Saltley, Birmingham	51/67	-	-	Day: utility diversions	B	1	G5	T	-	-	N	-	-	

3.3 Assessment of significance of effects

Residential receptors: direct effects - individual dwellings

AP₄-026-001

- 3.3.1 In the main ES no significant construction noise effects were reported in the vicinity of the proposed amendment works. This area is generally remote from the works assessed in the ES.
- 3.3.2 As a result of the amendment, construction noise at up to 85 dwellings on Adderley Road is forecast to slightly exceed the noise insulation trigger level. The duration of noise impacts at any of these dwellings is likely to be one month, although the impacts in total along Adderley Road are spread over 11 months. Noise insulation will be offered for qualifying buildings as defined in the draft CoCP noise insulation and temporary re-housing policy. Noise insulation will avoid residents being significantly affected by levels of construction noise inside their dwellings.
- 3.3.3 The level of detail on likely construction methods available at this time is adequate to predict likely noise levels and a standard extent of mitigation known to be deliverable throughout the works has been included in the assessment. It is, however, likely that under the requirements of the draft CoCP (see Volume 5 of the main ES: Appendix CT-003-000) the contractors will, by applying the Best Practicable Means (BPM) specific to each site, find additional ways to reduce noise levels so that the extent of noise insulation will be less and of shorter duration than those reported at this stage.

Residential receptors: direct effects - communities

SES-026-001

- 3.3.4 Further development of the construction method since the submission of the main ES will result in construction equipment associated with the Curzon Street No. 2 viaduct moving eastwards within the site. This brings some construction works closer to the residential properties on Northumberland Street. Night-time works crossing the existing viaduct are now proposed to be located to the south of the existing viaduct; whereas the original scheme assumed night-time works would occur both to the north and south of the existing viaduct.
- 3.3.5 The main ES reported significant construction noise effects at residential properties on Northumberland Street (on a community basis). The residential properties on Northumberland Street were forecast to experience significant adverse construction noise effects during the day. At night, construction noise levels higher than the noise insulation trigger levels, as defined in the draft CoCP, were predicted.
- 3.3.6 An assessment has been undertaken to determine whether construction noise from the SES₃ scheme will result in any new or different likely significant effects, using the significance criteria detailed in the main ES (Volume 5: Appendix SV-001-000).
- 3.3.7 At the residential properties on Northumberland Street the typical and highest daytime monthly construction noise levels will be comparable to the original scheme, as reported in the main ES (increase in typical daytime monthly levels of 1dB, no change to highest monthly levels). The typical and highest night-time monthly construction noise levels at Northumberland Street are slightly lower than with the

original scheme (reduction of 3dB and 4dB respectively), as all construction plant is now proposed to be located to the south of the existing viaduct. However, the forecast exceedance of the noise insulation trigger level remains. No changes to the daytime or night-time impact durations are anticipated. A combined construction noise and vibration impact is also identified, due to the closer proximity of vibro-compaction of earthworks as part of the SES₃ scheme. Therefore, the SES₃ change will result in a different significant effect compared to that reported in the main ES.

- 3.3.8 The proposed SES will act in combination with the amendments proposed in AP₂, in particular the reconfiguration of the Freightliner Terminal Depot. At the residential properties on Northumberland Street the cumulative effect of AP₂ and the SES₃ scheme is a slight increase (1dB) in the typical and highest daytime monthly construction noise levels, and an increase in the duration of the daytime impact to 14 months. This is a different significant effect.

AP₄-026-001

- 3.3.9 The works to construct the temporary and permanent Western Power Distribution utility diversion at Network Park industrial estate introduces additional construction works not assessed in the main ES.
- 3.3.10 The northern end of the Western Power Distribution utility diversion, along the B₄₁₁₄ Saltley Viaduct/High Street, and Adderley Road to the junction with Cranby Street, follows the same route as assessed in the main ES. The amendment introduces a long stretch of additional utility works along Adderley Road, this replaces a shorter length of utility diversion works assessed in the ES in the vicinity of Cranby Street and the Grand Union canal. The amendment also introduces new works at five existing pylons within Network Park Industrial Estate and Duddeston Mill Trading Estate.
- 3.3.11 In the main ES no significant construction noise effects were reported in the vicinity of the amendment works. This area is generally remote from the works assessed in the ES.
- 3.3.12 An assessment has been undertaken to determine whether construction noise from the SES₃ scheme will result in any new or different likely significant effects, using the significance criteria detailed in the main ES (Volume 5: Appendix SV-001-000).
- 3.3.13 Further south on Adderley Road, in the vicinity of residential properties on St Saviours Road, an increase in the typical and worst case monthly daytime construction noise levels of 2dB and 8dB respectively is anticipated (to 53dB and 68dB). These properties are set back from Adderley Road and are therefore not immediately adjacent to the utility works. However, ambient sound levels in this location are low and the relevant impact screening criterion is exceeded for one month. A new significant community construction noise effect is anticipated at the residential properties on St Saviours Road.
- 3.3.14 On Adderley Road, at the junction with Ash Road, the adjacent buildings are very close to the road and an increase in the typical and worst case monthly construction noise levels of 5dB and 16dB is anticipated (to 62dB and 79dB). This location is representative of residential properties on Adderley Road. The relevant impact screening criterion is exceeded, although the duration of the impact is very short at

one month. A new significant community construction noise effect is anticipated at the residential properties on Adderley Road.

- 3.3.15 Further south on Adderley Road, at the residential properties just to the north of Adderley Park, the predicted daytime construction noise levels are similar to those in the vicinity of the Ash Road junction. However, the magnitude of the increase in typical and worst monthly daytime construction noise levels is larger at 10dB and 22dB respectively (to 60dB and 78dB), as this area is more remote from works assessed in the ES and is well screened from these works by intervening buildings. The relevant impact screening criterion is exceeded; however, again the duration of the impact is very limited at one month. A new significant community construction noise effect is anticipated at these residential properties.

Non-residential receptors - direct effects

SES-026-001

- 3.3.16 Further development of the construction method since the submission of the main ES will result in construction equipment associated with the Curzon Street No. 2 viaduct moving eastwards within the site. This brings some construction works closer to the Safeside educational facility (incorporating a 999 call centre). Night-time works crossing the existing viaduct are now proposed to be located to the south of the existing viaduct; whereas the original scheme assumed night-time works would occur both to the north and south of the existing viaduct.
- 3.3.17 The main ES reported significant construction noise effects at Safeside during the day.
- 3.3.18 An assessment has been undertaken to determine whether construction noise from the SES₃ scheme will result in any new or different likely significant effects, using the significance criteria detailed in the main ES (Volume 5: Appendix SV-001-000).
- 3.3.19 At Safeside, the update to the construction methodology increases the typical daytime monthly construction noise levels by 5dB to 66dB. No change to the highest monthly construction noise levels is anticipated. The duration of the impact will increase from four months to 22 months. A combined construction noise and vibration impact is also identified, due to the closer proximity of vibro-compaction of earthworks to Safeside as part of the SES₃ scheme. Therefore, the SES₃ change will result in a different significant effect compared to that reported in the main ES.
- 3.3.20 The proposed SES will act in combination with the amendments proposed in AP₂, in particular the reconfiguration of the Freightliner Terminal Depot.
- 3.3.21 At Safeside (incorporating a 999 call centre) the cumulative effect of AP₂ and the SES₃ scheme is to increase the duration of the impact to 24 months.

AP₄-026-001

- 3.3.22 The works to construct the temporary and permanent Western Power Distribution utility diversion at Network Park industrial estate introduces additional construction works not assessed in the main ES.
- 3.3.23 The northern end of the Western Power Distribution utility diversion along the B₄₁₁₄ Saltley Viaduct/High Street, and Adderley Road to the junction with Cranby Street,

follows the same route as assessed in the main ES. The amendment introduces a long stretch of additional utility works along Adderley Road, this replaces a shorter length of utility diversion works assessed in the ES in the vicinity of Cranby Street and the Grand Union canal. The amendment also introduces new works at five existing pylons within Network Park Industrial Estate and Duddeston Mill Trading Estate.

- 3.3.24 A range of commercial/industrial and community receptors are located in the vicinity of the works, in particular along Adderley Road.
- 3.3.25 In the main ES no significant construction noise effects were reported in the vicinity of the amendment works. This area is generally remote from the works assessed in the ES. At the Adderley Children's Centre, St. Saviours Road, daytime construction noise levels were predicted to be above the impact screening criterion by 1dB for 1 month. However, based on the limited magnitude and duration of the exceedance a significant effect was not identified. At the second Adderley Children's Centre building on Adderley Road, where existing ambient sound levels are higher, no exceedance of the impact screening criterion was reported.
- 3.3.26 An assessment has been undertaken to determine whether construction noise from the SES₃ scheme will result in any new or different likely significant effects, using the significance criteria detailed in the main ES (Volume 5: Appendix SV-001-000).
- 3.3.27 On Adderley Road, in the vicinity of Adderley Children's Centre on St Saviours Road, an increase in the typical and worst case monthly daytime construction noise levels of 2dB and 8dB respectively is anticipated (to 53dB and 68dB). This receptor is set back from Adderley Road and is therefore not immediately adjacent to the utility works. However, ambient sound levels in this location are low and the relevant impact screening criterion is exceeded for two months. A new non-residential significant effect at the Adderley Children's Centre on St Saviours Road is anticipated.
- 3.3.28 Further south on Adderley Road, at the junction with Ash Road, the adjacent buildings are very close to the road and an increase in the typical and worst case monthly construction noise levels of 5dB and 16dB is anticipated (to 62dB and 79dB). This location is representative of industrial premises facing onto Adderley Road, the Madina Masjid place of worship, and the second Adderley Children's Centre building which faces onto Adderley Road. At all of these receptors the relevant impact screening criteria are exceeded, although the duration of the impact is very short at one month. A new non-residential significant effect at the Adderley Children's Centre on Adderley Road, the Madina Masjid place of worship, and industrial premises facing onto Adderley Road is anticipated.
- 3.3.29 Towards the southern end of the utility diversion along Adderley Road, at the junction with Arden Road, an increase in the typical and worst case monthly construction noise levels of 4dB and 12dB is anticipated respectively (to 51dB and 67dB). This location is representative of various commercial premises and Adderley Primary School, which is set back from Adderley Road. Existing ambient sound levels in this area are fairly low, resulting in the impact screening criterion at the school being exceeded for two months. A new non-residential significant effect is anticipated at the school. The impact screening criterion for commercial premises is not exceeded and a new significant effect at these premises is not identified.

- 3.3.30 A new significant cumulative construction noise effect at a non-residential receptor is anticipated due to committed development 2014/05646/PA. This development is for a new place of worship at 7-8 Adderley Road. Typical and worst case construction noise levels of 60dB and 78dB respectively are predicted at this location, the relevant impact screening criterion is exceeded for one month.

SES3 and AP4 ES Appendix SV-004-009

Environmental topic:	Sound, noise and vibration	SV
Appendix name:	Operational assessment report	004
Community forum area:	Central Chilterns	009

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1 Introduction

- 1.1.1 This appendix provides an update to Appendix SV-004-009 Operational sound, noise and vibration assessment report for community forum area 9 (CFA9) Central Chilterns from the main Environmental Statement (ES) as a result the Additional Provision 4 Environmental Statement (AP4 ES). This update should be read in conjunction with Appendix SV-004-009 operational noise assessment report from the main ES.

2 Scope, assumptions and limitations

2.1 Changes of relevance to this assessment

- 2.1.1 Operational sound, noise and vibration assessments have been undertaken for the Central Chilterns AP4 ES amendment: additional land required to extend the Chiltern tunnel from Mantle's Wood portal to South Heath green tunnel north portal (AP4-009-001).

3 Effects arising during operation

3.1 Avoidance and mitigation measures

- 3.1.1 These are set out in main ES, Volume 2, CFA Report 1, Section 11.

3.2 Quantitative identification of impacts and effects

Ground-borne sound and vibration

- 3.2.1 The assessment information, impact criteria and significance criteria for the assessment of the revised scheme with incorporated mitigation are presented in Table 1 for residential and non-residential receptors. The results should be considered in conjunction with the information contained in SES3 and AP4 ES map series SV-02 in the CFA9 Map Book.
- 3.2.2 Explanation of the Table 1 information is provided in main ES, Volume 5, Appendix SV-001-000 and Appendix SV-004-009.

Table 1 : Ground-borne sound and vibration levels, noise and vibration impacts and effects

Assessment location		Impact criteria				Significance criteria								Significant effect
		Ground-borne sound level dB L _{pA5max}	VDV m/s ^{-1.75} Daytime (07:00 - 23:00)	VDV m/s ^{-1.75} Night time (23:00 – 07:00)	% increase or decrease in VDV	Number of impacts represented	Type of effect	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Mitigation effect	
ID	Area represented													
376359	Hyde Lane, Hyde End	12	0.03	0.02	-	1	NA	R	-	-	-	-	-	-
622061	Chalk Lane, Hyde Heath	24	0.06	0.04	-	1	NA	R	-	-	-	-	-	-
622063	Chalk Lane, Hyde Heath (represented by 622061, stables so remove)	18	0.04	0.02	-	1	NA	R	-	-	-	-	-	-
721034	Hyde Lane, Hyde End	23	0.07	0.03	-	1	NA	R	-	-	-	-	-	-
721035	Hyde Lane, Hyde End	21	0.06	0.03	-	1	NA	R	-	-	-	-	-	-
721036	Chesham Road, Hyde End	13	0.03	0.02	-	1	NA	R	-	-	-	-	-	-
721037	Chesham Road, Great Missenden	21	0.06	0.03	-	1	NA	R	-	-	-	-	-	-
721038	Kings Lane, South Heath	22	0.06	0.03	-	1	NA	R	-	-	-	-	-	-
721039	Kings Lane, South Heath	23	0.06	0.03	-	1	NA	R	-	-	-	-	-	-
721040	Frith Hill, South Heath	15	0.04	0.02	-	1	NA	R	-	-	-	-	-	-
721041	Frith Hill, South Heath	26	0.08	0.04	-	1	NA	R	-	-	-	-	-	-

Impact summary

- 3.2.3 The operational ground-borne noise and vibration impacts identified in Table 1 are summarised in Table 2.

Table 2 : Summary of operational ground-borne noise and vibration impacts

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

Airborne sound: direct impacts and effects

- 3.2.4 The direct effects from the operation of the revised scheme as well as any new or altered roads or railway lines, which are identified as part of the scheme, are presented in Table 3 for those locations in the vicinity of the amendment.
- 3.2.5 The assessment information, impact criteria and significance criteria for the assessment of the revised scheme with incorporated mitigation are presented in Table 3 for residential and non-residential receptors. The results should be considered in conjunction with the information contained in SES3 and AP4 ES map series SV-02 in the CFA09 Map Book.
- 3.2.6 Explanation of the Table 3 information is provided in main ES, Volume 5, Appendix SV-001-000 and Appendix SV-004-009.

Table 3 : Operational noise – detailed results (AP4 revised scheme)

Assessment Location		Impact criteria						Significance criteria											Significant effect	
ID	Area represented	Proposed Scheme only (Year 15 traffic)			Do nothing (Opening year baseline)			Do something (Opening year baseline + Year 15 traffic) ****		Change		Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact		Mitigation of effect
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
351444	Aylesbury Road, Great Missenden	38	29	54/57	52	40	62	52	40	0	0	NA	2	R	T	-	-	-	-	
351452	Aylesbury Road, Great Missenden	41	31	56/59	62	50	62	62	50	0	0	NA	2	R	T	-	-	-	-	
351515	Aylesbury Road, Great Missenden	47	37	60/62	53	47	90	54	47	1	0	NA	2	R	T	-	-	-	-	
353672	Church Street, Great Missenden	<35	<25	44/47	62	50	62	62	50	0	0	NA	1	R	T	-	-	-	-	
354579	Elmtree Green, Great Missenden	<35	<25	46/48	53	41	62	53	41	0	0	NA	18	R	T	-	-	-	-	
354872	Frith Hill, Great Missenden	35	26	52/55	51	45	52	51	45	0	0	NA	2	R	T	-	-	-	-	
355246	Aylesbury Road, Great Missenden	37	27	52/55	62	50	62	62	50	0	0	NA	4	R	T	-	-	-	-	
355252	Aylesbury Road, Great Missenden	40	31	55/58	51	40	62	51	40	0	1	NA	1	R	T	-	-	-	-	
355317	Potter Row, Great Missenden	49	40	64/67	46	43	68	51	45	5	2	NA	1	R	T	-	-	-	-	#
355352	Potter Row, Great Missenden	51	42	63/66	46	39	68	52	44	6	4	A	2	R	T	-	-	-	-	~
373949	Hyde Lane, Hyde End	Outside of operational airborne noise study area as a result of the Amendment																		
374004	Hyde End, Great Missenden	Outside of operational airborne noise study area as a result of the Amendment																		
374188	Ballinger Road, South Heath	<35	26	51/54	51	41	46	51	41	0	0	NA	13	R	T	-	-	-	-	
374262	Meadow Lane, South Heath	<35	27	50/53	47	40	47	46	40	0	0	NA	6	R	T	-	-	-	-	
374450	Frith Hill, Great Missenden	Outside of operational airborne noise study area as a result of the Amendment																		
374515	Frith Hill, Great Missenden	35	26	54/57	51	45	52	51	45	0	0	NA	3	R	T	-	-	-	-	
374531	Chesham Road, Great Missenden	<35	<25	44/47	55	48	76	55	48	0	0	NA	1	R	T	-	-	-	-	
374552	Cudsdens Court, Great Missenden	<35	<25	<40/<40	56	50	76	56	49	0	0	NA	6	R	T	-	-	-	-	
374611	Frith Hill, Great Missenden	39	30	58/61	51	45	52	51	45	0	0	NA	3	R	T	-	-	-	-	
374641	Frith Hill, South Heath	39	30	59/61	51	45	52	51	45	0	0	NA	4	R	T	-	-	-	-	
374696	Frith Hill, South Heath	45	36	64/67	47	41	50	49	42	2	1	NA	3	R	T	-	-	-	-	

Assessment Location		Impact criteria						Significance criteria											Significant effect	
ID	Area represented	Proposed Scheme only (Year 15 traffic)			Do nothing (Opening year baseline)			Do something (Opening year baseline + Year 15 traffic) ****		Change		Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact		Mitigation of effect
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
374715	Frith Hill, South Heath	46	38	67/70	57	50	50	57	50	0	0	NA	1	R	T	-	-	-	-	
374775	Sibleys Rise, South Heath	42	35	61/63	47	40	47	46	40	0	0	NA	19	R	T	-	-	-	-	
374806	Kings Lane, South Heath	43	36	56/59	47	41	40	47	41	0	0	NA	8	R	T	-	-	-	-	
374849	Bayleys Hatch, South Heath	46	38	64/66	50	41	63	50	41	0	0	NA	6	R	T	-	-	-	-	
374914	Sibleys Rise, South Heath	41	33	63/66	47	40	47	47	40	0	0	NA	25	R	T	-	-	-	-	
375025	Kings Lane, South Heath	37	30	55/58	48	41	49	48	41	0	0	NA	8	R	T	-	-	-	-	
375067	Lappetts Lane, South Heath	36	29	50/52	48	41	49	48	41	0	0	NA	5	R	T	-	-	-	-	
375134	Kings Lane, South Heath	40	33	57/59	47	41	40	47	41	0	0	NA	10	R	T	-	-	-	-	
375214	Bayleys Hatch, South Heath	41	33	59/61	48	44	44	48	44	0	0	NA	10	R	T	-	-	-	-	
375322	Potter Row, Great Missenden	43	35	59/61	44	39	46	46	40	2	1	NA	5	R	T	-	-	-	-	
375417	Potter Row, Great Missenden	38	30	56/58	48	41	49	48	41	0	0	NA	6	R	T	-	-	-	-	
375440	Potter Row, Great Missenden	41	32	54/56	46	36	47	47	37	1	1	NA	1	R	T	-	-	-	-	
375451	Potter Row, Great Missenden	40	31	53/55	46	36	47	47	37	1	1	NA	1	R	T	-	-	-	-	
375485	Potter Row, Great Missenden	51	42	65/67	50	45	51	54	47	4	2	A	3	R	T	-	-	-	-	~
375495	Potter Row, Great Missenden	49	40	61/64	44	39	46	50	42	6	3	A	1	R	T	-	-	-	-	~
375508	Potter Row, Great Missenden	47	37	59/62	46	36	47	49	40	3	4	NA	3	R	T	-	-	-	-	#
375545	Potter Row, Great Missenden	45	36	58/60	46	36	47	48	39	2	3	NA	1	R	T	-	-	-	-	#
375619	Potter Row, Great Missenden	44	35	57/60	44	39	46	47	40	3	1	NA	2	R	T	-	-	-	-	#
375630	Potter Row, Great Missenden	51	42	63/65	44	39	46	52	44	8	5	A	1	R	T	-	-	-	-	~
375648	Potter Row, Great Missenden	48	38	59/62	46	36	47	50	40	4	4	NA	4	R	T	-	-	-	-	#
375669	Potter Row, Great Missenden	47	38	61/64	51	50	50	52	51	2	0	NA	5	R	T	-	-	-	-	
376239	Hyde Lane, Hyde End	Outside of operational airborne noise study area as a result of the Amendment																		
376310	Hyde Lane, Hyde End	Outside of operational airborne noise study area as a result of the Amendment																		

Assessment Location		Impact criteria						Significance criteria										Significant effect		
ID	Area represented	Proposed Scheme only (Year 15 traffic)			Do nothing (Opening year baseline)			Do something (Opening year baseline + Year 15 traffic) ****		Change		Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature		Combined impact	Mitigation of effect
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
376359	Hyde Lane, Hyde End	Outside of operational airborne noise study area as a result of the Amendment																		
376368	Hyde Lane, Hyde End	Outside of operational airborne noise study area as a result of the Amendment																		
376399	Chesham Road, Hyde End	Outside of operational airborne noise study area as a result of the Amendment																		
376478	Chesham Road, Hyde End	Outside of operational airborne noise study area as a result of the Amendment																		
376498	Chesham Road, Hyde End	Outside of operational airborne noise study area as a result of the Amendment																		
376517	Chesham Road, Hyde End	Outside of operational airborne noise study area as a result of the Amendment																		
376522	Chesham Road, Hyde End	Outside of operational airborne noise study area as a result of the Amendment																		
376647	Chesham Road, Hyde End	Outside of operational airborne noise study area as a result of the Amendment																		
376658	Chesham Road, Hyde End	Outside of operational airborne noise study area as a result of the Amendment																		
376681	Kings Lane, South Heath	<35	<25	<40/<40	51	46	51	51	46	0	0	NA	1	R	T	-	-	-	-	
376704	Kings Lane, South Heath	<35	<25	54/57	47	41	40	47	41	0	0	NA	10	R	T	-	-	-	-	
376750	Kings Lane, South Heath	<35	<25	53/56	48	41	49	48	41	0	0	NA	9	R	T	-	-	-	-	
377005	Wood Lane, South Heath	<35	<25	44/47	47	40	47	47	40	0	0	NA	9	R	T	-	-	-	-	
377084	Lappetts Lane, South Heath	<35	<25	51/53	47	40	47	47	40	0	0	NA	20	R	T	-	-	-	-	
377405	Wood Lane, South Heath	<35	<25	51/54	46	41	51	46	41	0	0	NA	16	R	T	-	-	-	-	
377718	Ballinger Road, South Heath	<35	25	47/50	51	41	46	51	41	0	0	NA	14	R	T	-	-	-	-	
377770	Ballinger Road, South Heath	<35	<25	44/47	51	41	46	51	41	0	0	NA	15	R	T	-	-	-	-	
377793	Marriotts Avenue, South Heath	<35	26	47/50	46	39	47	46	39	0	0	NA	17	R	T	-	-	-	-	
377835	Marriotts Avenue, South Heath	<35	25	44/47	46	39	47	46	39	0	0	NA	18	R	T	-	-	-	-	
378065	Ballinger Road, South Heath	<35	<25	42/45	51	41	46	51	41	0	0	NA	22	R	T	-	-	-	-	
379212	Bullbaiters Lane, Hyde Heath	Outside of operational airborne noise study area as a result of the Amendment																		
379334	Hyde Heath, Amersham	Outside of operational airborne noise study area as a result of the Amendment																		
379370	Top Common, Hyde End	Outside of operational airborne noise study area as a result of the Amendment																		

Assessment Location		Impact criteria						Significance criteria										Significant effect		
ID	Area represented	Proposed Scheme only (Year 15 traffic)			Do nothing (Opening year baseline)			Do something (Opening year baseline + Year 15 traffic) ****		Change		Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature		Combined impact	Mitigation of effect
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
379436	Chesham Road, Hyde End	Outside of operational airborne noise study area as a result of the Amendment																		
379500	Browns Road, Hyde End	Outside of operational airborne noise study area as a result of the Amendment																		
379633	Browns Road, Hyde End	Outside of operational airborne noise study area as a result of the Amendment																		
379730	Brays Lane, Hyde Heath	Outside of operational airborne noise study area as a result of the Amendment																		
380955	Chalk Lane, Hyde Heath	Outside of operational airborne noise study area as a result of the Amendment																		
382171	Chalk Lane, Hyde Heath	Outside of operational airborne noise study area as a result of the Amendment																		
382210	Chalk Lane, Little Missenden	Outside of operational airborne noise study area as a result of the Amendment																		
382291	Brays Close, Hyde Heath	Outside of operational airborne noise study area as a result of the Amendment																		
382388	Chalk Lane, Hyde Heath	Outside of operational airborne noise study area as a result of the Amendment																		
382636	Chalk Lane, Hyde Heath	Outside of operational airborne noise study area as a result of the Amendment																		
700358	Aylesbury Road, Great Missenden	57	48	71/73	52	49	57	59	51	6	3	A	1	R	T	-	-	-	-	~
700359	Aylesbury Road, Great Missenden	49	40	61/64	52	46	90	54	47	2	1	A	1	R	T	-	-	-	-	
700360	Potter Row, Great Missenden	48	39	62/65	44	39	46	50	42	6	3	A	1	R	T	-	-	-	-	~
721041	Frith Hill, South Heath	51	32	65/68	57	50	50	58	50	1	0	A	1	R	T	-	-	-	-	
351515	Aylesbury Road, Great Missenden, (Office)	47	37	60/62	53	47	90	54	47	1	0	B	2	G5	T	-	-	-	-	
353672	Great Missenden Church Of England Combined School, Church Street (School)	<35	<25	44/47	62	50	62	62	50	0	0	B	1	G4	T	-	-	-	-	
354872	Frith Hill, Great Missenden, (Stables)	35	26	52/55	51	45	52	51	45	0	0	B	2	G5	T	-	-	-	-	
376647	Middlegrove Farm, Chesham Road (General Commercial)	Outside of operational airborne noise study area as a result of the Amendment																		
377770	Post Office, Ballinger Road, South Heath, (Post Office)	<35	26	50/52	51	41	46	51	41	0	0	B	1	G5	T	-	-	-	-	
379730	Hyde Heath Village Hall, Hyde Heath (Hall)	Outside of operational airborne noise study area as a result of the Amendment																		

Assessment Location		Impact criteria						Significance criteria						Significant effect						
ID	Area represented	Proposed Scheme only (Year 15 traffic)			Do nothing (Opening year baseline)			Do something (Opening year baseline + Year 15 traffic) ****		Change		Type of effect	Number of impacts represented		Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Mitigation of effect
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
379730	Hyde Heath, (General Commercial)	Outside of operational airborne noise study area as a result of the Amendment																		
379730	Hyde Heath Chapel, Hyde Heath (Chapel)	Outside of operational airborne noise study area as a result of the Amendment																		
379730	Rayners Care Home Hyde Heath, (Care Home)	Outside of operational airborne noise study area as a result of the Amendment																		

Direct impact - summary

3.2.7 The operational airborne noise impacts identified in Table 3 are summarised in Table 4.

Table 4 : Summary of operational airborne sound impacts

Receptor	Number of Impacts		
	Minor	Moderate	Major
Residential properties	4	5	0
Non-residential properties	0	0	0
Quiet Areas	None	None	None

3.3 Assessment of significance of effects

Residential receptors: direct effects - individual dwellings

- 3.3.1 Taking account of the avoidance and mitigation measures incorporated into the scheme, the main ES assessment identified that at Sheepcotts Cottage, Hyde End, represented by assessment location 376359, operational airborne noise would exceed the daytime noise insulation trigger threshold set forth in the Noise Insulation (railway and other guided systems) Regulations 1996, the night-time World Health Organization's Interim Target of 55dB¹ or the criterion² for maximum noise level as a train passes.
- 3.3.2 The Amendment alters the route past Sheepcotts Cottage from the surface running railway to a railway operating in a tunnel. As a result, the property is outside of the operational airborne noise study area and is no longer estimated to be likely to qualify for noise insulation.

Residential receptors: direct effects - communities

- 3.3.3 Taking account of the avoidance and mitigation measures incorporated into the scheme, the main ES assessment identified, significant operational airborne noise effects at:
- Hyde End. A significant (on a community basis) operational airborne noise effect at around approximately 5 dwellings in the vicinity of Hyde Lane where the forecast increases in sound from the railway are likely to cause major adverse effect on the acoustic character of the area around the closest two properties. The effect on the acoustic character around the other three that are located further from the railway would be moderate. This significant effect is marked as OSV09-Co1 in the main ES Map Series SV-01, SV-02 and SV-05.

¹ World Health Organization, (2010), Night-time Noise Guidelines for Europe.

² During the night (2300-0700) a significant effect is also identified where the scheme results in a maximum sound level at the façade of a building at or above: 85dB LpAFmax (where the number of train pass-bys exceeding this value is less than or equal to 20); or 80dB LpAFmax (where the number of train pass-bys exceeding this value is greater than 20).

- South Heath, reference OSV09-Co2. A significant (on a community basis) operational airborne noise effect was identified around approximately 15³ dwellings in the vicinity of Potter Row where the forecast increases in sound from the railway are likely to cause moderate adverse effect on the acoustic character of the area. This significant effect is marked as OSV09-Co2 in the main ES Map Series SV-01, SV-02 and SV-05.

3.3.4 The amendment alters the route past Hyde End from a surface running railway to a railway operating in a tunnel. The community is outside of the operational airborne noise study area of the revised scheme and therefore a significant effect at this community is no longer likely as a result of this amendment.

3.3.5 The mitigation envisaged with the amendment reduces operational sound levels such that the adverse effects on the residential area around South Heath, Potters Row (reported in the main ES as significant effect number OSV09-Co2) are no longer considered significant when assessed on a community basis.

Residential receptors: indirect effects

3.3.6 No change from the main ES.

Non-residential receptors: direct effects

3.3.7 No change from the main ES.

Non-residential receptors: indirect effects

3.3.8 No change from the main ES.

Cumulative effects

3.3.9 No change from the main ES.

³ As amended by the correction made in SES₃.

SES3 and AP4 ES Appendix SV-004-013

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

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1 Introduction

- 1.1.1 This appendix provides an update to Appendix SV-004-001 operational sound, noise and vibration assessment report for community forum area 13 (CFA₁₃) Calvert, Steeple Claydon, Twyford and Chetwode from the main Environmental Statement (ES) as a result of Additional Provision 4 Environmental Statement (AP₄ ES). This update should be read in conjunction with Appendix SV-013-004 operational assessment report from the main ES.

2 Scope, assumptions and limitations

2.1 Changes of relevance to this assessment

Amendments of Additional Provision

- 2.1.1 Operational sound, noise and vibration assessments have been undertaken for the following amendment: additional land required for an overbridge and reconfiguration works at Calvert Landfill waste transfer sidings (AP₄-013-002).

3 Effects arising during operation

3.1 Avoidance and mitigation measures

- 3.1.1 The amendment includes the installation of noise fence barriers along the sidings and the access route from the existing Calvert Landfill site, as shown on SES₃ and AP₄ ES maps series SV-01 and SV-02. This mitigation is in addition, to the proposed mitigation identified within the main ES, CFA₁₃, Volume 2, Section 11.

3.2 Quantitative identification of impacts and effects

Ground-borne sound and vibration

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

Airborne sound: direct impacts and effects

- 3.2.2 The direct effects from the operation of the AP₄ revised scheme as well as any new, amended or altered roads or railway lines, which are identified as part of the scheme, are presented in Table 1 for those locations in the vicinity of the amendments.
- 3.2.3 The assessment information, impact criteria and significance criteria for the assessment of the incorporated mitigation case at residential and non-residential receptors are presented in Table 1. The results should be considered in conjunction with the information contained in SES₃ and AP₄ ES map series SV-02 in the CFA₁₃ Volume 5 sound, noise and vibration map book.
- 3.2.4 Explanation of the Table 1 information is provided in main ES, Volume 5: Appendix SV-001-000 and Appendix SV-004-001.

Table 1 : Operational noise – detailed results

Assessment Location		Impact criteria										Significance criteria							Significant effect	
ID	Area represented	HS2 scheme only (Year 15 traffic)			Do nothing (opening year baseline)			Do something (opening year baseline + Year 15 traffic) ****		Change		Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact		Mitigation of effect
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
284601	Sandstone Close, Calvert	47	38	60/63	52	42	56	53	43	1	1	A	7	R	T	-	-	-	-	
284685	Sandstone Close, Calvert	45	36	59/62	46	41	48	48	42	3	1	A	6	R	T	-	-	-	-	
284834	Sandy Road, Calvert	46	37	57/61	52	42	56	53	43	1	1	A	29	R	T	-	-	-	-	
285186	Sandy Road, Calvert	49	39	59/64	52	42	56	54	44	2	2	A	8	R	T	-	-	-	-	
285268	Brindles Close, Calvert	45	36	56/59	46	33	41	48	37	2	5	A	21	R	T	-	-	-	-	
285332	Rustics Close, Calvert	44	35	55/58	46	33	41	48	37	2	4	A	24	R	T	-	-	-	-	
285447	Cotswolds Way, Calvert	48	38	58/61	59	45	55	59	46	0	1	A	19	R	T	-	-	-	-	
285464	Brickhill Way, Calvert	50	40	60/64	55	37	44	56	42	1	5	A	4	R	T	-	-	-	-	
285533	Cotswolds Way, Calvert	48	39	58/62	46	33	41	50	39	4	7	A	16	R	T	-	-	-	-	
285709	Heathers Close, Calvert	46	37	58/61	52	42	56	53	43	1	1	A	16	R	T	-	-	-	-	
285731	Cotswolds Way, Calvert	52	43	63/66	55	37	44	56	43	2	6	A	3	R	T	-	-	-	-	
285737	Cotswolds Way, Calvert	51	42	63/66	55	45	53	56	46	1	2	A	14	R	T	-	-	-	-	
286466	Werner Terrace, Calvert	50	41	61/64	63	52	59	63	52	0	0	NA	7	R	T	-	-	-	-	
286506	Werner Terrace, Calvert	53	45	64/67	63	52	59	63	53	0	1	A	14	R	T	-	-	-	-	
286585	Brackley Lane, Calvert	51	42	63/66	55	45	53	56	46	1	2	A	11	R	T	-	-	-	-	
286608	Brackley Lane, Calvert	56	47	69/72	48	40	49	56	47	8	7	A	3	R	T	-	-	-	-	
286616	Brackley Lane, Calvert	56	47	68/71	48	40	49	56	47	7	7	A	1	R	T	-	-	-	-	
286631	Brackley Lane, Calvert	53	44	66/69	48	40	49	54	45	6	5	A	2	R	T	-	-	-	-	
286928	Sandy Road, Calvert	51	42	62/66	52	42	56	54	45	2	3	A	5	R	T	-	-	-	-	
286954	Brickhill Way, Calvert	50	41	61/65	52	42	56	54	44	2	3	A	10	R	T	-	-	-	-	

3.3 Assessment of significance of effects

Residential receptors: direct effects- individual dwellings

3.3.1 No change from main ES.

Residential receptors: direct effects- communities

3.3.2 No change from main ES.

Residential receptors: indirect effects

3.3.3 No change from main ES.

Non-residential receptors: direct effects

No change from main ES.

Non-residential receptors: indirect effects

3.3.4 No change from main ES.

Cumulative effects

3.3.5 No change from main ES.

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