

High Speed Rail (Crewe – Manchester)

Supplementary Environmental Statement 2 and Additional Provision 2 Environmental Statement

Volume 5: Map Book

Sound, noise and vibration (SV-02, SV-03, SV-08, SV-09)

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Department
for Transport

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

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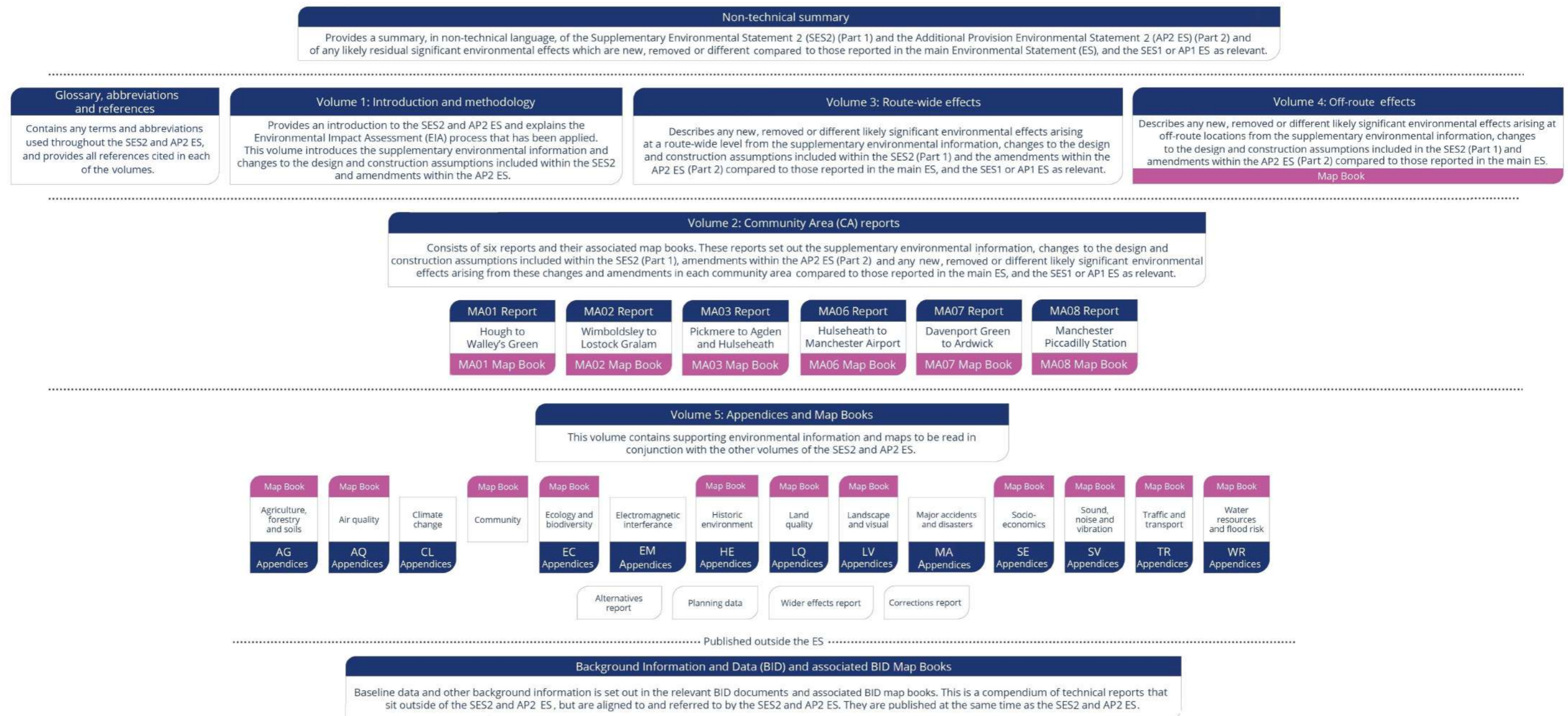
Data dictionary and definitions

Map series name	SV-02 - Operational Airborne Noise and Vibration Impacts and Likely Significant Effects	SV-03 - Construction Airborne Noise and Vibration Likely Significant Effects	SV-08 - Daytime Operational Sound Contour Maps	SV-09 - Night-time Operational Sound Contour Maps
Map series description	<p>SV-02 presents the direct operational noise impacts and likely significant effects of the Proposed Scheme.</p> <p>The SV-02 figure series necessarily contains a large amount of information relating to the operational noise and vibration assessment. It is designed to communicate visually the assessment process from the prediction of impacts to the determination of likely residual significant effects. The corresponding text is included in Volume 2 and Volume 5.</p> <p>A more detailed explanation of each legend item included on the figures can be found in the data dictionary.</p>	<p>The SV-03 figure series accompanies the construction noise & vibration assessments. It shows the locations at which a quantitative assessment of the direct effects of construction noise and/or vibration has been carried out. These are labelled as assessment locations with a reference number to enable cross-reference to the construction noise and vibration reports contained in Main ES Volume 5: Appendix SV-002-0MA0X, or Volume 5: Appendix SV-002-0MA0X. A more detailed explanation of each legend item included on the figures can be found in the data dictionary.</p>	<p>SV-08 presents the predicted daytime operational sound from the new railway.</p> <p>The sound levels from the new railway (expressed as $L_{pAeq,T}$) are presented in typical noise mapping colours in 5 dB steps. There is a panel at the top right of the figure; this panel contains a key communicating the daytime sound levels represented by the various colours. A corresponding and similar panel is found on SV-02 and SV-09, along with the key sound contours that were used within the environmental assessment.</p> <p>A more detailed explanation of each legend item included on the figures can be found in the data dictionary.</p>	<p>SV-09 presents the predicted night-time operational sound from the new railway.</p> <p>The sound levels from the new railway (expressed as $L_{pAeq,T}$) are presented in typical noise mapping colours in 5 dB steps. There is a panel at the top right of the figure; this panel contains a key communicating the night-time sound levels represented by the various colours. A corresponding and similar panel is found on SV-02 and SV-08, along with the key sound contours that were used within the environmental assessment.</p> <p>A more detailed explanation of each legend item included on the figures can be found in the data dictionary.</p>
Community Area name				
MA01 Hough to Walley's Green	✓	✓		
MA02 Wimboldsley to Lostock Gralam	✓	✓		
MA03 Pickmere to Agden and Hulseheath	✓	✓		
MA06 Hulseheath to Manchester Airport	✓	✓	✓	✓
MA07 Davenport Green to Ardwick		✓		
MA08 Manchester Piccadilly Station	✓	✓		
ORW1 Preston Station (PSTN)				
ORW2 Carlisle Station (CSTN)				
ORW3 Annandale Depot (ADEP)				

Mapping explanatory notes

Structure of the Supplementary Environmental Statement 2 and the Additional Provision 2 Environmental Statement

This map book is part of the suite of documents that make up the Supplementary Environmental Statement 2 (SES2) and the Additional Provision 2 Environmental Statement (AP2 ES) for the High Speed Rail (Crewe – Manchester) scheme. The SES2 and the AP2 ES are separate documents; however, they are bound together and presented in a number of volumes shown in Figure 1.



Copyright statements

Copyright statements are presented in the data dictionary and definitions section at the front of the map book, due to limited space to include this on the individual maps themselves.

Ordnance Survey data

All maps produced as part of the SES2 and AP2 ES contain Ordnance Survey (OS) data. HS2 Ltd use the most up to date mapping available, where possible, supplied by the OS and as such, we cannot be held responsible for any inaccuracies within this data. As part of our licence conditions, all digital maps carry a watermark.

Chainage

Most of the maps presented as part of the SES2 and AP2 ES have a chainage value shown next to the alignment. Chainage is presented on the maps in black font, in the form of XXX+YYY, e.g. 192+000 or 239+500.

Chainage (known as reference chainage) is referenced from Euston Station, which is 0+000, and the value presented is in metres, e.g. 192+000 refers to the point, 192,000m, or 192km, from Euston Station. Chainage values increase in intervals dependent on the map scale. For maps at 1:50,000 scale chainage is shown at 5km intervals. For maps at 1:25,000 scale chainage is shown at 2km intervals. For maps at 1:20,000, 1:10,000, 1:5,000 and 1:2,500 scales, chainage is shown at 1km intervals.

Chainage has been included on the maps as a useful tool for comparing different map sets showing the different environmental themes or engineering plans, due to map sets having different scales, and therefore, showing differing amounts of alignment on the map.

Map sheet layout

Each map in Volume 2 is presented twice, with the main ES map (In Parliament - Session 2021 - 2022) on the left-hand page and the SES2 and the AP2 ES map on the right. For the CT-05 and CT-06 map series, the SES2 and the AP2 ES is shown with different coloured hatching, annotated with labels, which highlights the areas of change. The coloured text box provides a brief description of the design change and amendment, and gives the SES2 and the AP2 ES reference number. In some instances where the effect covers a large area, a box without hatching but with a label, is shown. Only maps which have been amended as a result of the SES2 and the AP2 ES are included within the map books. Other design changes which are within the existing limits of the Bill and do not result in new or different likely significant effects are also shown on the maps, but are not indicated by hatching.

Each Volume 5 map is annotated to describe the change to a receptor or significant effect, and to give the SES2 and the AP2 ES reference number. For more detailed information about the SES2 and the AP2 ES annotation, refer to the map series legend. Only maps which have been amended as a result of the SES2 and the AP2 ES are included within the map book. Changes to receptors or significant effects relating to SES1 or AP1 ES are also provided for reference. Where this is the case they are shown in a faded box.

Where a significant effect has been changed due to a correction to mapping produced in the main ES or previous SES/AP, the significant effect reference is suffixed with a double asterisk (**). The map now shows the correct effect.

Map orientation

The majority of the maps presented in these map books are presented with the railway alignment running horizontally across the page. The direction of travel to London would be following the alignment to the left hand side of the page, and Manchester to the right.

The exception to this, are map series LV-00, LV-02, LV-07 and LV-08, which present the alignment running from bottom to top of the page. This is to allow more of the modelled outputs to be shown at the appropriate map scale. In this instance, the direction of travel to London would be to the bottom of the page, and Manchester to the top.

Further details on the approach to mapping is set out in Section 6 of Volume 1 of the SES2 and AP2 ES.

Map books

In total, there are 19 map books included in the SES2 and AP2 ES Volume 2, Volume 4 and Volume 5. A list of the map book titles and map series is provided below for reference.

Map book title (map series)	Map book title (map series)
Volume 2: Map Book – MA01: Hough to Walley’s Green (CT-05, CT-06, CT-10, LV-03, SV-05)	Volume 5: Map Book – Planning Data / Committed Developments (CT-13)
Volume 2: Map Book – MA02: Wimboldsley to Lostock Gralam (CT-05, CT-06, CT-10, LV-03, SV-05)	Volume 5: Map Book – Ecology and biodiversity (EC-01)
Volume 2: Map Book – MA03: Pickmere to Agden and Hulseheath (CT-05, CT-06, CT-10, LV-03, LV-04, SV-05)	Volume 5: Map Book – Historic environment (HE-01, HE-02)
Volume 2: Map Book – MA06: Hulseheath to Manchester Airport (CT-05, CT-06, CT-10, LV-01, LV-03, LV-04, SV-05)	Volume 5: Map Book – Land quality (LQ-01)
Volume 2: Map Book – MA07: Davenport Green to Ardwick (CT-05, CT-06, CT-10, LV-01, LV-03, LV-04)	Volume 5: Map Book – Landscape and visual (LV-00, LV-02, LV-07, LV-08, LV-17)
Volume 2: Map Book – MA08: Manchester Piccadilly Station (CT-05, CT-06, CT-10, LV-03, LV-04, SV-05)	Volume 5: Map Book – Socio-economics (SE-01)
Volume 4: Off-route effects map book	Volume 5: Map Book – Sound, noise and vibration (SV-02, SV-03, SV-08, SV-09)
Volume 5: Map Book – Agriculture, forestry and soils (AG-01, AG-04)	Volume 5: Map Book – Traffic and transport (TR-01, TR-03, TR-04, TR-08)
Volume 5: Map Book – Air quality (AQ-01)	Volume 5: Map Book – Water resources and flood risk (WR-01, WR-03, WR-05, WR-06)
Volume 5: Map Book – Community (CM-01)	

High Speed Rail (Crewe – Manchester)

Supplementary Environmental Statement 2 and Additional Provision 2 Environmental Statement

Data dictionary and definitions

Data dictionary and definitions

Legend features	Definition	Source	Copyright
Airborne noise and vibration assessment location	Locations near surface sections of the route at which a quantitative assessment of airborne sound and ground-borne vibration impacts due to the operation of the Proposed Scheme has been carried out. These are labelled with an assessment location reference code to enable cross-reference to the operational sound and vibration reports in Volume 5, Appendix SV-003-0MA0X.	High Speed Two (HS2) Ltd	
Airborne noise assessment location	Locations at which a quantitative assessment of airborne sound impacts due to the operation of the Proposed Scheme has been carried out. These are labelled with an assessment location reference code to enable cross-reference to the operational sound and vibration reports in Volume 5, Appendix SV-003-0MA0X.	High Speed Two (HS2) Ltd	
Airborne noise study area	This defines the area within which operational airborne sound impacts of the scheme have been quantitatively assessed. This area is defined as within 1km of surface sections of the route in rural areas and within 500m of surface sections of the route in urban areas.	High Speed Two (HS2) Ltd	
Airborne noise, ground-borne sound and vibration assessment location	Locations at which a quantitative assessment of airborne sound, ground-borne sound and vibration impacts due to the operation of the Proposed Scheme has been carried out. These are labelled with an assessment location reference code to enable cross-reference to the operational sound and vibration reports in Volume 5, Appendix SV-003-0MA0X.	High Speed Two (HS2) Ltd	
Baseline measurement locations	These represent locations at which sound measurements were carried out as part of the baseline sound surveys. Measurements of existing baseline sound levels at these locations have been used to derive baseline sound levels at operational and construction sound assessment locations. These baseline measurement locations are labelled with a reference number which enables cross-reference to the baseline sound reports contained in Volume 5: Appendix SV-002-0MA0X, which also describes how these are linked to baseline levels at assessment locations.	High Speed Two (HS2) Ltd	
Committed developments - SV only	This informs the assessment of the future baseline. A development consent or allocation that has full or outline planning permission, or is allocated in an adopted development plan.	High Speed Two (HS2) Ltd	
Community area boundary	The Environmental Statement has been split into sections called Community Areas.	High Speed Two (HS2) Ltd	© Crown copyright. Reproduced by permission of Ordnance Survey Licence Number 100049190. Year of Publication 2019.

Legend features	Definition	Source	Copyright
Construction airborne sound and vibration assessment location	Locations at which a quantitative assessment of construction noise and vibration impacts of the Proposed Scheme has been carried out. These are labelled with an assessment location reference code to enable cross-reference to the construction sound & vibration reports contained in Volume 5: Appendix SV-002-0MA0X.	High Speed Two (HS2) Ltd	
Construction airborne sound assessment location	Locations at which a quantitative assessment of construction noise impacts of the Proposed Scheme has been carried out. These are labelled with an assessment location reference code to enable cross-reference to the construction sound & vibration reports contained in Volume 5: Appendix SV-002-0MA0X.	High Speed Two (HS2) Ltd	
Construction vibration assessment locations	Locations at which a quantitative assessment of construction vibration impacts of the Proposed Scheme has been carried out. These are labelled with an assessment location reference code to enable cross-reference to the construction sound & vibration reports contained in Volume 5: Appendix SV-002-0MA0X.	High Speed Two (HS2) Ltd	
County boundary	County boundaries from Ordnance Survey boundary mapping.	Ordnance Survey	© Crown copyright. Reproduced by permission of Ordnance Survey Licence Number 100049190. Year of Publication 2021.
Depot, station, headhouse or portal building	Extends to cover operational footprint of each depot and station and the footprint of each tunnel vent shaft and headhouse at surface level. Excludes any ancillary buildings associated with these structures.	High Speed Two (HS2) Ltd	
District/Borough boundary	Ordnance Survey local authority boundary mapping.	Ordnance Survey	© Crown copyright. Reproduced by permission of Ordnance Survey Licence Number 100049190. Year of Publication 2021.
Engineering earthworks: Cutting	Cuttings created in the construction of the railway and associated works such as highways.	High Speed Two (HS2) Ltd	
Engineering earthworks: Embankment	Embankments created in the construction of the railway and associated works such as highways.	High Speed Two (HS2) Ltd	

Legend features	Definition	Source	Copyright
<p>Envisaged features further reducing noise effects: Other environmental e.g. landscaping Engineering e.g. cuttings</p>	<p>Other environmental features e.g. landscaping: These lines represent environmental mitigation features provided for reasons other than noise mitigation which also reduce sound levels from the Proposed Scheme to the surrounding environment. These features are not placed specifically to reduce or remove a likely significant noise effect. Examples include landscaping and visual mitigation earthworks (non-engineering earthworks). Engineering e.g. cuttings: These lines represent engineering features which reduce sound levels from the Proposed Scheme to the surrounding environment but are not placed specifically to reduce or remove a likely significant noise effect. Examples include cuttings and safety barriers on viaducts which are not close to sensitive receptors.</p>	<p>High Speed Two (HS2) Ltd</p>	
<p>Envisaged mitigation to avoid / reduce significant noise effects: Landscaping and/or fence barriers Engineering e.g. cuttings</p>	<p>Landscaping and/or fence barriers: These lines represent the envisaged mitigation provided specifically to reduce sound levels from the Proposed Scheme at sensitive receptors in order to reduce or remove likely operational significant noise effects. Examples include noise fence barriers or earth bunds (non-engineering earthworks) acting as noise barriers. These features are labelled with the height of the top of the barrier/bund above rail level. Engineering e.g. cuttings: These lines represent engineering features of the route which reduce sound levels from the Proposed Scheme at potentially significant sensitive receptors. These features, therefore, serve a material purpose in reducing or avoiding likely significant noise effects. Examples include engineering cuttings near to sensitive receptors. These features are labelled with the height of the top of the feature above rail level.</p>	<p>High Speed Two (HS2) Ltd</p>	
<p>Ground-borne noise & vibration study area (highly sensitive non-residential)</p>	<p>This defines the area within which direct operational ground-borne sound and vibration impacts of the scheme at highly sensitive non-residential receptors have been quantitatively assessed. This area is defined as within 200m of the route.</p>	<p>High Speed Two (HS2) Ltd</p>	
<p>Ground-borne noise & vibration study area (residential and non-residential)</p>	<p>This defines the area within which direct operational ground-borne sound and vibration impacts of the scheme at residential and non-residential receptors have been quantitatively assessed. This area is defined as within 85m of the route.</p>	<p>High Speed Two (HS2) Ltd</p>	
<p>Ground-borne noise and/or vibration assessment location</p>	<p>Locations near tunnelled sections of the route at which a quantitative assessment of ground-borne sound and vibration impacts due to the operation of the Proposed Scheme has been carried out. These are labelled with an assessment location reference code to enable cross-reference to the operational sound & vibration reports contained in Volume 5: Appendix SV-003-0MA0X.</p>	<p>High Speed Two (HS2) Ltd</p>	
<p>Ground-borne noise or vibration impact at residential buildings</p>	<p>Buildings at which an operational ground-borne sound or vibration impact is predicted from the Proposed Scheme.</p>	<p>High Speed Two (HS2) Ltd</p>	

Legend features	Definition	Source	Copyright
Land potentially required during construction	Boundary defining the maximum possible extent of construction works required to build HS2 as far as the current level of design allows. This only covers surface works and includes all tunnel portals, vent shafts and headhouses, but does not apply to wholly tunnelled sections or to air rights. It also encompasses associated highway, access, drainage and utility works.	High Speed Two (HS2) Ltd	
LpAFmax exceeds 60dB façade	Assessment locations where the predicted value of LpAFmax is 60 dB or greater having applied a façade correction of +2.5 dB to the predicted free field value.	High Speed Two (HS2) Ltd	
Noise Important Areas defined in national noise action plans (Defra 2014)/ (Defra 2019)	The Environmental Noise (England) Regulations 2006 (SI 2006/2238) required Defra, as the Competent Authority, to implement the Environmental Noise Directive in England, which requires amongst other things, the adoption of Action Plans, based upon the noise exposure assessment results. The noise action plan(s) "apply in particular to the most important areas as established by the strategic noise maps". These identified areas are referred to as noise important areas.	High Speed Two (HS2) Ltd	
Non engineering earthworks: Cutting	Cuttings created in the construction of landscape features and mitigation measures.	High Speed Two (HS2) Ltd	
Non engineering earthworks: Embankment	Embankments created in the construction of landscape features and mitigation measures.	High Speed Two (HS2) Ltd	
Operational airborne noise impacts at residential buildings	The buildings shown on SV-02 and SV-05 are colour-coded according to the magnitude of the predicted noise impacts of the Proposed Scheme. Noise impacts are calculated by comparing the sound levels predicted if the Proposed Scheme did not go ahead with those if it did (details of this process can be found in Volume 5: Appendix SV-001-00000). Panel B on SV02/SV-05 contains a key showing the colours used with the corresponding impact categories. The impacts presented are the greatest (i.e. worst-case) of the impacts predicted for daytime and night-time.	High Speed Two (HS2) Ltd	
Potential additional noise insulation (triggered by maximum sound levels at night)	This represents dwellings which would potentially be provided with noise insulation due maximum sound levels from the Proposed Scheme (further information regarding assessment criteria can be found in Volume 5 Appendix SV-001-00000).	High Speed Two (HS2) Ltd	
Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)	This represents dwellings which would potentially be provided with noise insulation due to noise from the Proposed Scheme exceeding the World Health Organization (WHO) night noise guidelines interim target (further information regarding assessment criteria can be found in Volume 5 Appendix SV-001-00000).	High Speed Two (HS2) Ltd	
Potential noise insulation (triggered by Noise Insulation Regulations 1996)	This represents dwellings which would potentially qualify for noise insulation under the Noise Insulation (Railways and Other Guided Transport Systems) Regulations 1996 (further information regarding assessment criteria can be found in Volume 5 Appendix SV-001-00000).	High Speed Two (HS2) Ltd	

Legend features	Definition	Source	Copyright
Route in bored tunnel Route in green tunnel	Represents the proposed route of HS2, split into route in bored tunnel and route in green tunnel sections.	High Speed Two (HS2) Ltd	
Route on surface	Represents the proposed route of HS2, split into route on surface and tunnelled sections.	High Speed Two (HS2) Ltd	
Sound contours	The sound levels from the Proposed Scheme (expressed as LpAeq,T and representing sound from the new railway only) are presented as contours lines, which represent equal sound levels. Further details regarding contour values are provided on the SV-02, SV-05, SV-08 and SV-09 map series.	High Speed Two (HS2) Ltd	

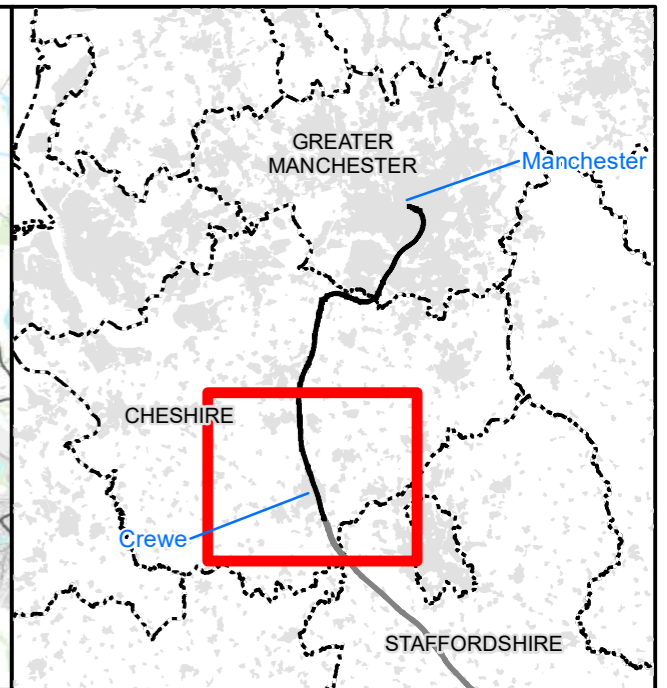
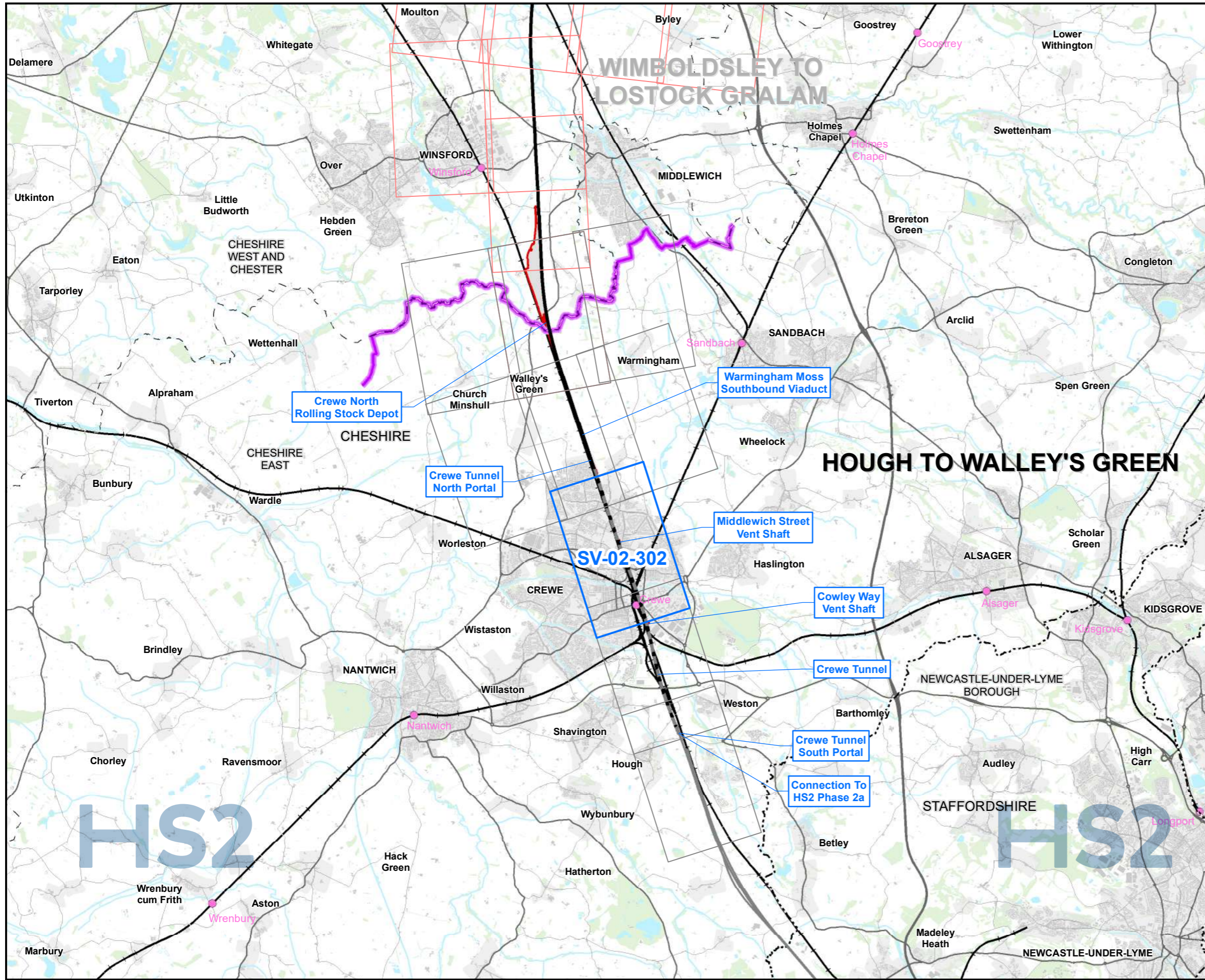
High Speed Rail (Crewe – Manchester)

Supplementary Environmental Statement 2 and Additional Provision 2 Environmental Statement

MA01: Hough to Walley's Green

SV-02 – Operational Airborne Noise and Vibration Impacts and
Likely Significant Effects

SV-03 – Construction Airborne Noise and Vibration
Likely Significant Effects



Map Series Information:

SV-02 presents the direct operational noise impacts and likely significant effects of the Proposed Scheme. The SV-02 figure series necessarily contains a large amount of information relating to the operational noise and vibration assessment. It is designed to communicate visually the assessment process from the prediction of impacts to the determination of likely residual significant effects. The corresponding text is included in Volume 2 and Volume 5. Key items on the map include the following:

- The Proposed Scheme (the proposed railway alignments and surrounding associated earthworks/roads);
- blue and green lines representing the wayside airborne noise mitigation measures included in the Proposed Scheme;
- the study areas, which indicate the areas within which direct sound and vibration impacts of the Proposed Scheme have been quantitatively assessed;
- the calculated direct operational impacts of the scheme, displayed as colour-coded buildings and symbols representing buildings that would potentially qualify for noise insulation;
- sound contours representing sound produced by the new railway (displayed in a simpler manner than on SV-08 and SV-09 in order not to obscure the features on the map series);
- the assessment locations at which a quantitative prediction of sound and impacts have been carried out (representing a number of nearby buildings). These are labelled with a unique reference number to enable cross-reference to further detail regarding the assessments in main ES Volume 5: Appendix SV-003-0MA0X or, Volume 5: Appendix SV-002-0MA0X; and
- labels indicating where the likely residual direct noise or vibration significant effects have been identified. These are labelled with a unique reference number to enable cross-reference to further detail regarding the assessments in main ES Volume 5: Appendix SV-003-0MA0X or, Volume 5: Appendix SV-002-0MA0X.

The design of the Proposed Scheme will be informed through stakeholder engagement and further engineering and environmental studies. A more detailed explanation of each legend item included on the figures and on the separate legend page can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

Main Map Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- Existing railway station
- County boundary
- District/Borough boundary
- Map sheets included in this community area
- Map sheets included in this community area with no amendment
- Map sheets not included in this community area

Map Number	SV-02-INDEX-MA01
Map Name	Index Map of: Operational Airborne Noise and Vibration Impacts and Likely Significant Effects SES2 and AP2 ES Community Area MA01: Hough to Walley's Green

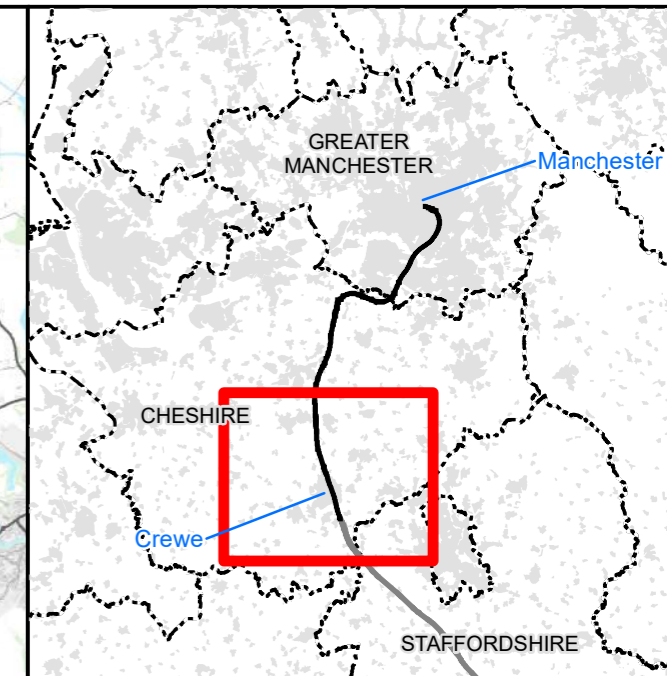
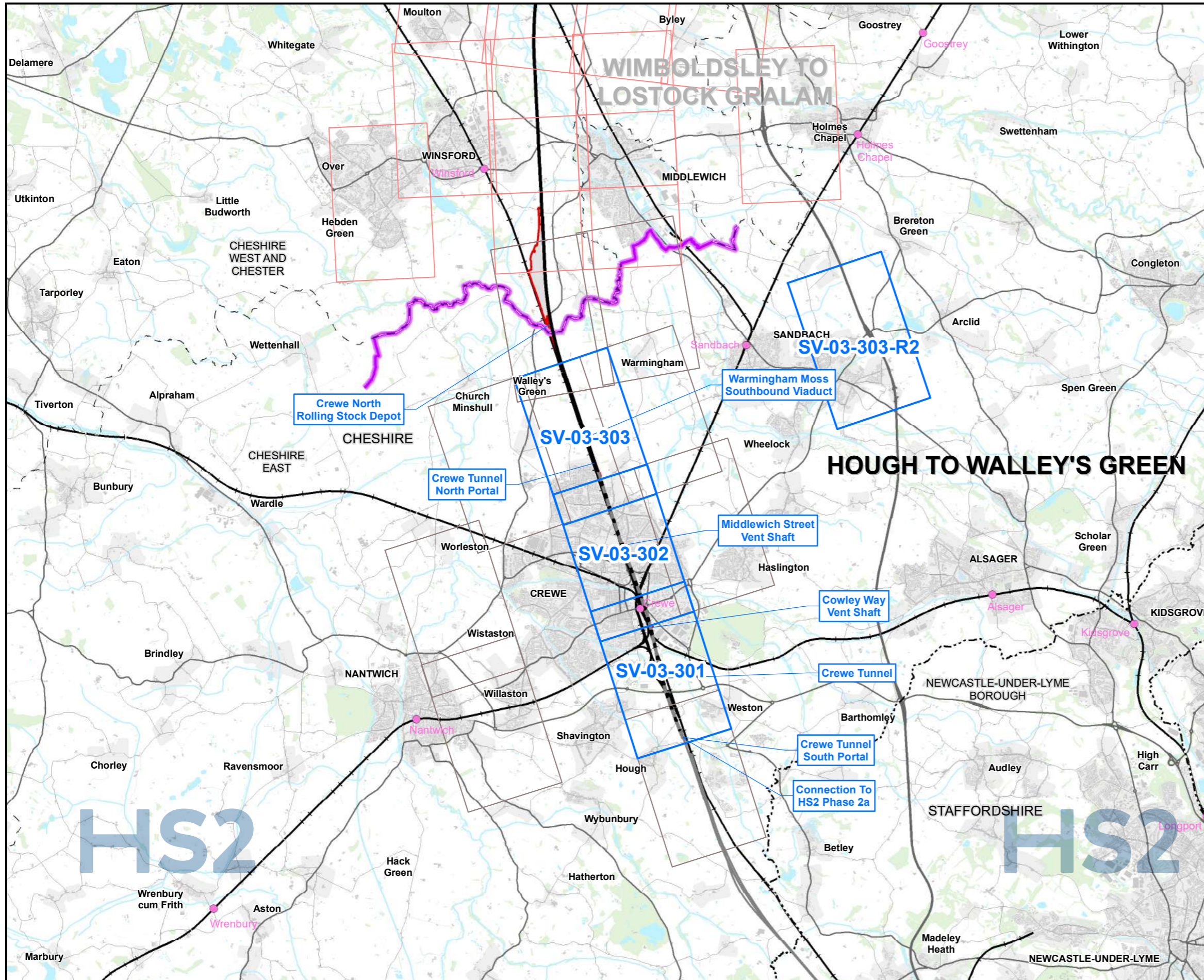
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Map Series Information:

The SV-03 figure series accompanies the construction noise & vibration assessments. It shows the locations at which a quantitative assessment of the direct effects of construction noise and/or vibration has been carried out. These are labelled as assessment locations with a reference number to enable cross-reference to the construction noise and vibration reports contained in Volume 5: Appendix SV-002-00000

The figure series also shows locations at which baseline sound measurements were carried out.

These baseline measurement locations are labelled with a reference number to enable cross-reference to the baseline sound reports contained in Volume 5: Appendix SV-002-00000.

The design of the Proposed Scheme will be informed through stakeholder engagement and further engineering and environmental studies.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Main Map Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- Existing railway station
- County boundary
- District/Borough boundary
- Map sheets included in this community area
- Map sheets included in this community area with no amendment
- Map sheets not included in this community area

Map Number	SV-03-INDEX-MA01
Map Name	Index Map of: Construction Airborne Noise and Vibration Likely Significant Effects SES2 and AP2 ES Community Area MA01: Hough to Walley's Green

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Doc Number: 2PT27-MWJ-EV-MAP-M000-002083-P01 Date: 20/04/23

HS2 (rail only) noise level $L_{p,Aeq,T}$		Potential noise effect ^{1, 2}	
Night-time $L_{p,Aeq,T}$ (T=23:00 to 07:00)	Daytime $L_{p,Aeq,T}$ (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
> 55 dB	> 65 dB	Likely significant effect on dwellings indicated by ○, * or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV-003-00000. Likely significant effect indicated by MA0X-O-N# ²
40 to 55 dB	50 to 65 dB	Effect dependent on noise level change and significance criteria. Likely significant effects on groups of dwellings and any shared community open areas indicated by MA0X-O-C# ²	
< 40 dB	< 50 dB	Generally no adverse effect expected ¹	

Operational airborne noise impacts at residential buildings¹

- Major adverse
- Moderate adverse
- Minor adverse
- Negligible
- Beneficial

- Potential additional noise insulation (triggered by maximum noise levels at night)¹
- * Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)¹
- ✕ Potential noise insulation (triggered by Noise Insulation Regulations 1996)¹
- L_{pAFmax} exceeds 60dB façade
- HS2 train only L_{pAFmax} +2.5dB façade correction

Ground-borne noise or vibration impact at residential buildings

See text for full description and extent of likely significant effect. (*Where SES/AP is reason for likely significant effect)

Likely significant effect removed/added/different (as a result of amendment*: AP2-XXX-YYY). SES2/AP2 change ref.

Significant effect descriptor

Removed effect Added effect Different effect



¹ For further information see Volume 5 Appendix SV-001-00000 of the Main ES
² For further details of the SES2/AP2 ES assessment see Volume 5 Appendix SV-003-00000

Map Number	SV-02 - Legend
Map Name	Operational Airborne Noise and Vibration Impacts and Likely Significant Effects SES2 and AP2 ES

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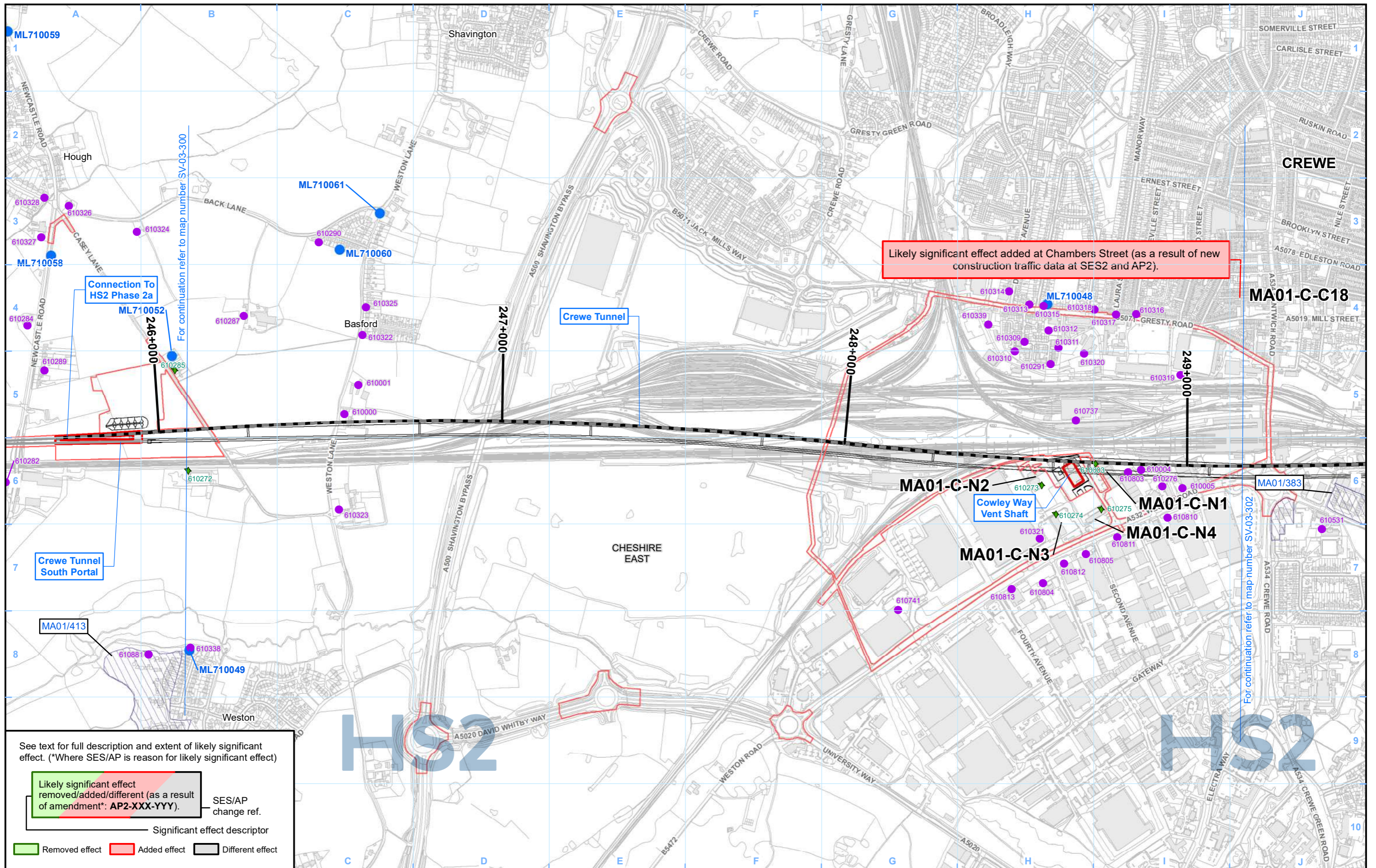
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Likely significant effect added at Chambers Street (as a result of new construction traffic data at SES2 and AP2).

See text for full description and extent of likely significant effect. (*Where SES/AP is reason for likely significant effect)

Likely significant effect removed/added/different (as a result of amendment*: AP2-XXX-YYY). — SES/AP change ref.

— Significant effect descriptor

█ Removed effect
 █ Added effect
 █ Different effect

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- County boundary
- District/Borough boundary

Engineering earthworks:

- Embankment
- Cutting
- Land potentially required during construction

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

- Committed developments - SV Only
- Construction airborne sound assessment location
- Construction vibration assessment location
- Construction airborne sound and vibration assessment location
- Baseline measurement location

labelled with assessment location ID reference number (for details of the SES2/AP2 ES assessment results see Volume 5 Appendix SV-002-00000) (labelled with measurement location reference code).

Likely significant effects from construction noise and/or vibration on groups of dwellings and any shared community open areas, and non-residential receptors, are indicated by MA01-C-C# and MA01-C-N#, respectively.

Map Number: SV-03-301

Map Name: Construction Airborne Noise and Vibration Likely Significant Effects SES2 and AP2 ES

Community Area MA01: Hough to Walley's Green

HS2

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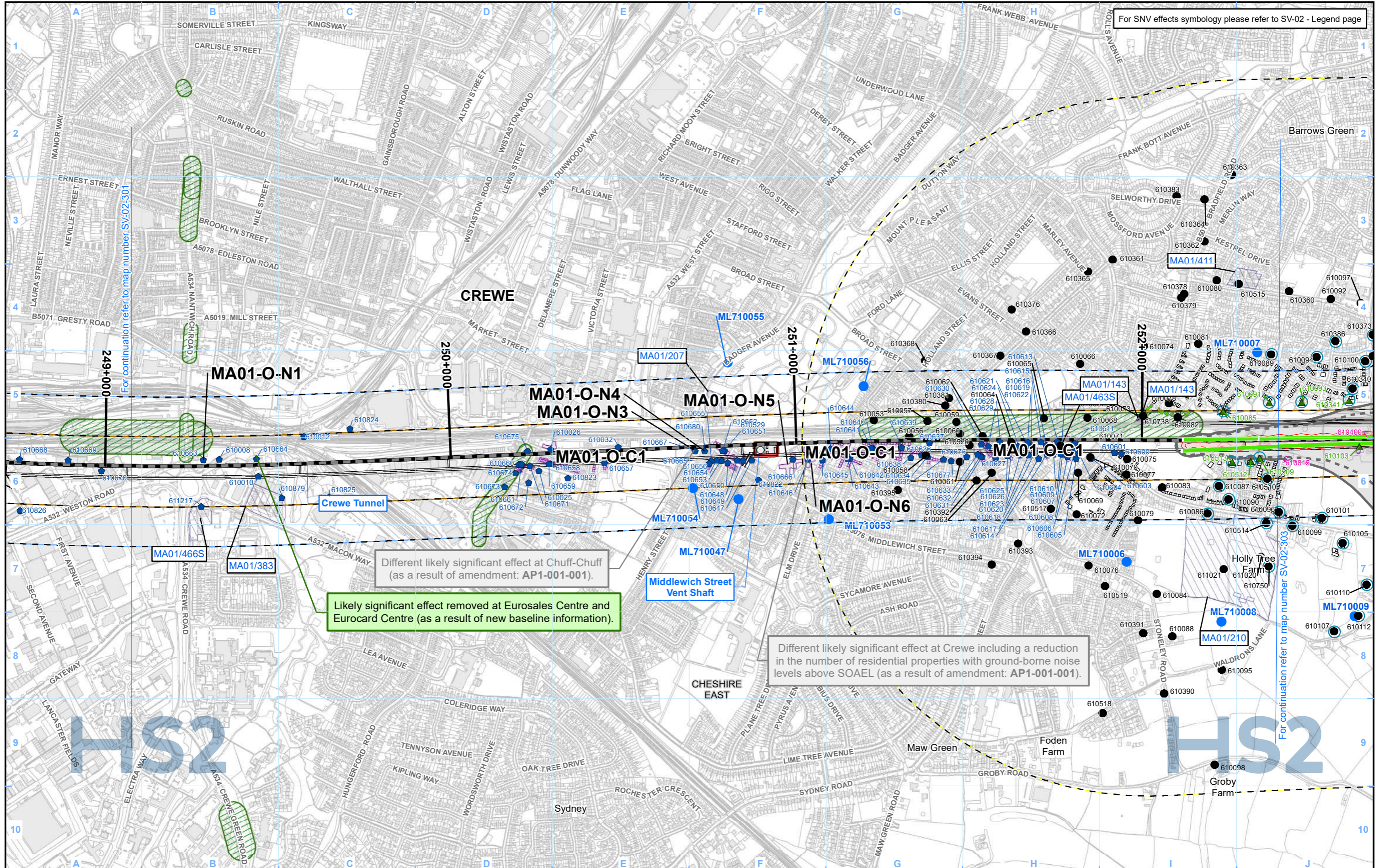
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Date: 21/04/23

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Metres



Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- County boundary
- District/Borough boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Noise related features

Envisaged mitigation to avoid / reduce significant noise effects:

- Landscaping and/or fence barriers (labelled with total noise barrier height above rail)
- Engineering e.g. cuttings (green tunnels separately marked)

Envisaged features further reducing noise effects:

- Other environmental e.g. landscaping
- Engineering e.g. cuttings

Noise Important Areas defined in national noise action plans (Defra 2014)

- Committed developments - SV Only
- Airborne noise study area

- Ground-borne noise & vibration study area (residential and non-residential)
- Ground-borne noise & vibration study area (highly sensitive non-residential)
- Airborne noise assessment location
- Airborne noise and vibration assessment location
- Ground-borne noise and/or vibration assessment location
- Airborne noise, ground-borne sound and vibration assessment location
- Baseline measurement locations

Map Number: SV-02-302

Map Name: Operational Airborne Noise and Vibration Impacts and Likely Significant Effects SES2 and AP2

Community Area MA01: Hough to Walley's Green

HS2

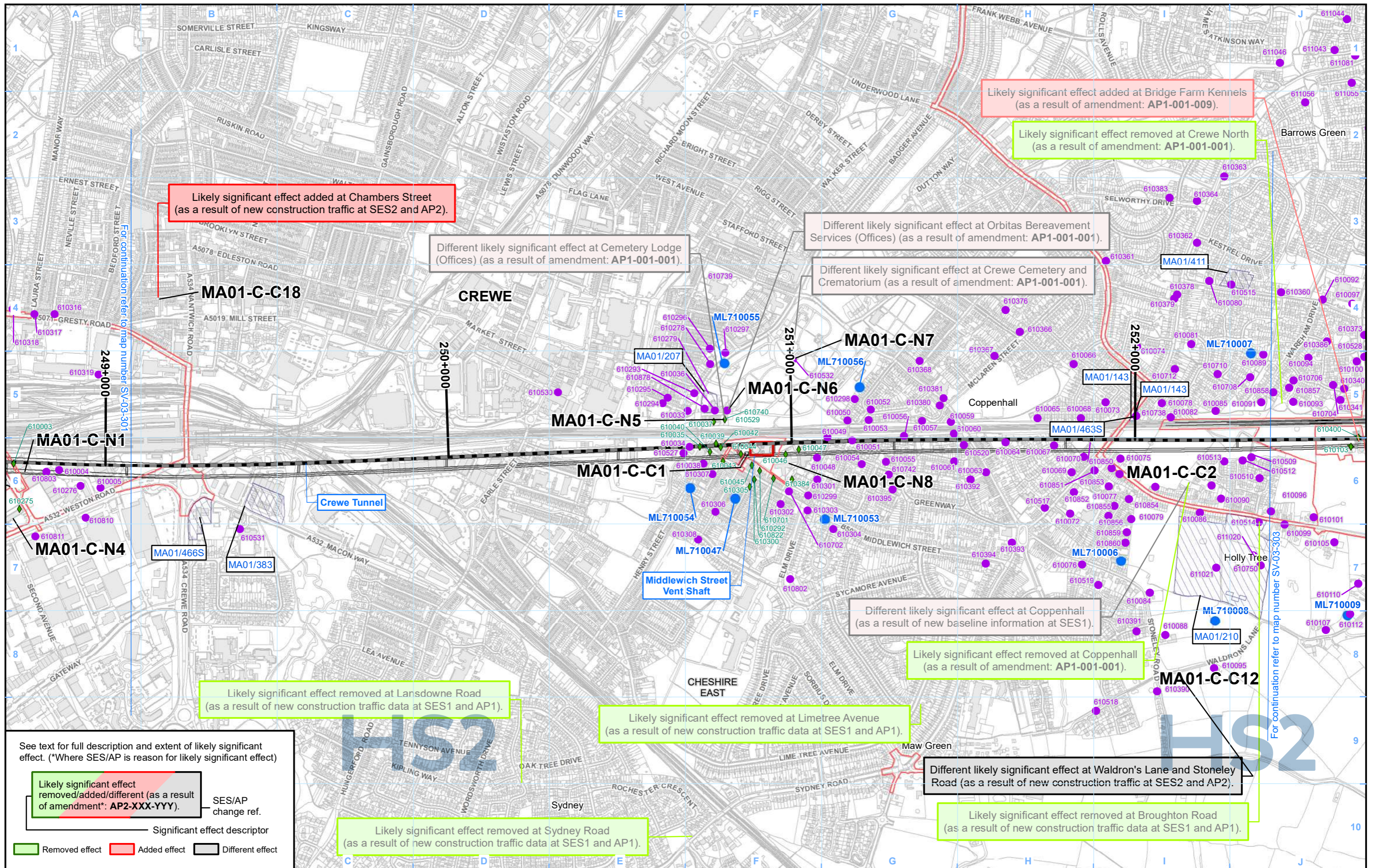
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Date: 13/04/23



See text for full description and extent of likely significant effect. (*Where SES/AP is reason for likely significant effect)

Likely significant effect removed/added/different (as a result of amendment*: AP2-XXX-YYY).	SES/AP change ref.
Significant effect descriptor	
Removed effect	Added effect
Different effect	

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- County boundary
- District/Borough boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Land potentially required during construction

Legend - Sound related features

- Committed developments - SV Only
- Construction airborne sound assessment location
- Construction vibration assessment location
- Construction airborne sound and vibration assessment location
- Baseline measurement location

labelled with assessment location ID reference number (for details of the SES2/AP2 ES assessment results see Volume 5 Appendix SV-002-00000) (labelled with measurement location reference code).

Likely significant effects from construction noise and/or vibration on groups of dwellings and any shared community open areas, and non-residential receptors, are indicated by MA01-C-C# and MA01-C-N#, respectively.

Map Number: SV-03-302

Map Name: Construction Airborne Noise and Vibration Likely Significant Effects SES2 and AP2 ES

Community Area MA01: Hough to Walley's Green

HS2

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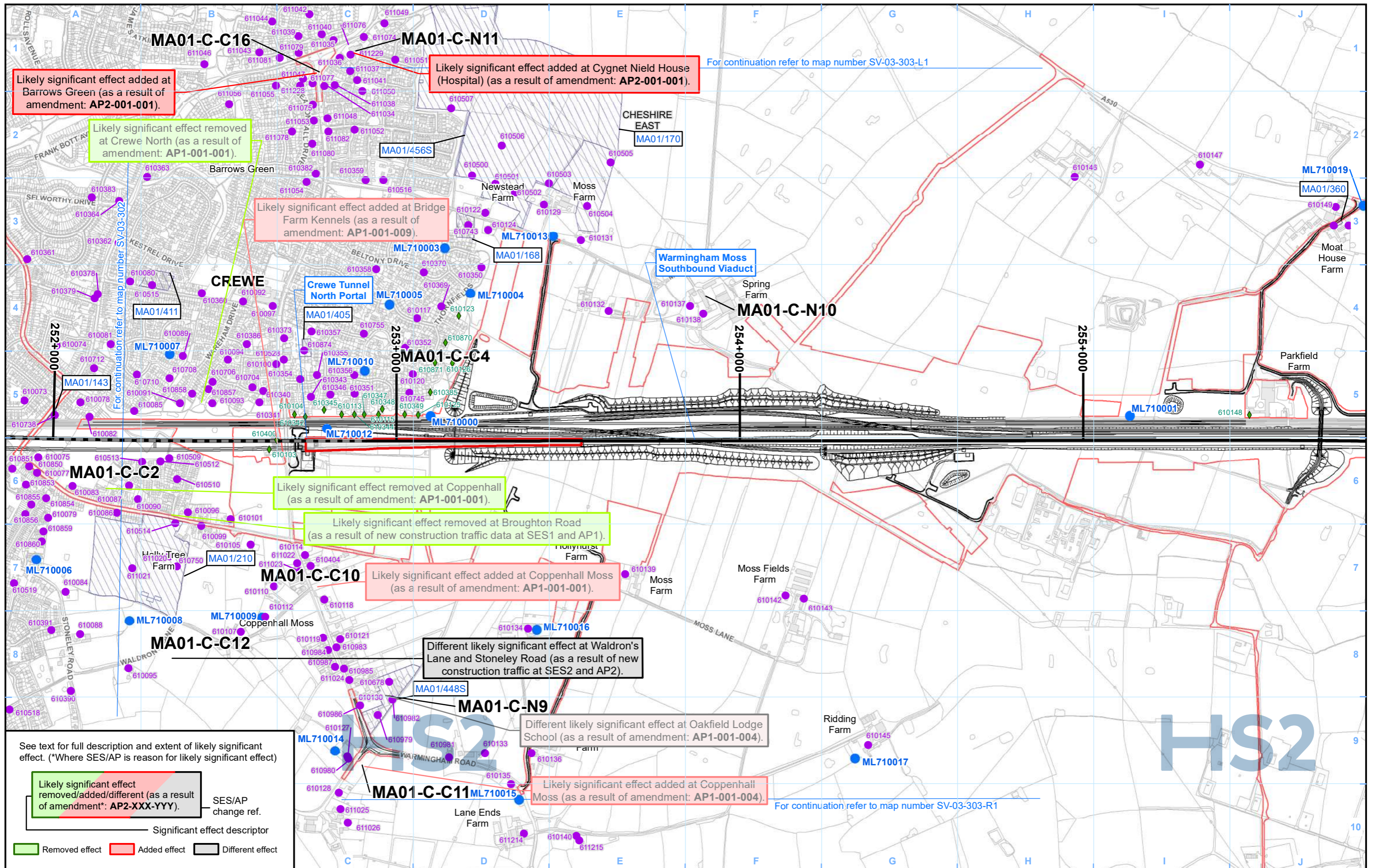
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Date: 21/04/23

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Likely significant effect added at Barrows Green (as a result of amendment: AP2-001-001).

Likely significant effect removed at Crewe North (as a result of amendment: AP1-001-001).

Likely significant effect added at Cygnet Nield House (Hospital) (as a result of amendment: AP2-001-001).

Likely significant effect added at Bridge Farm Kennels (as a result of amendment: AP1-001-009).

Likely significant effect removed at Coppenhall (as a result of amendment: AP1-001-001).

Likely significant effect removed at Broughton Road (as a result of new construction traffic data at SES1 and AP1).

Likely significant effect added at Coppenhall Moss (as a result of amendment: AP1-001-001).

Different likely significant effect at Waldron's Lane and Stoneley Road (as a result of new construction traffic at SES2 and AP2).

Different likely significant effect at Oakfield Lodge School (as a result of amendment: AP1-001-004).

Likely significant effect added at Coppenhall Moss (as a result of amendment: AP1-001-004).

See text for full description and extent of likely significant effect. (*Where SES/AP is reason for likely significant effect)

Likely significant effect removed/added/different (as a result of amendment*: AP2-XXX-YYY). — SES/AP change ref.

— Significant effect descriptor

Removed effect (Green box) Added effect (Red box) Different effect (Grey box)

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- County boundary
- District/Borough boundary

Legend - Sound related features

Engineering earthworks: Non engineering earthworks:

- Embankment
- Cutting
- Embankment
- Cutting
- Land potentially required during construction

Legend - Sound related features

- Committed developments - SV Only
- Construction airborne sound assessment location
- Construction vibration assessment location
- Construction airborne sound and vibration assessment location
- Baseline measurement location

labelled with assessment location ID reference number (for details of the SES2/AP2 ES assessment results see Volume 5 Appendix SV-002-00000) (labelled with measurement location reference code).

Likely significant effects from construction noise and /or vibration on groups of dwellings and any shared community open areas, and non-residential receptors, are indicated by MA01-C-C# and MA01-C-N#, respectively.

Map Number: SV-03-303

Map Name: Construction Airborne Noise and Vibration Likely Significant Effects SES2 and AP2 ES

Community Area MA01: Hough to Walley's Green

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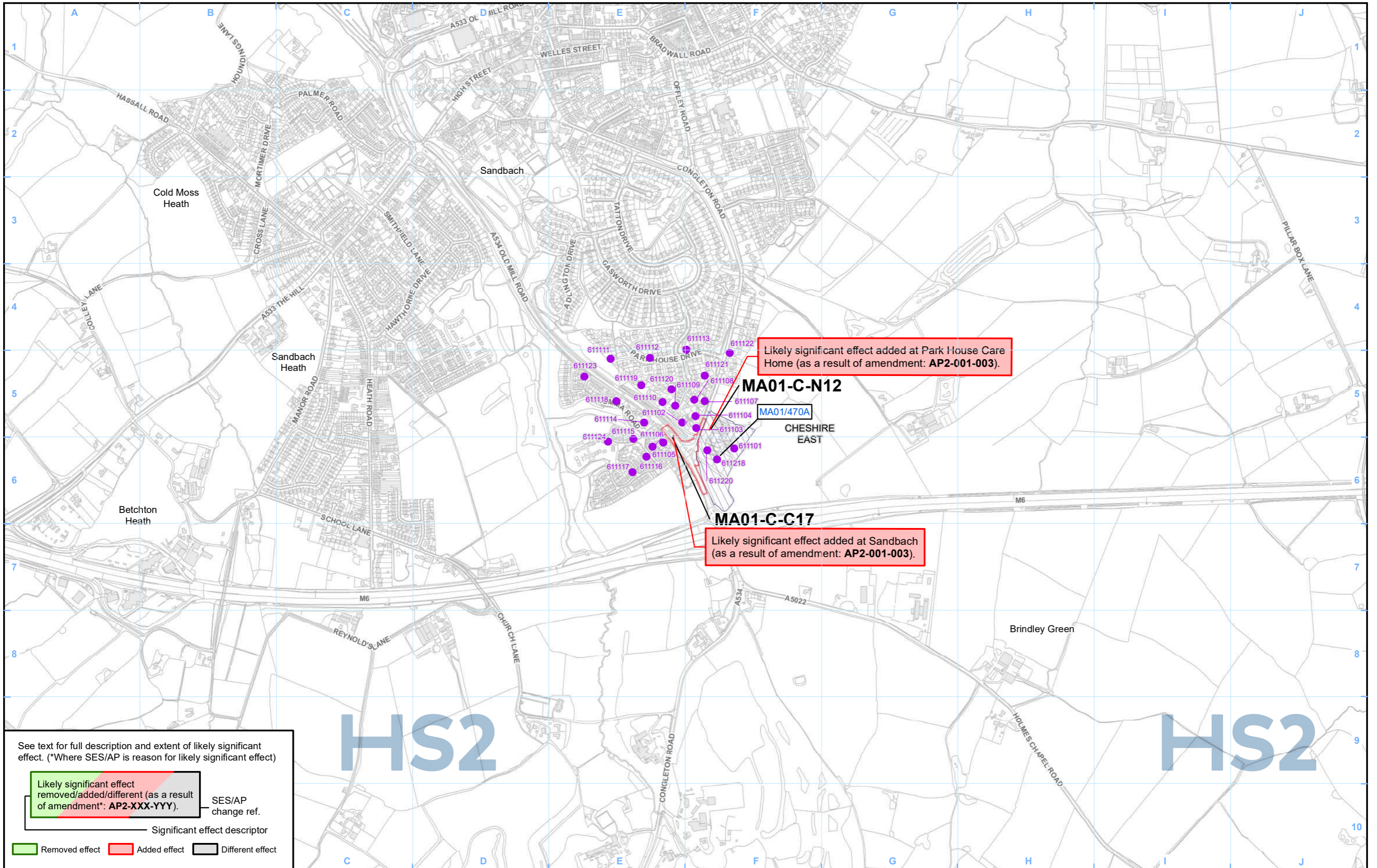
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Doc Number: 2PT27-MWJ-EV-MAP-M000-002050-P01

Date: 21/04/23

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See text for full description and extent of likely significant effect. (*Where SES/AP is reason for likely significant effect)

Likely significant effect removed/added/different (as a result of amendment*: AP2-XXX-YYY).	SES/AP change ref.
Significant effect descriptor	
Removed effect	Added effect
Different effect	

HS2

HS2

Legend - General features

- Route in bored tunnel
 - Route in green tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Community area boundary
 - County boundary
 - District/Borough boundary
- Engineering earthworks:
- Embankment
 - Cutting
 - Land potentially required during construction
- Non engineering earthworks:
- Embankment
 - Cutting

Legend - Sound related features

- Committed developments - SV Only
 - Construction airborne sound assessment location
 - Construction vibration assessment location
 - Construction airborne sound and vibration assessment location
 - Baseline measurement location
- labelled with assessment location ID reference number (for details of the SES2/AP2 ES assessment results see Volume 5 Appendix SV-002-00000) (labelled with measurement location reference code).
- Likely significant effects from construction noise and /or vibration on groups of dwellings and any shared community open areas, and non-residential receptors, are indicated by MA01-C-C# and MA01-C-N#, respectively.

Map Number	SV-03-303-R2
Map Name	Construction Airborne Noise and Vibration Likely Significant Effects SES2 and AP2 ES
	Community Area MA01: Hough to Walley's Green

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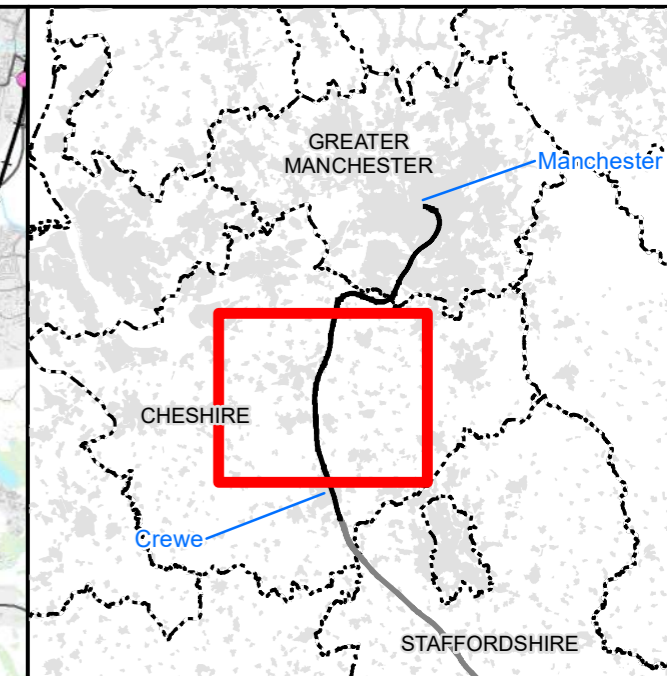
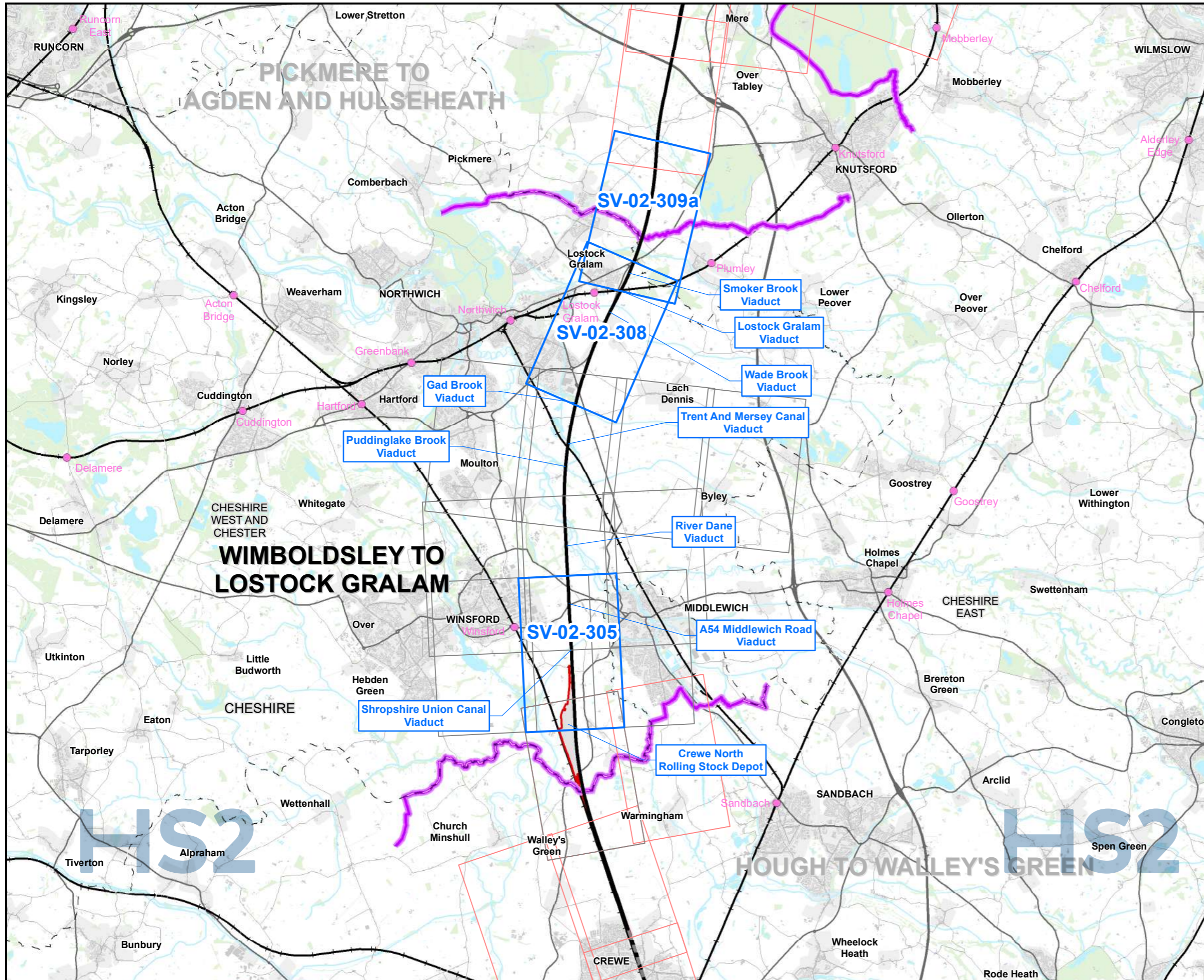
High Speed Rail (Crewe – Manchester)

Supplementary Environmental Statement 2 and Additional Provision 2 Environmental Statement

MA02: Wimboldsley to Lostock Gralam

SV-02 – Operational Airborne Noise and Vibration Impacts and
Likely Significant Effects

SV-03 – Construction Airborne Noise and Vibration
Likely Significant Effects



Map Series Information:

SV-02 presents the direct operational noise impacts and likely significant effects of the Proposed Scheme. The SV-02 figure series necessarily contains a large amount of information relating to the operational noise and vibration assessment. It is designed to communicate visually the assessment process from the prediction of impacts to the determination of likely residual significant effects. The corresponding text is included in Volume 2 and Volume 5. Key items on the map include the following:

- The Proposed Scheme (the proposed railway alignments and surrounding associated earthworks/roads);
- blue and green lines representing the wayside airborne noise mitigation measures included in the Proposed Scheme;
- the study areas, which indicate the areas within which direct sound and vibration impacts of the Proposed Scheme have been quantitatively assessed;
- the calculated direct operational impacts of the scheme, displayed as colour-coded buildings and symbols representing buildings that would potentially qualify for noise insulation;
- sound contours representing sound produced by the new railway (displayed in a simpler manner than on SV-08 and SV-09 in order not to obscure the features on the map series);
- the assessment locations at which a quantitative prediction of sound and impacts have been carried out (representing a number of nearby buildings). These are labelled with a unique reference number to enable cross-reference to further detail regarding the assessments in main ES Volume 5: Appendix SV-003-0MA0X or, Volume 5: Appendix SV-002-0MA0X; and
- labels indicating where the likely residual direct noise or vibration significant effects have been identified. These are labelled with a unique reference number to enable cross-reference to further detail regarding the assessments in main ES Volume 5: Appendix SV-003-0MA0X or, Volume 5: Appendix SV-002-0MA0X.

The design of the Proposed Scheme will be informed through stakeholder engagement and further engineering and environmental studies. A more detailed explanation of each legend item included on the figures and on the separate legend page can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

Main Map Legend

	Route in tunnel		Map sheets included in this community area
	Route on surface		Map sheets included in this community area with no amendment
	Depot, station, headhouse or portal building		Map sheets not included in this community area
	Community area boundary		
	Existing railway station		
	County boundary		
	District/Borough boundary		

Map Number	SV-02-INDEX-MA02
Map Name	Index Map of: Operational Airborne Noise and Vibration Impacts and Likely Significant Effects SES2 and AP2 ES Community Area MA02: Wimboldsley to Lostock Gralam

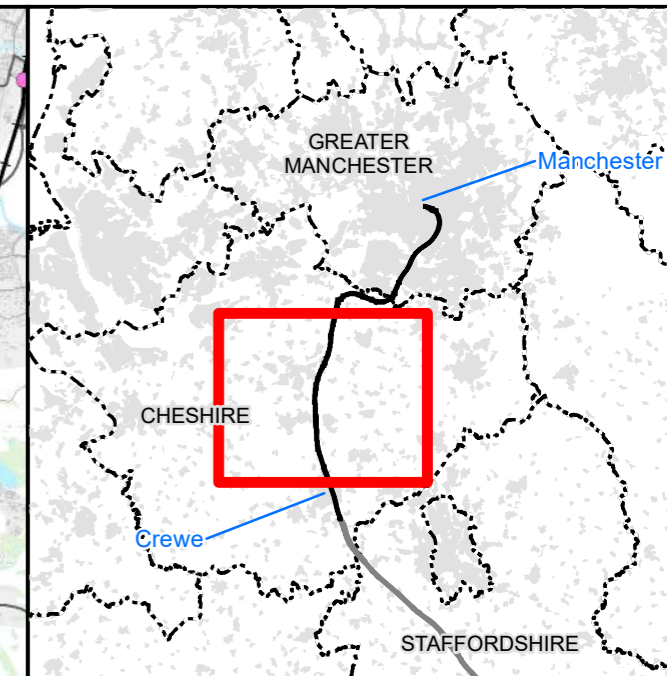
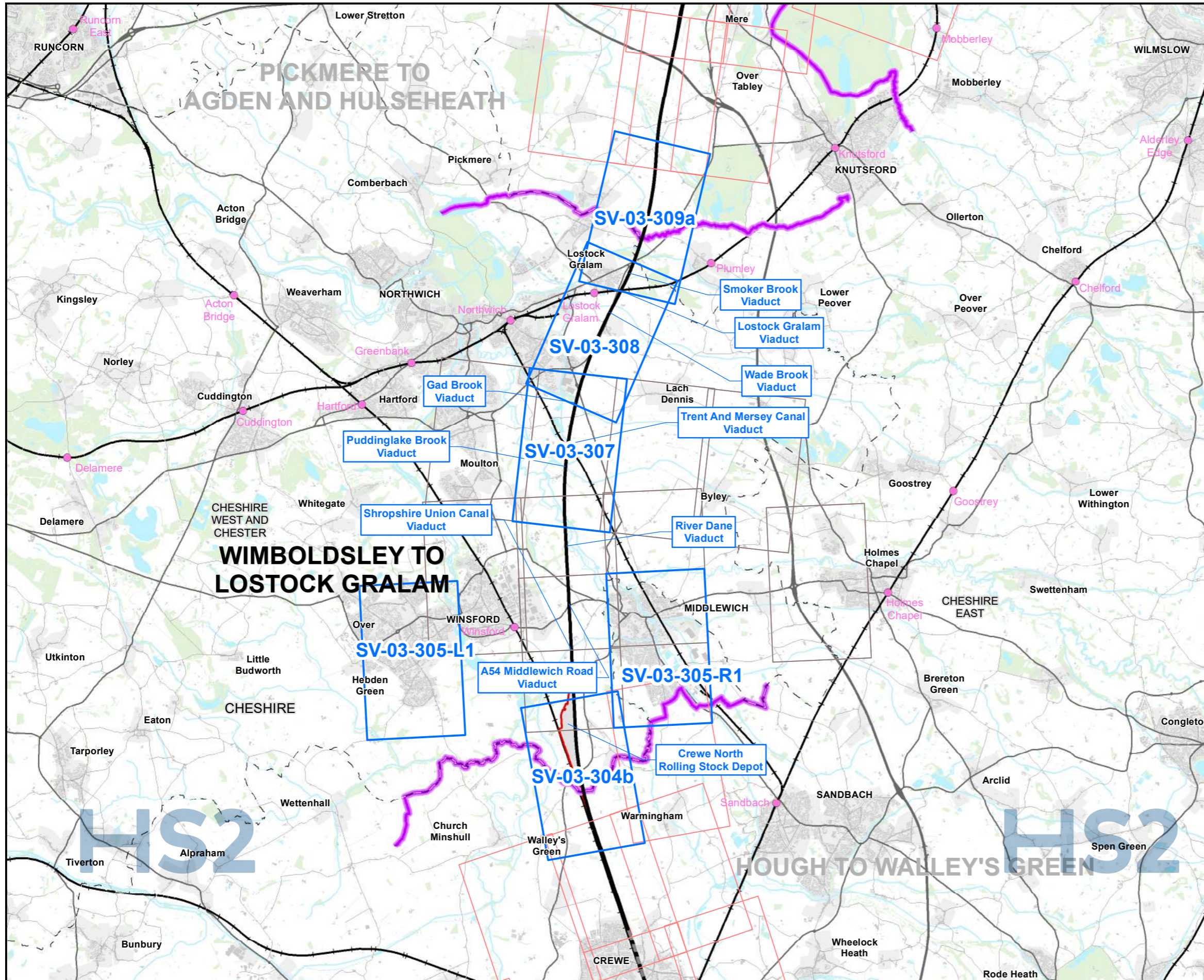
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Doc Number: 2PT27-MWJ-EV-MAP-M000-002038-P01 **Date:** 13/04/23



Map Series Information:

The SV-03 figure series accompanies the construction noise & vibration assessments. It shows the locations at which a quantitative assessment of the direct effects of construction noise and/or vibration has been carried out. These are labelled as assessment locations with a reference number to enable cross-reference to the construction noise and vibration reports contained in Volume 5: Appendix SV-002-00000

The figure series also shows locations at which baseline sound measurements were carried out.

These baseline measurement locations are labelled with a reference number to enable cross-reference to the baseline sound reports contained in Volume 5: Appendix SV-002-00000.

The design of the Proposed Scheme will be informed through stakeholder engagement and further engineering and environmental studies.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

- Main Map Legend**
- Route in tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Community area boundary
 - Existing railway station
 - County boundary
 - District/Borough boundary
 - Map sheets included in this community area
 - Map sheets included in this community area with no amendment
 - Map sheets not included in this community area

Map Number	SV-03-INDEX-MA02
Map Name	Index Map of: Construction Airborne Noise and Vibration Likely Significant Effects SES2 and AP2 ES Community Area MA02: Wimboldsley to Lostock Gralam

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Doc Number: 2PT27-MWJ-EV-MAP-M000-002084-P01

Date: 20/04/23

HS2 (rail only) noise level $L_{p,Aeq,T}$		Potential noise effect ^{1, 2}	
Night-time $L_{p,Aeq,T}$ (T=23:00 to 07:00)	Daytime $L_{p,Aeq,T}$ (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
> 55 dB	> 65 dB	Likely significant effect on dwellings indicated by ○, * or X avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV-003-00000. Likely significant effect indicated by MA0X-O-N# ²
40 to 55 dB	50 to 65 dB	Effect dependent on noise level change and significance criteria. Likely significant effects on groups of dwellings and any shared community open areas indicated by MA0X-O-C# ²	
< 40 dB	< 50 dB	Generally no adverse effect expected ¹	

Operational airborne noise impacts at residential buildings¹

- Major adverse
- Moderate adverse
- Minor adverse
- Negligible
- Beneficial

- Potential additional noise insulation (triggered by maximum noise levels at night)¹
- * Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)¹
- X Potential noise insulation (triggered by Noise Insulation Regulations 1996)¹
- L_{pAFmax} exceeds 60dB façade
- HS2 train only L_{pAFmax} +2.5dB façade correction

Ground-borne noise or vibration impact at residential buildings

See text for full description and extent of likely significant effect. (*Where SES/AP is reason for likely significant effect)

Likely significant effect removed/added/different (as a result of amendment*: AP2-XXX-YYY). SES2/AP2 change ref.

Significant effect descriptor

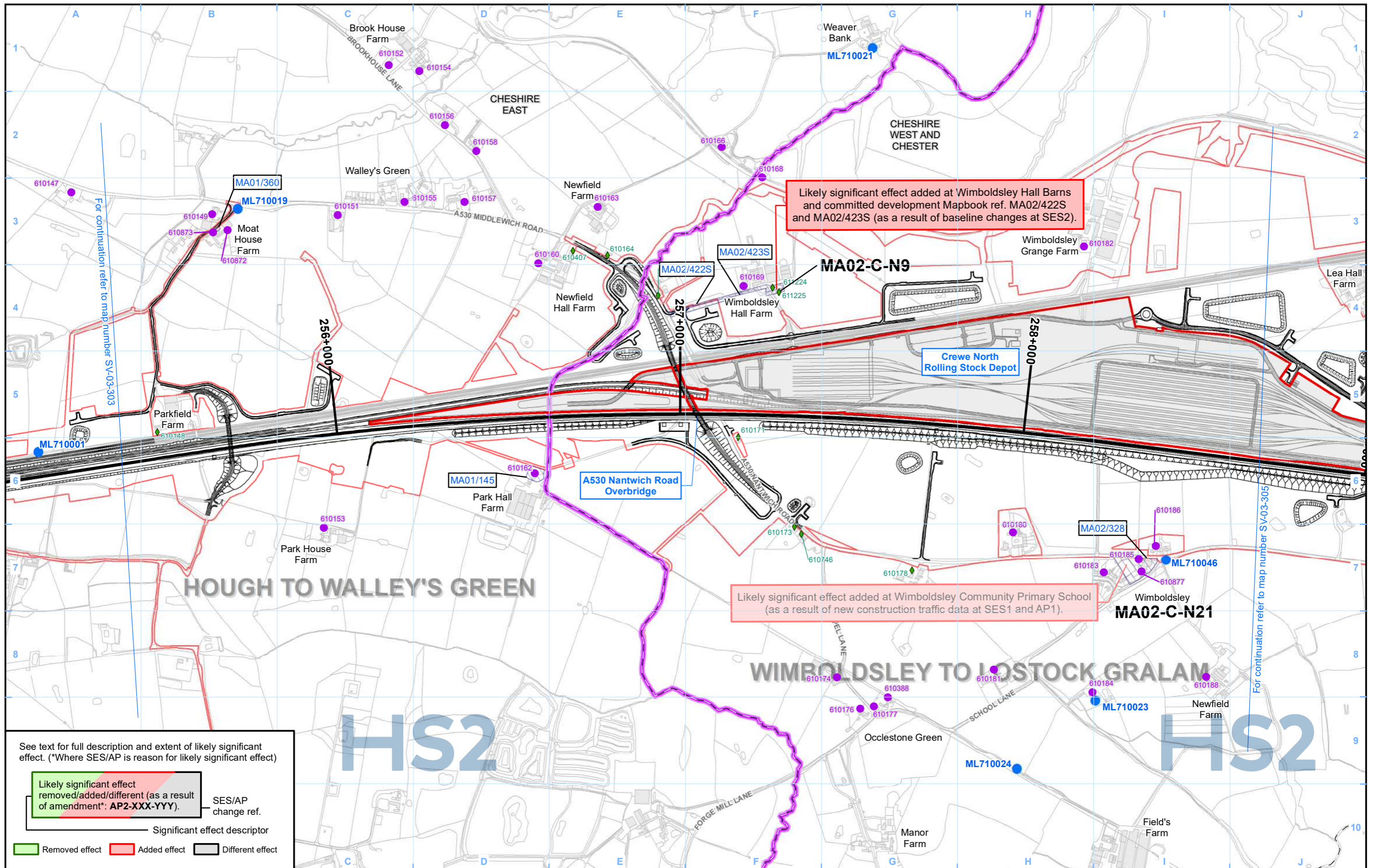
Removed effect Added effect Different effect



¹ For further information see Volume 5 Appendix SV-001-00000 of the Main ES
² For further details of the SES2/AP2 ES assessment see Volume 5 Appendix SV-003-00000

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See text for full description and extent of likely significant effect. (*Where SES/AP is reason for likely significant effect)

Likely significant effect removed/added/different (as a result of amendment*: AP2-XXX-YYY).	SES/AP change ref.
Significant effect descriptor	
Removed effect	Added effect
Different effect	

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- County boundary
- District/Borough boundary
- Engineering earthworks:**
 - Embankment
 - Cutting
- Non engineering earthworks:**
 - Embankment
 - Cutting
- Land potentially required during construction

Legend - Sound related features

- Committed developments - SV Only
 - Construction airborne sound assessment location
 - Construction vibration assessment location
 - Construction airborne sound and vibration assessment location
 - Baseline measurement location
- labelled with assessment location ID reference number (for details of the SES2/AP2 ES assessment results see Volume 5 Appendix SV-002-00000) (labelled with measurement location reference code).
- Likely significant effects from construction noise and/or vibration on groups of dwellings and any shared community open areas, and non-residential receptors, are indicated by MA02-C-C# and MA02-C-N#, respectively.

Map Number	SV-03-304b
Map Name	Construction Airborne Noise and Vibration Likely Significant Effects SES2 and AP2 ES
Community Area MA02: Wimboldsley to Lostock Gralam	

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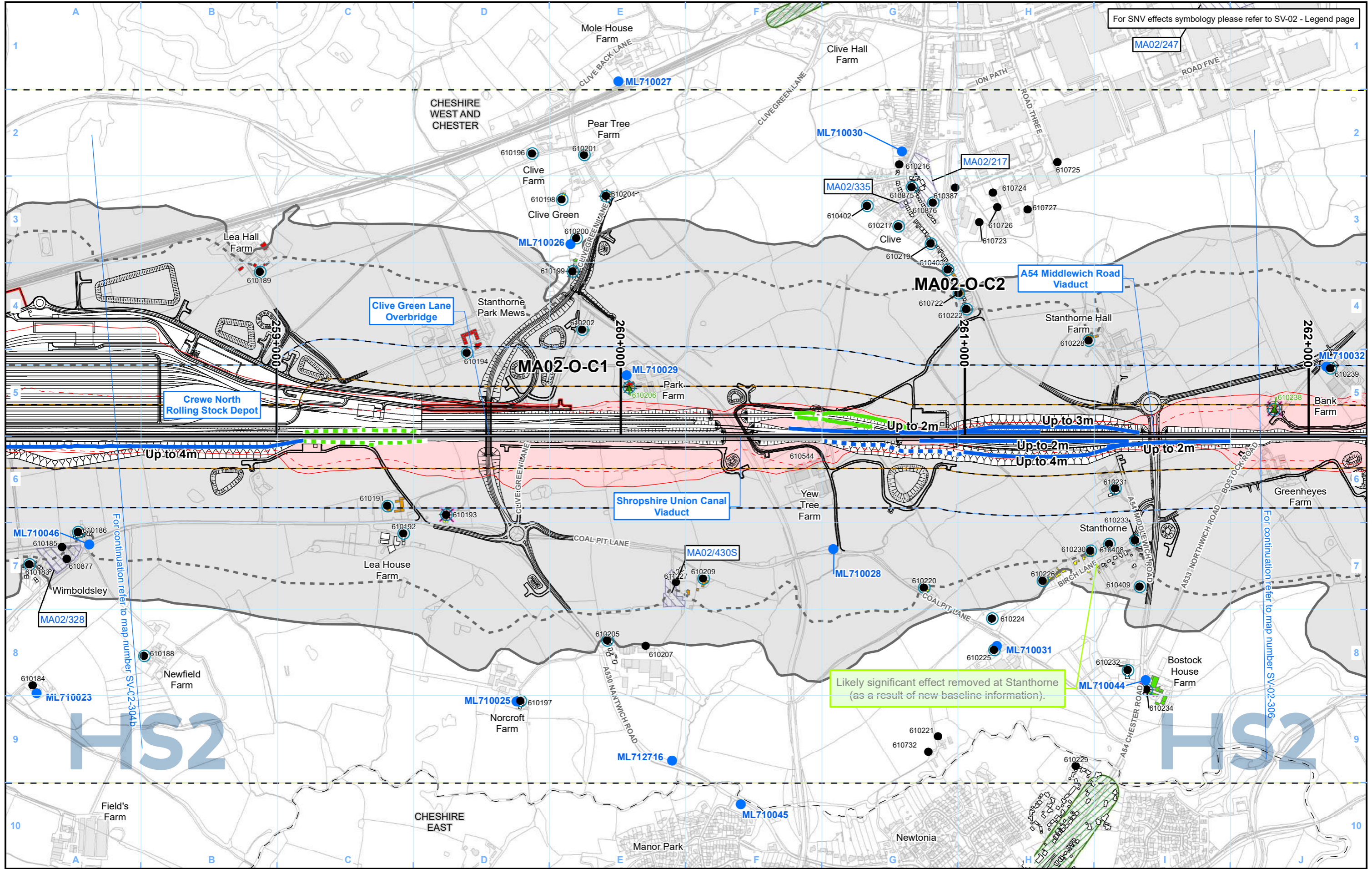
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Scale at A3: 1:10,000

Metres

Date: 27/04/23

For SNV effects symbology please refer to SV-02 - Legend page



Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- County boundary
- District/Borough boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Noise related features

Envisaged mitigation to avoid / reduce significant noise effects:

- Landscaping and/or fence barriers (labelled with total noise barrier height above rail)
- Engineering e.g. cuttings (green tunnels separately marked)

Envisaged features further reducing noise effects:

- Other environmental e.g. landscaping
- Engineering e.g. cuttings

Noise Important Areas defined in national noise action plans (Defra 2014)

Committed developments - SV Only

Airborne noise study area

Ground-borne noise & vibration study area (residential and non-residential)

Ground-borne noise & vibration study area (highly sensitive non-residential)

- Airborne noise assessment location
- Airborne noise and vibration assessment location
- Ground-borne noise and/or vibration assessment location
- Airborne noise, ground-borne sound and vibration assessment location
- Baseline measurement locations

Map Number: SV-02-305

Map Name: Operational Airborne Noise and Vibration Impacts and Likely Significant Effects SES2 and AP2

Community Area MA02: Wimboldsley to Lostock Gralam

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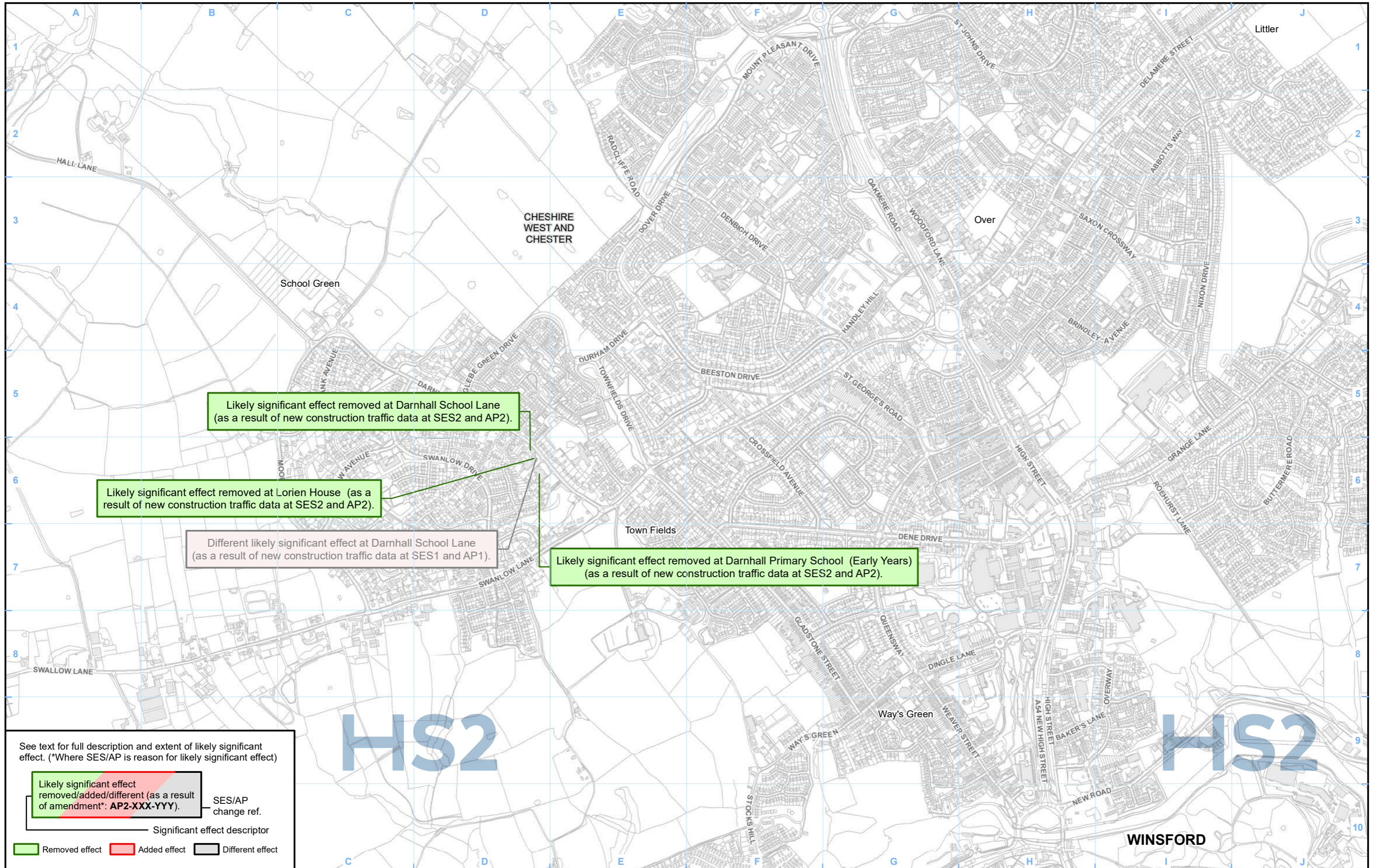
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Metres

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See text for full description and extent of likely significant effect. (*Where SES/AP is reason for likely significant effect)

Likely significant effect removed/added/different (as a result of amendment*: AP2-XXX-YYY).

SES/AP change ref.

Significant effect descriptor

Removed effect Added effect Different effect

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- County boundary
- District/Borough boundary
- Engineering earthworks: Embankment, Cutting
- Non engineering earthworks: Embankment, Cutting
- Land potentially required during construction

Legend - Sound related features

- Committed developments - SV Only
- Construction airborne sound assessment location
- Construction vibration assessment location
- Construction airborne sound and vibration assessment location
- Baseline measurement location

labelled with assessment location ID reference number (for details of the SES2/AP2 ES assessment results see Volume 5 Appendix SV-002-00000) (labelled with measurement location reference code).

Likely significant effects from construction noise and/or vibration on groups of dwellings and any shared community open areas, and non-residential receptors, are indicated by MA02-C-C# and MA02-C-N#, respectively.

Map Number: SV-03-305-L1

Map Name: Construction Airborne Noise and Vibration Likely Significant Effects SES2 and AP2 ES

Community Area MA02: Wimboldsley to Lostock Gralam

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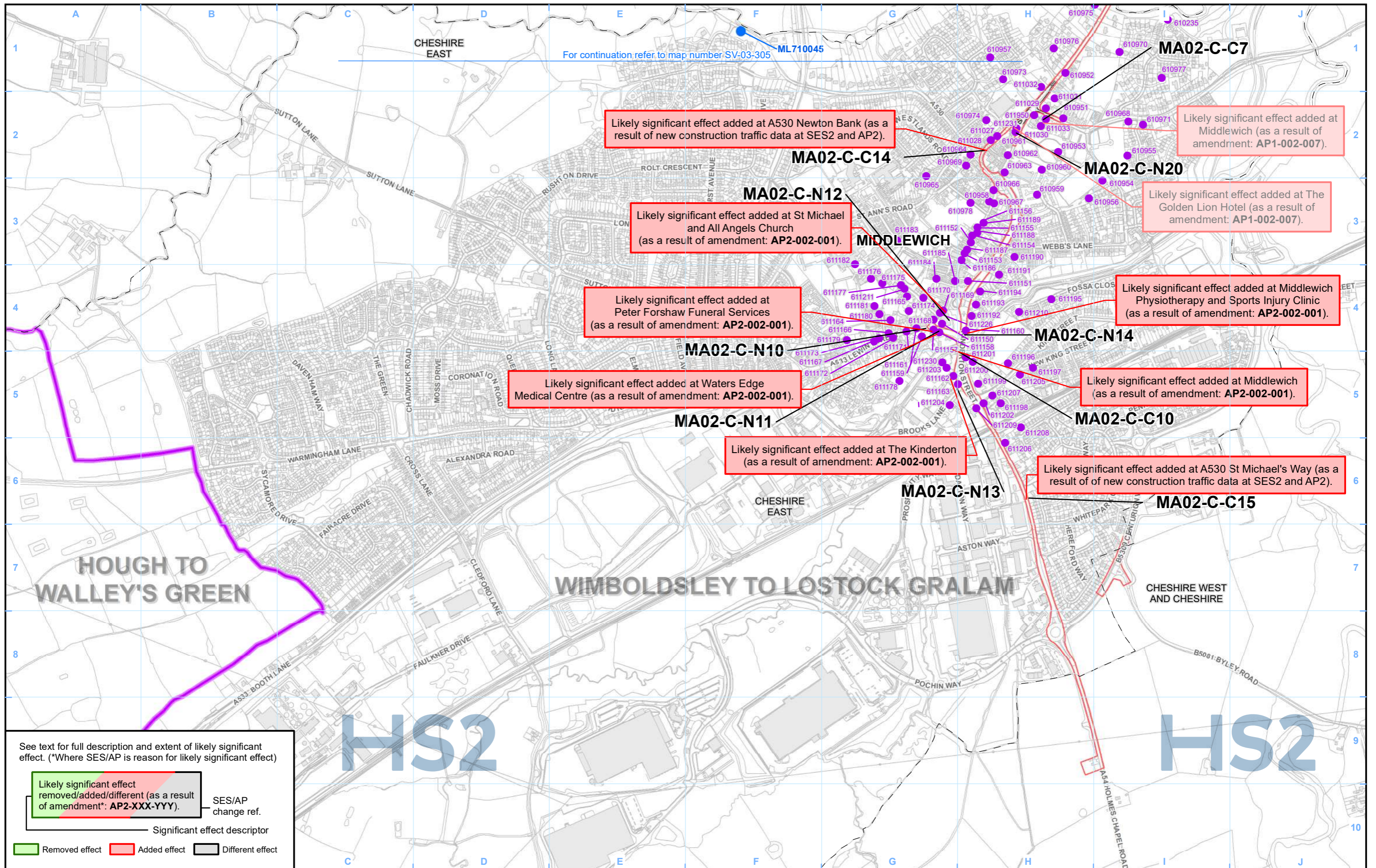
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See text for full description and extent of likely significant effect. (*Where SES/AP is reason for likely significant effect)

Likely significant effect removed/added/different (as a result of amendment*: AP2-XXX-YYY).	SES/AP change ref.	
—	Significant effect descriptor	
Removed effect	Added effect	Different effect

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- County boundary
- District/Borough boundary

Legend - Sound related features

- Engineering earthworks: Embankment, Cutting
- Non engineering earthworks: Embankment, Cutting
- Committed developments - SV Only
- Construction airborne sound assessment location
- Construction vibration assessment location
- Construction airborne sound and vibration assessment location
- Baseline measurement location

labelled with assessment location ID reference number (for details of the SES2/AP2 ES assessment results see Volume 5 Appendix SV-002-00000) (labelled with measurement location reference code).

Likely significant effects from construction noise and /or vibration on groups of dwellings and any shared community open areas, and non-residential receptors, are indicated by MA02-C-C# and MA02-C-N#, respectively.

Map Number: SV-03-305-R1

Map Name: Construction Airborne Noise and Vibration Likely Significant Effects SES2 and AP2 ES

Community Area MA02: Wimboldsley to Lostock Gralam

HS2

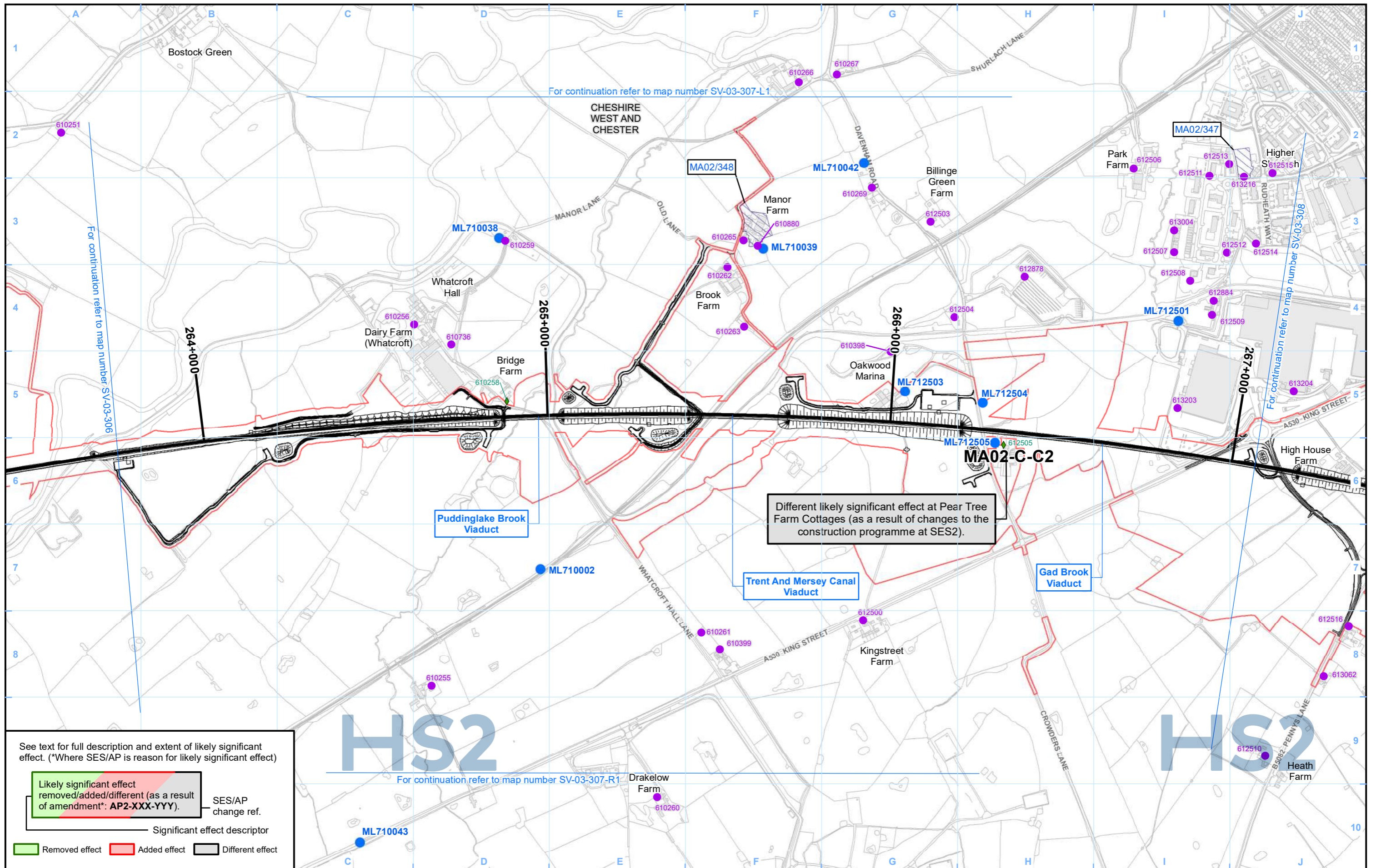
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Doc Number: 2PT27-MWJ-EV-MAP-M000-002587-P01

Date: 27/04/23

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See text for full description and extent of likely significant effect. (*Where SES/AP is reason for likely significant effect)

Likely significant effect removed/added/different (as a result of amendment*: AP2-XXX-YYY).	SES/AP change ref.
Significant effect descriptor	
 Removed effect	 Added effect
 Different effect	

Legend - General features

- Route in bored tunnel
 - Route in green tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Community area boundary
 - County boundary
 - District/Borough boundary
- Engineering earthworks:**
 - Embankment
 - Cutting
 - Non engineering earthworks:**
 - Embankment
 - Cutting
 - Land potentially required during construction

Legend - Sound related features

- Committed developments - SV Only
 - Construction airborne sound assessment location
 - Construction vibration assessment location
 - ◆ Construction airborne sound and vibration assessment location
 - Baseline measurement location
- labelled with assessment location ID reference number (for details of the SES2/AP2 ES assessment results see Volume 5 Appendix SV-002-00000) (labelled with measurement location reference code).
- Likely significant effects from construction noise and /or vibration on groups of dwellings and any shared community open areas, and non-residential receptors, are indicated by MA02-C-C# and MA02-C-N#, respectively.

Map Number	SV-03-307
Map Name	Construction Airborne Noise and Vibration Likely Significant Effects SES2 and AP2 ES
	Community Area MA02: Wimboldsley to Lostock Gralam

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Birmingham B4 6GA.

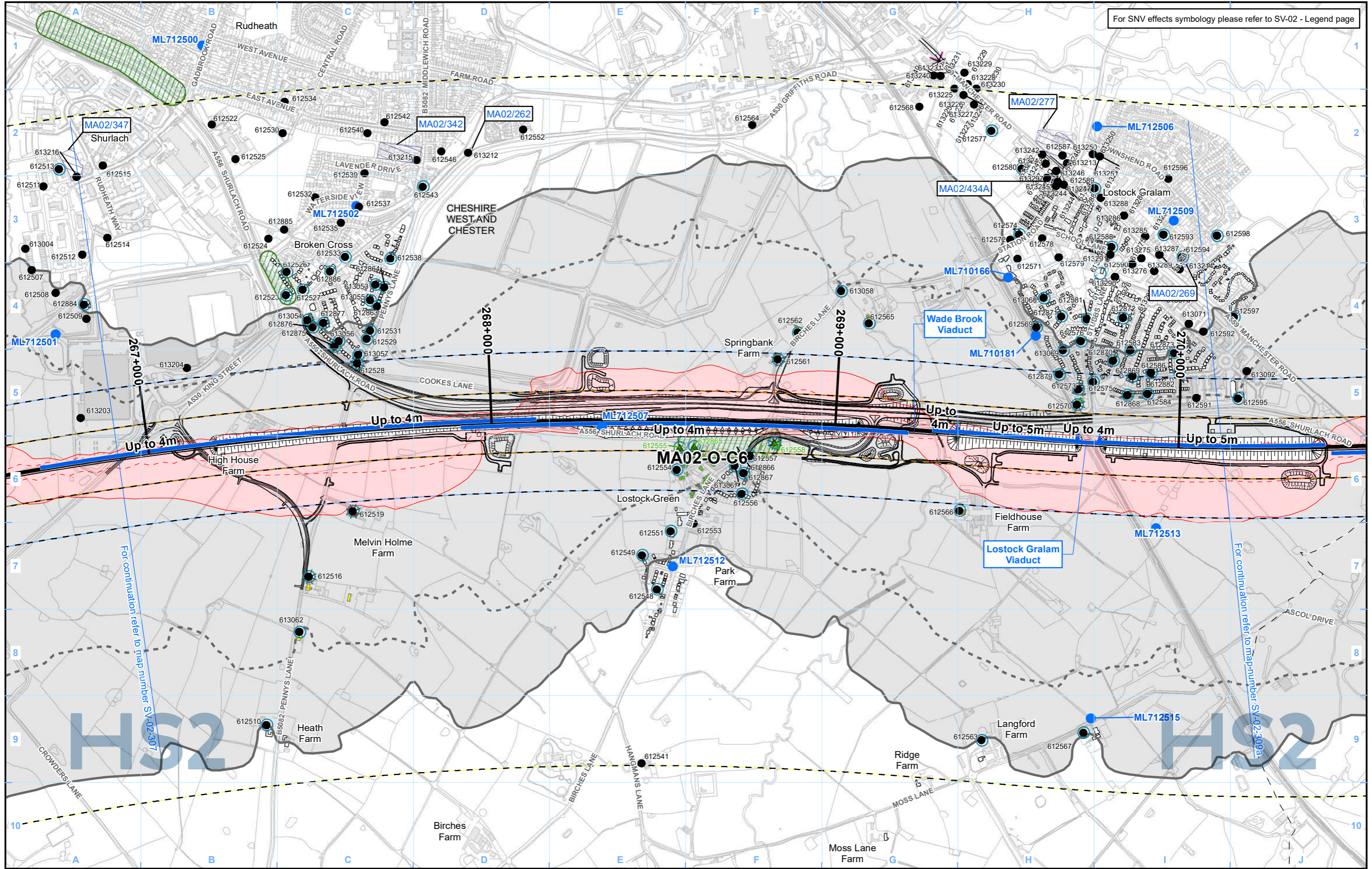
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Date: 27/04/23

For SNV effects symbology please refer to SV-02 - Legend page



Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- County boundary
- District/Borough boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Noise related features

Envisaged mitigation to avoid / reduce significant noise effects:

- Landscaping and/or fence barriers (labelled with total noise barrier height above rail)
- Engineering e.g. cuttings (green tunnels separately marked)

Envisaged features further reducing noise effects:

- Other environmental e.g. landscaping
- Engineering e.g. cuttings

Noise Important Areas defined in national noise action plans (Defra 2014)

Committed developments - SV Only

Airborne noise study area

Ground-borne noise & vibration study area (residential and non-residential)

Ground-borne noise & vibration study area (highly sensitive non-residential)

- Airborne noise assessment location
- Airborne noise and vibration assessment location
- Ground-borne noise and/or vibration assessment location
- Airborne noise, ground-borne sound and vibration assessment location
- Baseline measurement locations

Map Number: SV-02-308

Map Name: Operational Airborne Noise and Vibration Impacts and Likely Significant Effects SES2 and AP2

Community Area MA02: Wimbodley to Lostock Gralam

HS2

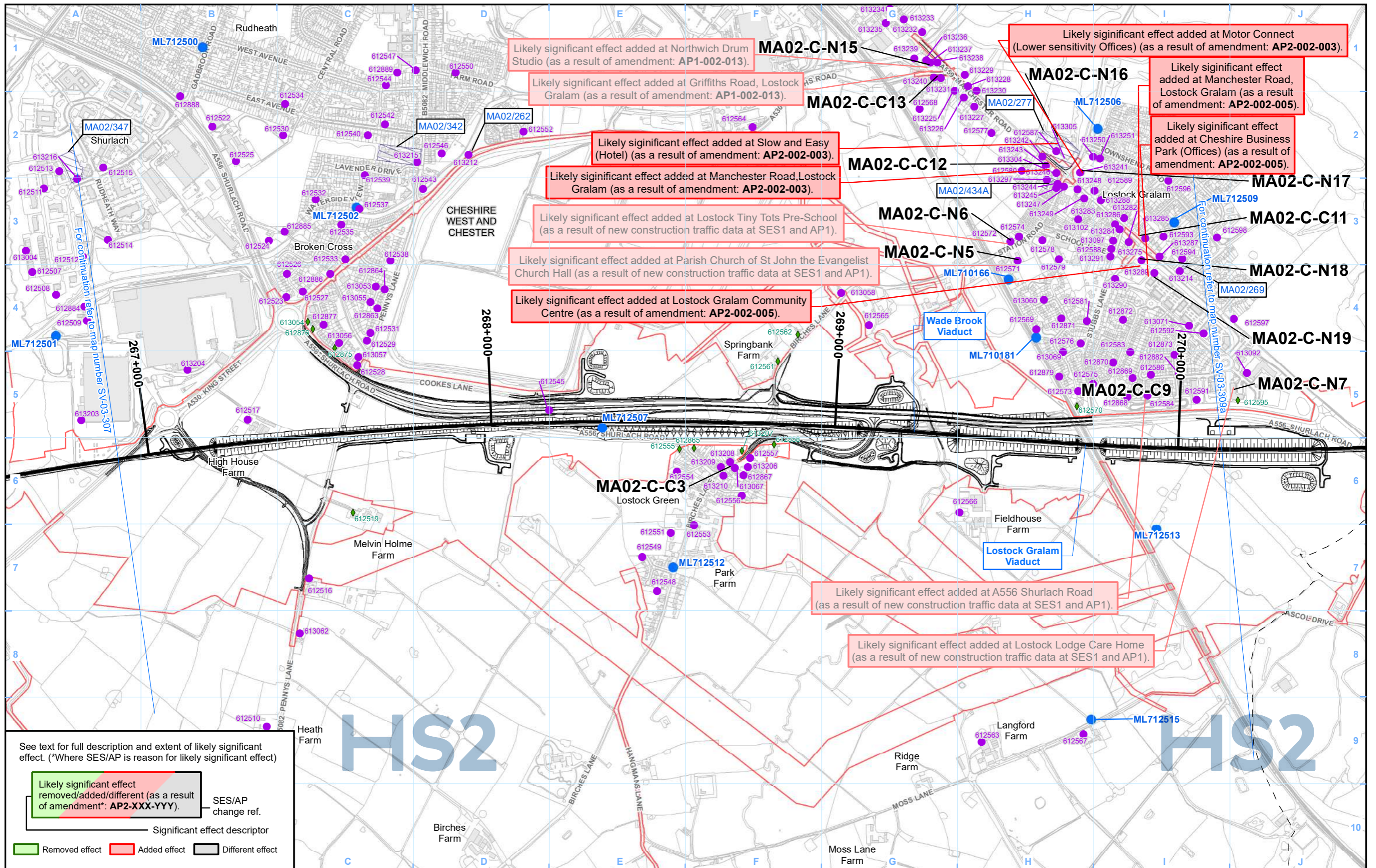
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Date: 13/04/23



See text for full description and extent of likely significant effect. (*Where SES/AP is reason for likely significant effect)

Likely significant effect removed/added/different (as a result of amendment*: AP2-XXX-YYY).	SES/AP change ref.
—	Significant effect descriptor
Removed effect	Added effect
Different effect	

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- County boundary
- District/Borough boundary

Legend - Sound related features

Engineering earthworks:	Non engineering earthworks:
Embankment	Embankment
Cutting	Cutting
Land potentially required during construction	

Legend - Sound related features

- Committed developments - SV Only
- Construction airborne sound assessment location
- Construction vibration assessment location
- Construction airborne sound and vibration assessment location
- Baseline measurement location

labelled with assessment location ID reference number (for details of the SES2/AP2 ES assessment results see Volume 5 Appendix SV-002-00000) (labelled with measurement location reference code).

Likely significant effects from construction noise and/or vibration on groups of dwellings and any shared community open areas, and non-residential receptors, are indicated by MA02-C-C# and MA02-C-N#, respectively.

Map Number: SV-03-308

Map Name: Construction Airborne Noise and Vibration Likely Significant Effects SES2 and AP2 ES

Community Area MA02: Wimboldsley to Lostock Gralam

HS2

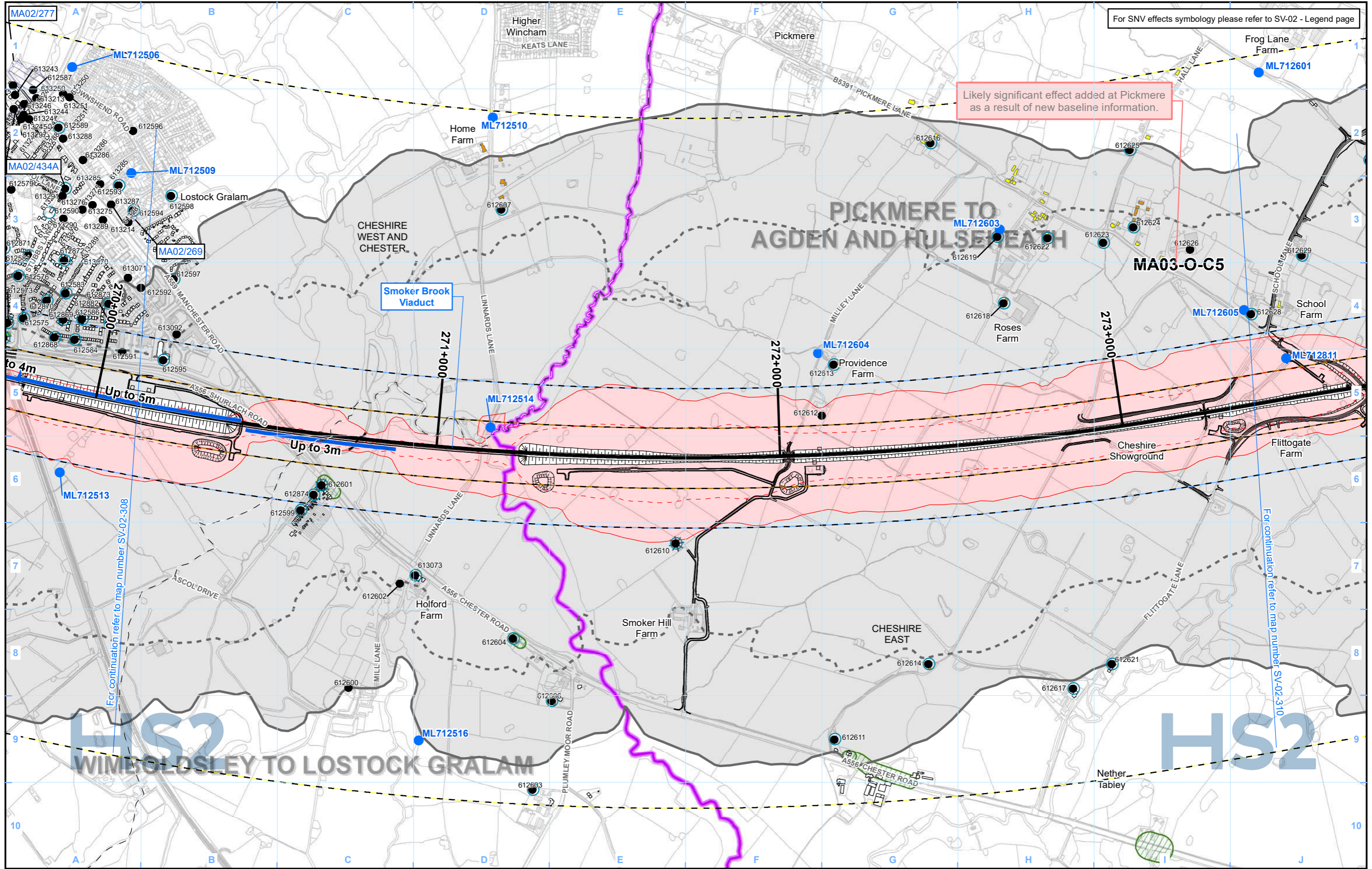
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Date: 27/04/23



For SNV effects symbology please refer to SV-02 - Legend page

Likely significant effect added at Pickmere as a result of new baseline information.

- Legend - General features**
- Route in bored tunnel
 - Route in green tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Community area boundary
 - County boundary
 - District/Borough boundary

- Engineering earthworks:**
- Embankment
 - Cutting
- Non engineering earthworks:**
- Embankment
 - Cutting

- Legend - Noise related features**
- Envisaged mitigation to avoid / reduce significant noise effects:
- Landscaping and/or fence barriers (labelled with total noise barrier height above rail)
 - Engineering e.g. cuttings (green tunnels separately marked)
- Envisaged features further reducing noise effects:
- Other environmental e.g. landscaping
 - Engineering e.g. cuttings

- Noise Important Areas defined in national noise action plans (Defra 2014)
- Committed developments - SV Only
- Airborne noise study area

- Ground-borne noise & vibration study area (residential and non-residential)
- Ground-borne noise & vibration study area (highly sensitive non-residential)
- Airborne noise assessment location
 - Airborne noise and vibration assessment location
 - Ground-borne noise and/or vibration assessment location
 - Airborne noise, ground-borne sound and vibration assessment location
 - Baseline measurement locations

Map Number: SV-02-309a

Map Name: Operational Airborne Noise and Vibration Impacts and Likely Significant Effects SES2 and AP2

Community Area MA02: Wimboldsley to Lostock Gralam

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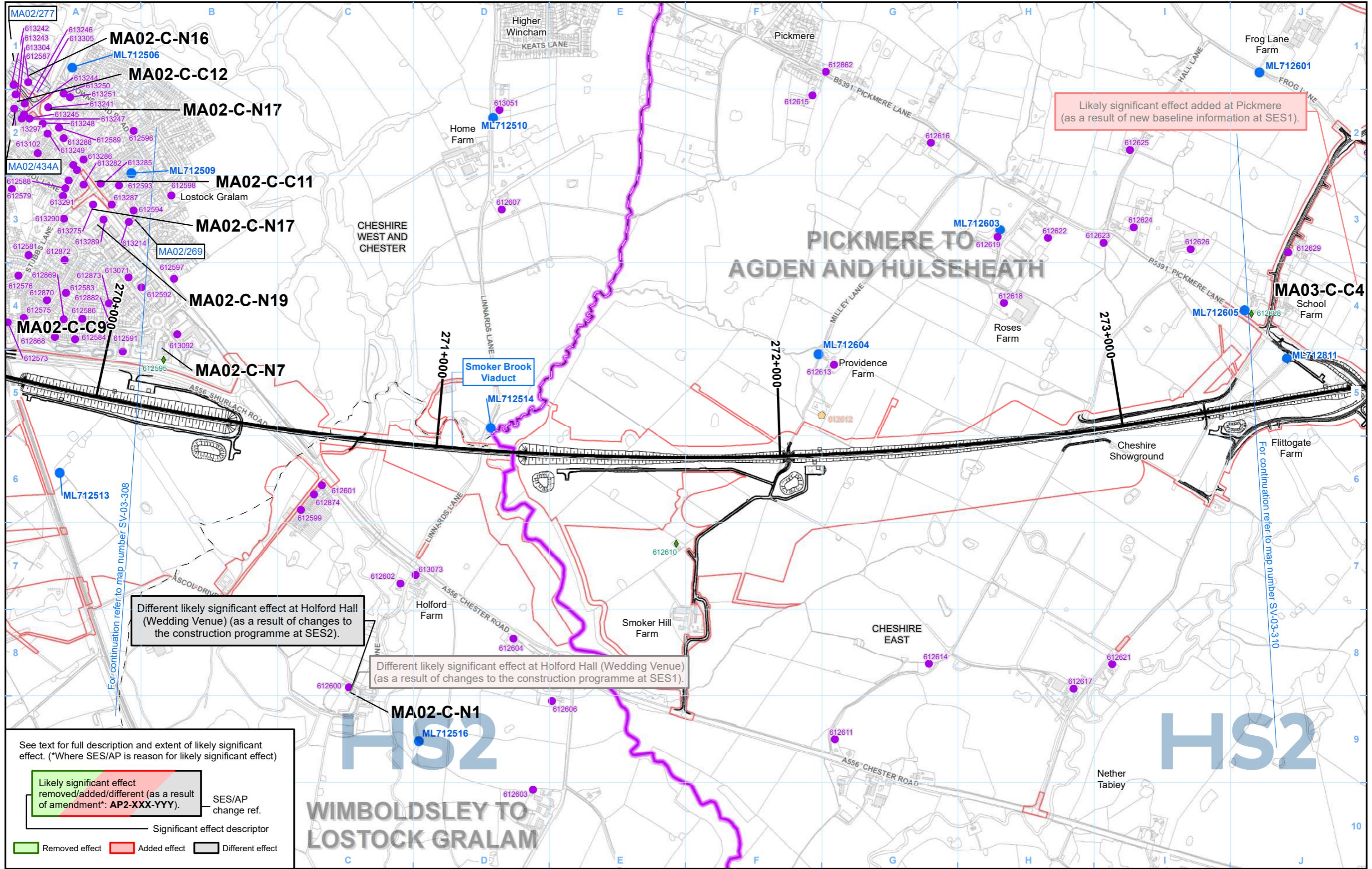
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Date: 13/04/23

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Metres



Likely significant effect added at Pickmere (as a result of new baseline information at SES1).

Different likely significant effect at Holford Hall (Wedding Venue) (as a result of changes to the construction programme at SES2).

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

See text for full description and extent of likely significant effect. (*Where SES/AP is reason for likely significant effect)

Likely significant effect removed/added/different (as a result of amendment*: AP2-XXX-YYY).	SES/AP change ref.
—	Significant effect descriptor
Removed effect	Added effect
Different effect	

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- County boundary
- District/Borough boundary

Legend - Sound related features

Engineering earthworks:	Non engineering earthworks:
Embankment	Embankment
Cutting	Cutting
Land potentially required during construction	

Legend - Sound related features

- Committed developments - SV Only
- Construction airborne sound assessment location
- Construction vibration assessment location
- Construction airborne sound and vibration assessment location
- Baseline measurement location

labelled with assessment location ID reference number (for details of the SES2/AP2 ES assessment results see Volume 5 Appendix SV-002-00000) (labelled with measurement location reference code).

Likely significant effects from construction noise and/or vibration on groups of dwellings and any shared community open areas, and non-residential receptors, are indicated by MA02-C-C# and MA02-C-N#, respectively.

Map Number: SV-03-309a

Map Name: Construction Airborne Noise and Vibration Likely Significant Effects SES2 and AP2 ES

Community Area MA02: Wimboldsley to Lostock Gralam

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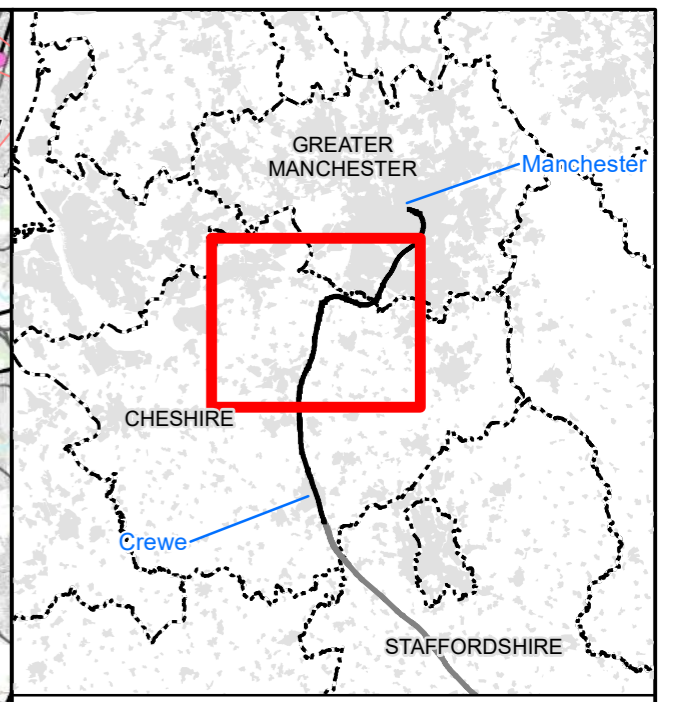
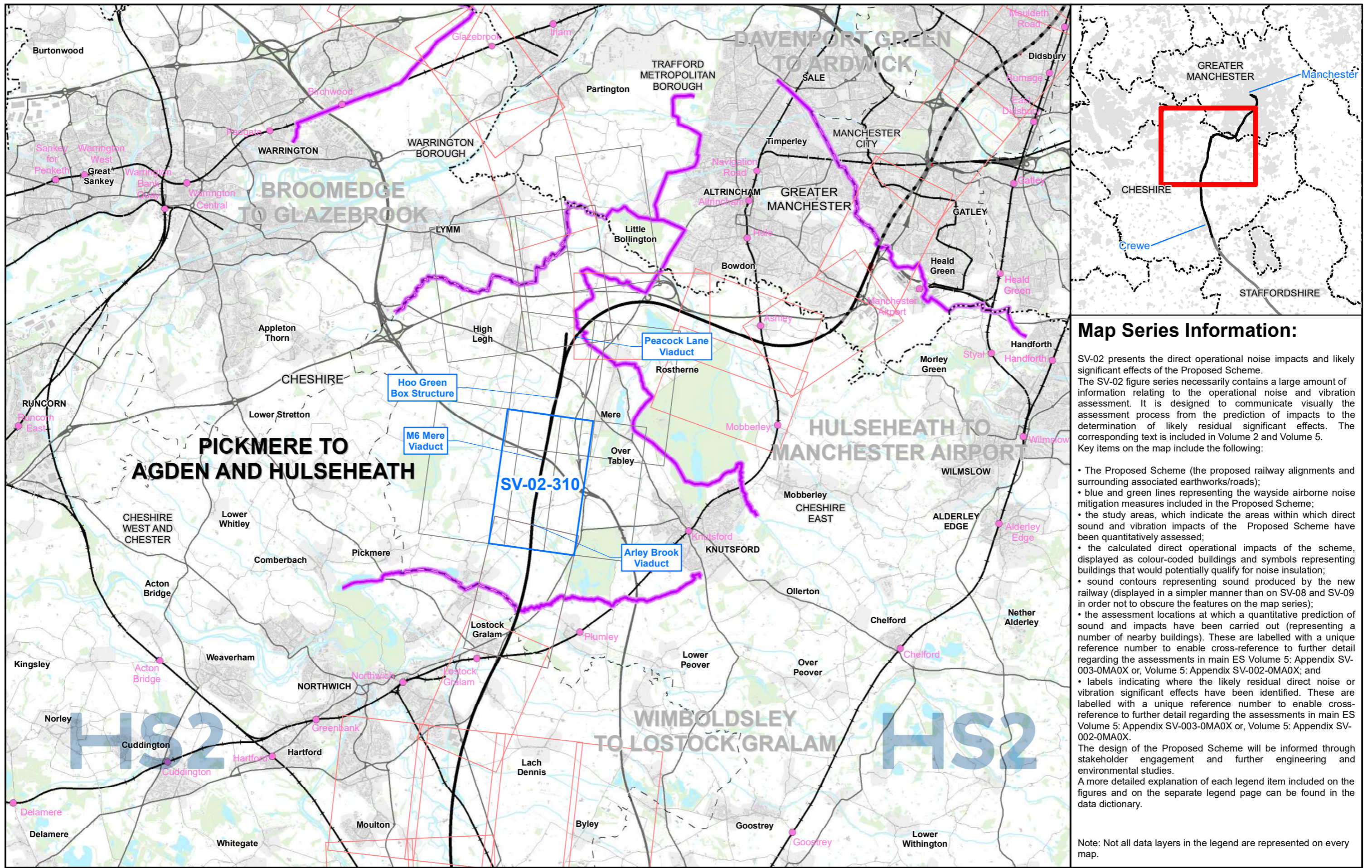
High Speed Rail (Crewe – Manchester)

Supplementary Environmental Statement 2 and Additional Provision 2 Environmental Statement

MA03: Pickmere to Agden and Hulseheath

SV-02 – Operational Airborne Noise and Vibration Impacts and
Likely Significant Effects

SV-03 – Construction Airborne Noise and Vibration
Likely Significant Effects



Map Series Information:

SV-02 presents the direct operational noise impacts and likely significant effects of the Proposed Scheme. The SV-02 figure series necessarily contains a large amount of information relating to the operational noise and vibration assessment. It is designed to communicate visually the assessment process from the prediction of impacts to the determination of likely residual significant effects. The corresponding text is included in Volume 2 and Volume 5. Key items on the map include the following:

- The Proposed Scheme (the proposed railway alignments and surrounding associated earthworks/roads);
- blue and green lines representing the wayside airborne noise mitigation measures included in the Proposed Scheme;
- the study areas, which indicate the areas within which direct sound and vibration impacts of the Proposed Scheme have been quantitatively assessed;
- the calculated direct operational impacts of the scheme, displayed as colour-coded buildings and symbols representing buildings that would potentially qualify for noise insulation;
- sound contours representing sound produced by the new railway (displayed in a simpler manner than on SV-08 and SV-09 in order not to obscure the features on the map series);
- the assessment locations at which a quantitative prediction of sound and impacts have been carried out (representing a number of nearby buildings). These are labelled with a unique reference number to enable cross-reference to further detail regarding the assessments in main ES Volume 5: Appendix SV-003-0MA0X or, Volume 5: Appendix SV-002-0MA0X; and
- labels indicating where the likely residual direct noise or vibration significant effects have been identified. These are labelled with a unique reference number to enable cross-reference to further detail regarding the assessments in main ES Volume 5: Appendix SV-003-0MA0X or, Volume 5: Appendix SV-002-0MA0X.

The design of the Proposed Scheme will be informed through stakeholder engagement and further engineering and environmental studies. A more detailed explanation of each legend item included on the figures and on the separate legend page can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

Main Map Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- Existing railway station
- County boundary
- District/Borough boundary
- Map sheets included in this community area
- Map sheets included in this community area with no amendment
- Map sheets not included in this community area

Map Number	SV-02-INDEX-MA03
Map Name	Index Map of: Operational Airborne Noise and Vibration Impacts and Likely Significant Effects SES2 and AP2 ES Community Area MA03: Pickmere to Agden and Hulseheath

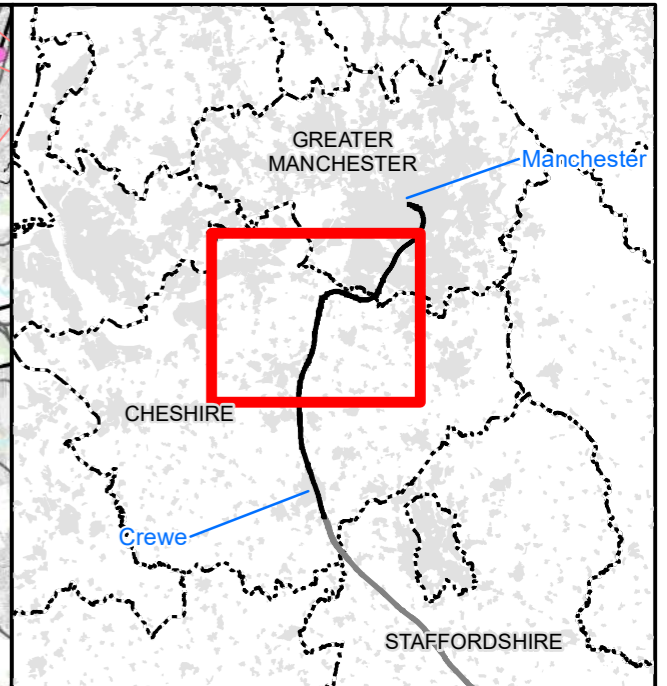
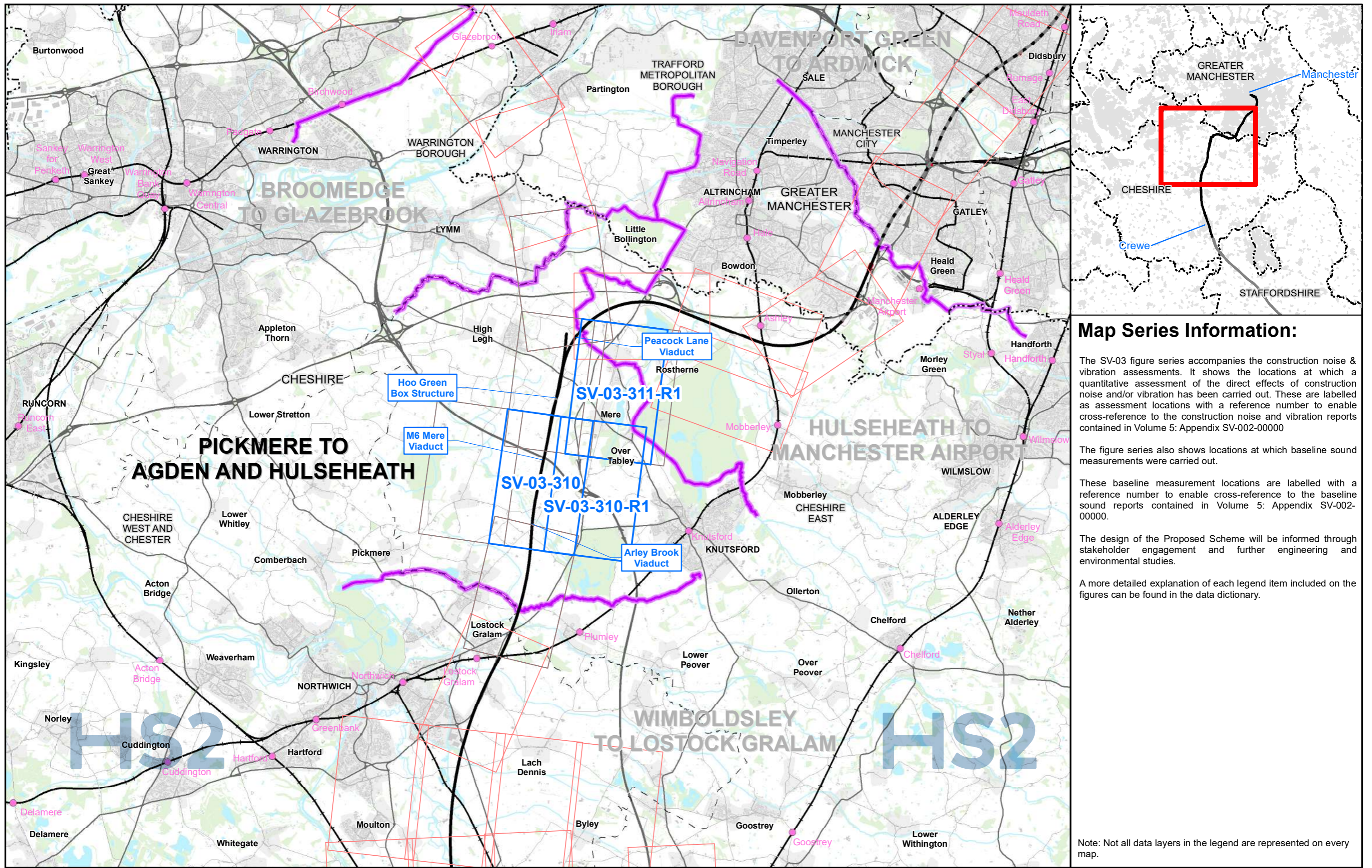
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Map Series Information:

The SV-03 figure series accompanies the construction noise & vibration assessments. It shows the locations at which a quantitative assessment of the direct effects of construction noise and/or vibration has been carried out. These are labelled as assessment locations with a reference number to enable cross-reference to the construction noise and vibration reports contained in Volume 5: Appendix SV-002-00000

The figure series also shows locations at which baseline sound measurements were carried out.

These baseline measurement locations are labelled with a reference number to enable cross-reference to the baseline sound reports contained in Volume 5: Appendix SV-002-00000.

The design of the Proposed Scheme will be informed through stakeholder engagement and further engineering and environmental studies.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

Main Map Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- Existing railway station
- County boundary
- District/Borough boundary
- Map sheets included in this community area
- Map sheets included in this community area with no amendment
- Map sheets not included in this community area

Map Number	SV-03-INDEX-MA03
Map Name	Index Map of: Construction Airborne Noise and Vibration Likely Significant Effects SES2 and AP2 ES Community Area MA03: Pickmere to Agden and Hulseheath

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Doc Number: 2PT27-MWJ-EV-MAP-M000-002085-P01 **Date: 20/04/23**

HS2 (rail only) noise level $L_{p,Aeq,T}$		Potential noise effect ^{1, 2}	
Night-time $L_{p,Aeq,T}$ (T=23:00 to 07:00)	Daytime $L_{p,Aeq,T}$ (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
> 55 dB	> 65 dB	Likely significant effect on dwellings indicated by ○, * or X avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV-003-00000. Likely significant effect indicated by MA0X-O-N# ²
40 to 55 dB	50 to 65 dB	Effect dependent on noise level change and significance criteria. Likely significant effects on groups of dwellings and any shared community open areas indicated by MA0X-O-C# ²	
< 40 dB	< 50 dB	Generally no adverse effect expected ¹	

Operational airborne noise impacts at residential buildings¹

- Major adverse
- Moderate adverse
- Minor adverse
- Negligible
- Beneficial

- Potential additional noise insulation (triggered by maximum noise levels at night)¹
- * Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)¹
- X Potential noise insulation (triggered by Noise Insulation Regulations 1996)¹
- L_{pAFmax} exceeds 60dB façade
- HS2 train only L_{pAFmax} +2.5dB façade correction

Ground-borne noise or vibration impact at residential buildings

See text for full description and extent of likely significant effect. (*Where SES/AP is reason for likely significant effect)

Likely significant effect removed/added/different (as a result of amendment*: AP2-XXX-YYY). SES2/AP2 change ref.

Significant effect descriptor

Removed effect Added effect Different effect

HS2

HS2

¹ For further information see Volume 5 Appendix SV-001-00000 of the Main ES

² For further details of the SES2/AP2 ES assessment see Volume 5 Appendix SV-003-00000

Map Number	SV-02 - Legend
Map Name	Operational Airborne Noise and Vibration Impacts and Likely Significant Effects SES2 and AP2 ES

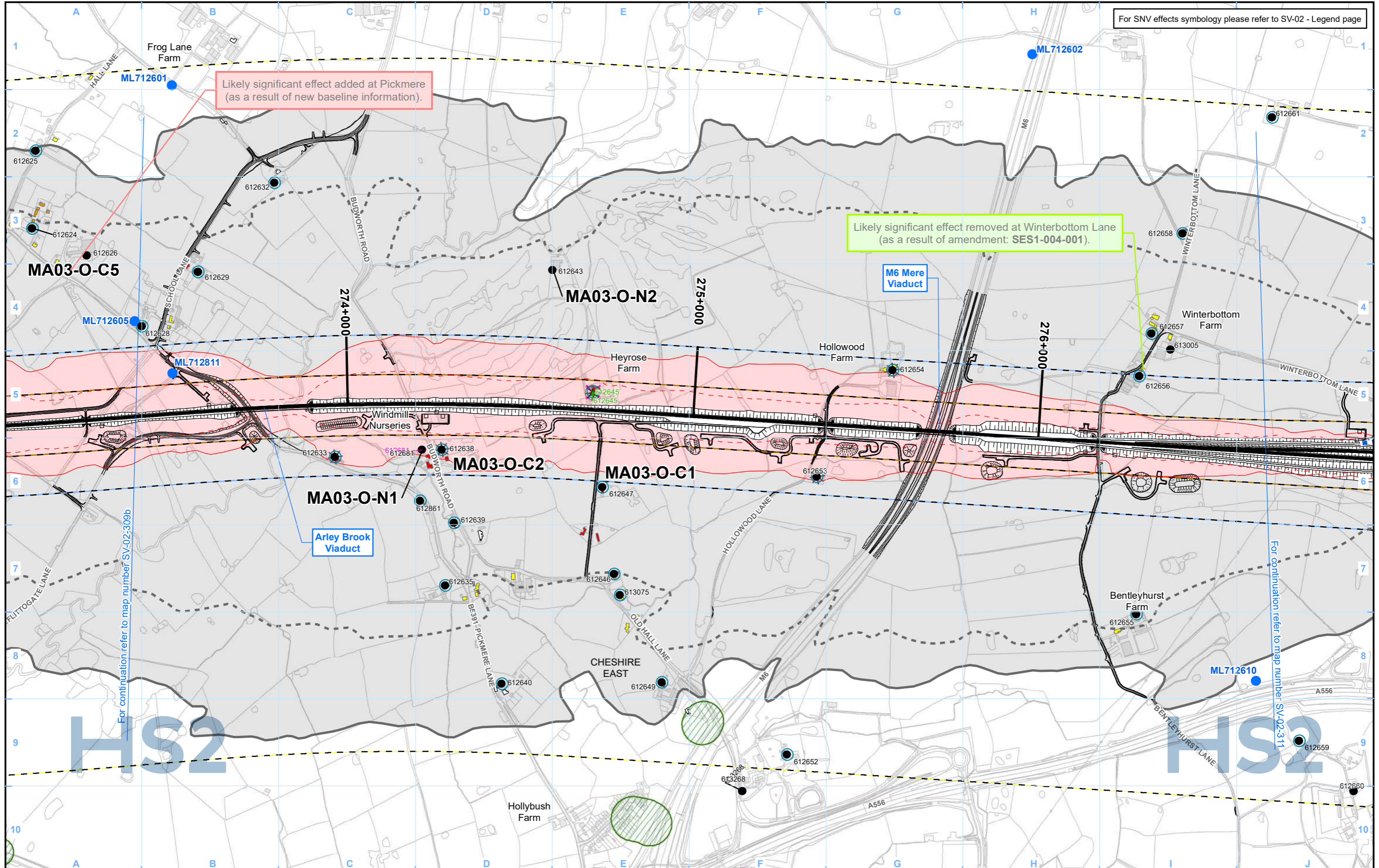
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Doc Number: -

Date:

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Likely significant effect added at Pickmere (as a result of new baseline information).

Likely significant effect removed at Winterbottom Lane (as a result of amendment: SES1-004-001).

For continuation refer to map number SV-02-309b

For continuation refer to map number SV-02-311

- Legend - General features**
- Route in bored tunnel
 - Route in green tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Community area boundary
 - County boundary
 - District/Borough boundary

- Engineering earthworks:**
- Embankment
 - Cutting
- Non engineering earthworks:**
- Embankment
 - Cutting

- Legend - Noise related features**
- Envisaged mitigation to avoid / reduce significant noise effects:
- Landscaping and/or fence barriers (labelled with total noise barrier height above rail)
 - Engineering e.g. cuttings (green tunnels separately marked)
- Envisaged features further reducing noise effects:
- Other environmental e.g. landscaping
 - Engineering e.g. cuttings

- Noise Important Areas defined in national noise action plans (Defra 2014)
- Noise Important Areas defined in national noise action plans (Defra 2014)
- Committed developments - SV Only
- Committed developments - SV Only
- Airborne noise study area
- Airborne noise study area

- Ground-borne noise & vibration study area (residential and non-residential)
- Ground-borne noise & vibration study area (residential and non-residential)
- Ground-borne noise & vibration study area (highly sensitive non-residential)
- Ground-borne noise & vibration study area (highly sensitive non-residential)
- Airborne noise assessment location
- Airborne noise assessment location
- Airborne noise and vibration assessment location
- Airborne noise and vibration assessment location
- Ground-borne noise and/or vibration assessment location
- Ground-borne noise and/or vibration assessment location
- Airborne noise, ground-borne sound and vibration assessment location
- Airborne noise, ground-borne sound and vibration assessment location
- Baseline measurement locations
- Baseline measurement locations

Map Number: SV-02-310

Map Name: Operational Airborne Noise and Vibration Impacts and Likely Significant Effects SES2 and AP2

Community Area MA03: Pickmere to Agden and Hulseheath

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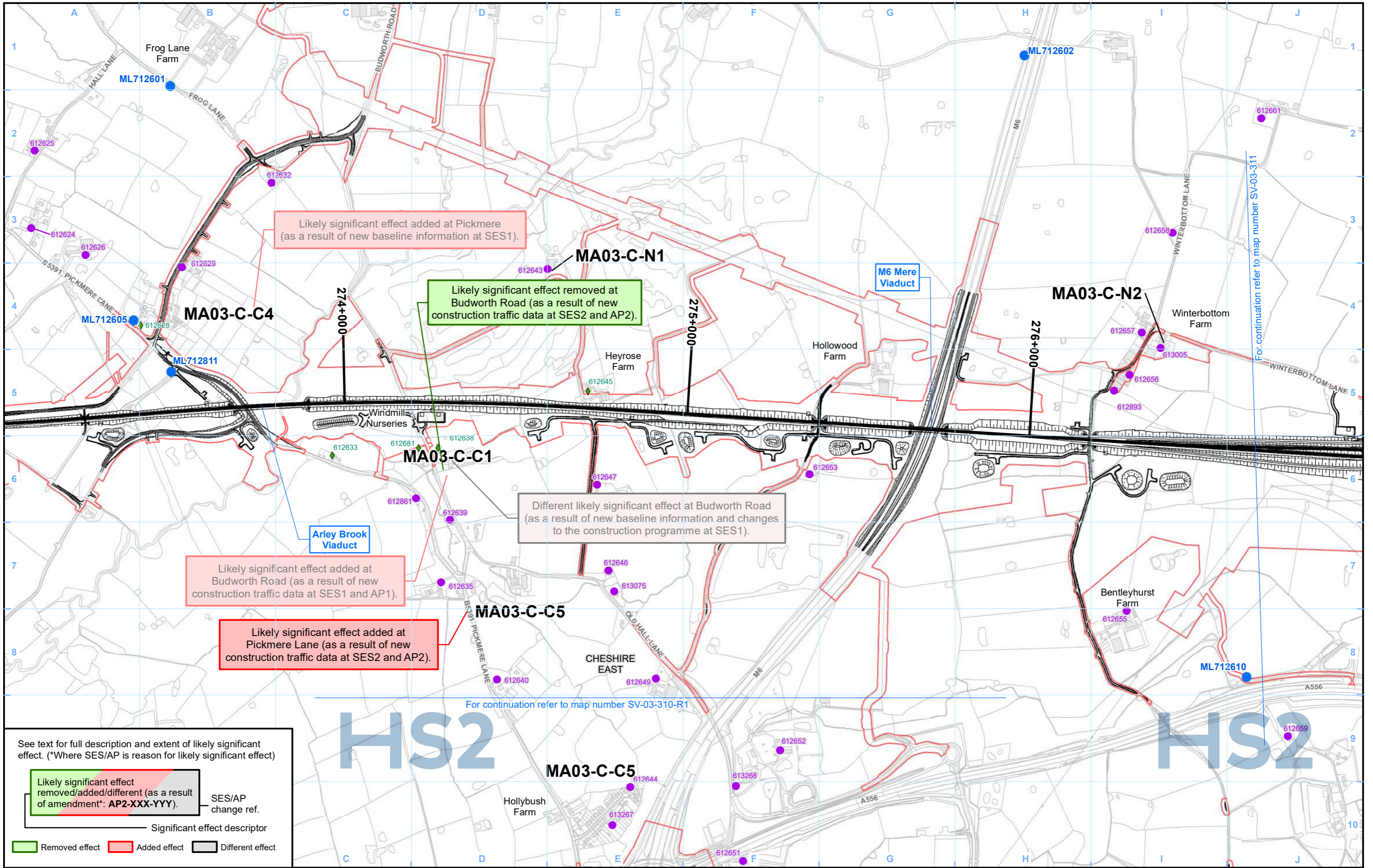
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Date: 13/04/23

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Metres



See text for full description and extent of likely significant effect. (*Where SES/AP is reason for likely significant effect)

Likely significant effect removed/added/different (as a result of amendment*: AP2-XXX-YYY).	SES/AP change ref.
Significant effect descriptor	
Removed effect	Added effect
Different effect	

- Legend - General features**
- Route in bored tunnel
 - Route in green tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Community area boundary
 - County boundary
 - District/Borough boundary

- Engineering earthworks:**
- Embankment
 - Cutting
- Non engineering earthworks:**
- Embankment
 - Cutting
 - Land potentially required during construction

- Legend - Sound related features**
- Committed developments - SV Only
 - Construction airborne sound assessment location
 - Construction vibration assessment location
 - Construction airborne sound and vibration assessment location
 - Baseline measurement location

labelled with assessment location ID reference number (for details of the SES2/AP2 ES assessment results see Volume 5 Appendix SV-002-00000) (labelled with measurement location reference code).

Likely significant effects from construction noise and /or vibration on groups of dwellings and any shared community open areas, and non-residential receptors, are indicated by MA03-C-C# and MA03-C-N#, respectively.

Map Number	SV-03-310
Map Name	Construction Airborne Noise and Vibration Likely Significant Effects SES2 and AP2 ES
	Community Area MA03: Pickmere to Agden and Hulseheath

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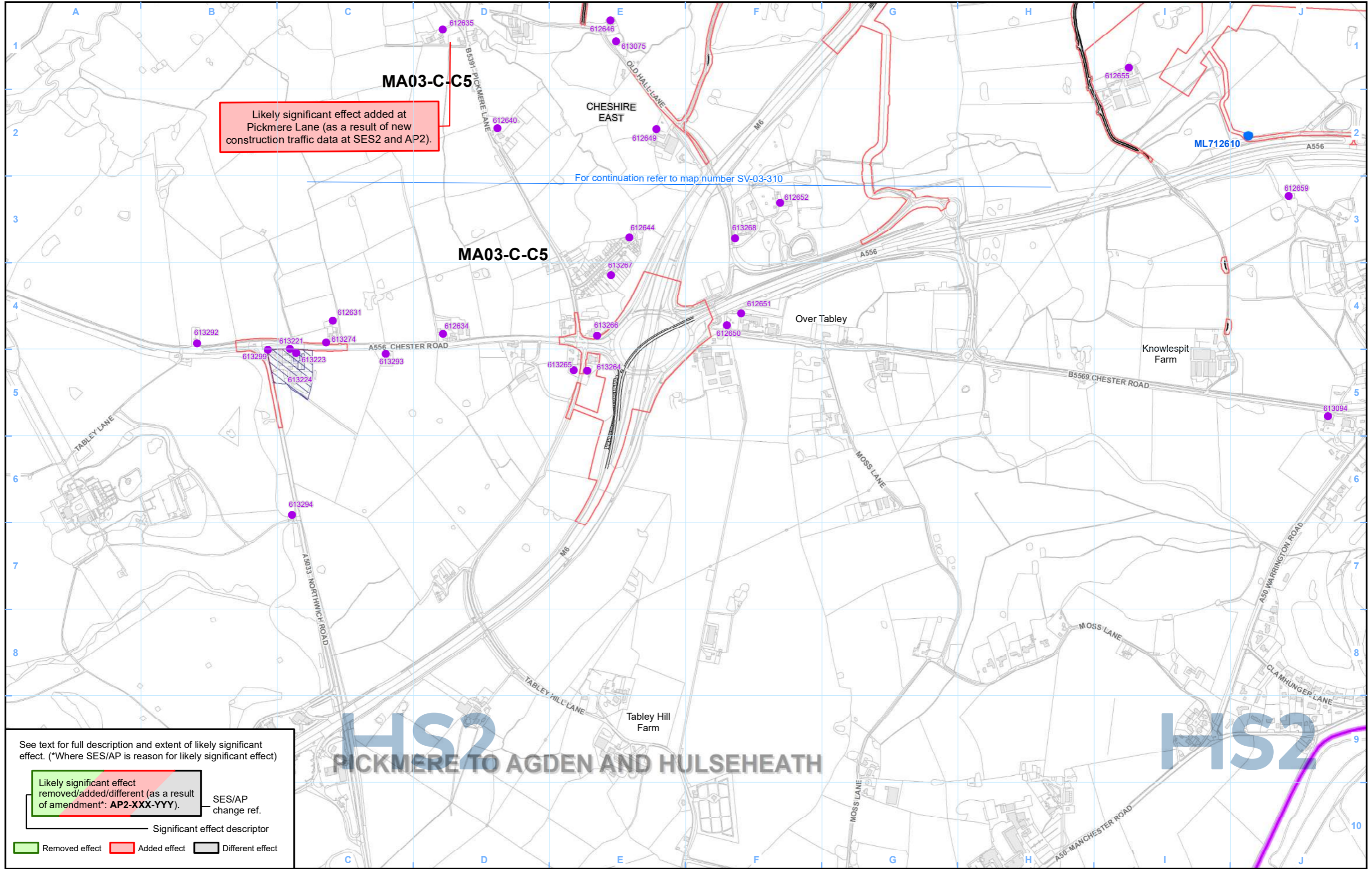
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Date: 21/04/23

For continuation refer to map number SV-03-311

For continuation refer to map number SV-03-310-R1

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Likely significant effect added at Pickmere Lane (as a result of new construction traffic data at SES2 and AP2).

For continuation refer to map number SV-03-310

See text for full description and extent of likely significant effect. (*Where SES/AP is reason for likely significant effect)

Likely significant effect removed/added/different (as a result of amendment*: AP2-XXX-YYY).	SES/AP change ref.	
Significant effect descriptor		
Removed effect	Added effect	Different effect

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- County boundary
- District/Borough boundary
- Engineering earthworks:**
 - Embankment
 - Cutting
- Non engineering earthworks:**
 - Embankment
 - Cutting
- Land potentially required during construction

Legend - Sound related features

- Committed developments - SV Only
 - Construction airborne sound assessment location
 - Construction vibration assessment location
 - Construction airborne sound and vibration assessment location
 - Baseline measurement location
- labelled with assessment location ID reference number (for details of the SES2/AP2 ES assessment results see Volume 5 Appendix SV-002-00000) (labelled with measurement location reference code).
- Likely significant effects from construction noise and /or vibration on groups of dwellings and any shared community open areas, and non-residential receptors, are indicated by MA03-C-C# and MA03-C-N#, respectively.

Map Number	SV-03-310-R1
Map Name	Construction Airborne Noise and Vibration Likely Significant Effects SES2 and AP2 ES
	Community Area MA03: Pickmere to Agden and Hulseheath

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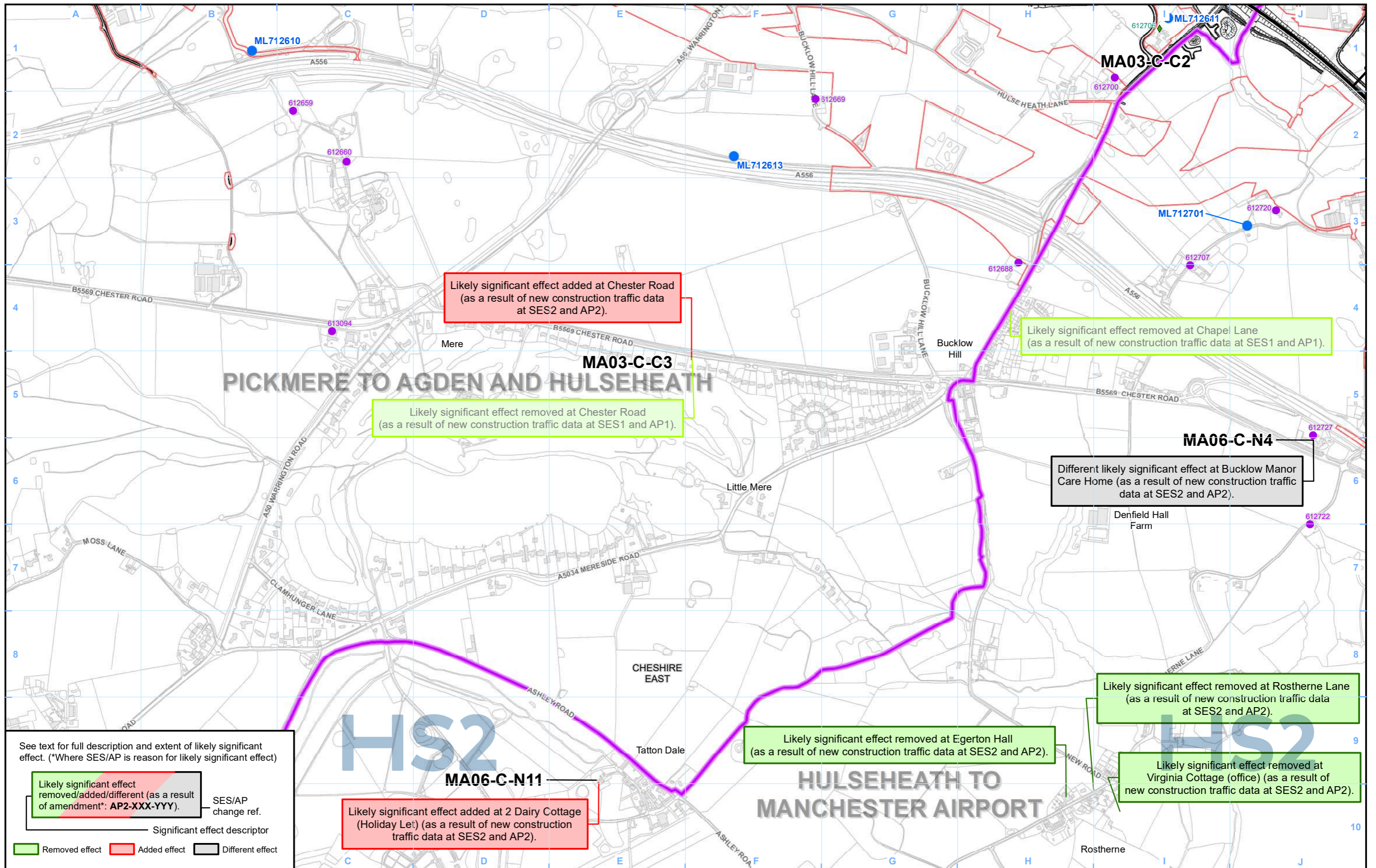
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Date: 21/04/23

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See text for full description and extent of likely significant effect. (*Where SES/AP is reason for likely significant effect)

Likely significant effect removed/added/different (as a result of amendment*: AP2-XXX-YYY).	SES/AP change ref.
Likely significant effect removed/added/different (as a result of amendment*: AP2-XXX-YYY).	Significant effect descriptor
Removed effect	Added effect
Added effect	Different effect

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- County boundary
- District/Borough boundary
- Engineering earthworks:
 - Embankment
 - Cutting
- Non engineering earthworks:
 - Embankment
 - Cutting
- Land potentially required during construction

Legend - Sound related features

- Committed developments - SV Only
 - Construction airborne sound assessment location
 - Construction vibration assessment location
 - Construction airborne sound and vibration assessment location
 - Baseline measurement location
- labelled with assessment location ID reference number (for details of the SES2/AP2 ES assessment results see Volume 5 Appendix SV-002-00000) (labelled with measurement location reference code).
- Likely significant effects from construction noise and/or vibration on groups of dwellings and any shared community open areas, and non-residential receptors, are indicated by MA03-C-C# and MA03-C-N#, respectively.

Map Number	SV-03-311-R1
Map Name	Construction Airborne Noise and Vibration Likely Significant Effects SES2 and AP2 ES
	Community Area MA03: Pickmere to Agden and Hulseheath

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High Speed Rail (Crewe – Manchester)

Supplementary Environmental Statement 2 and Additional Provision 2 Environmental Statement

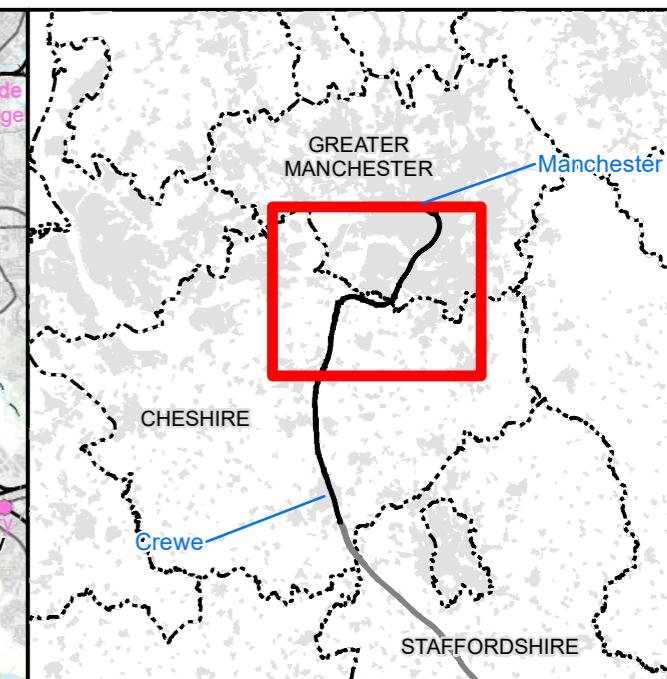
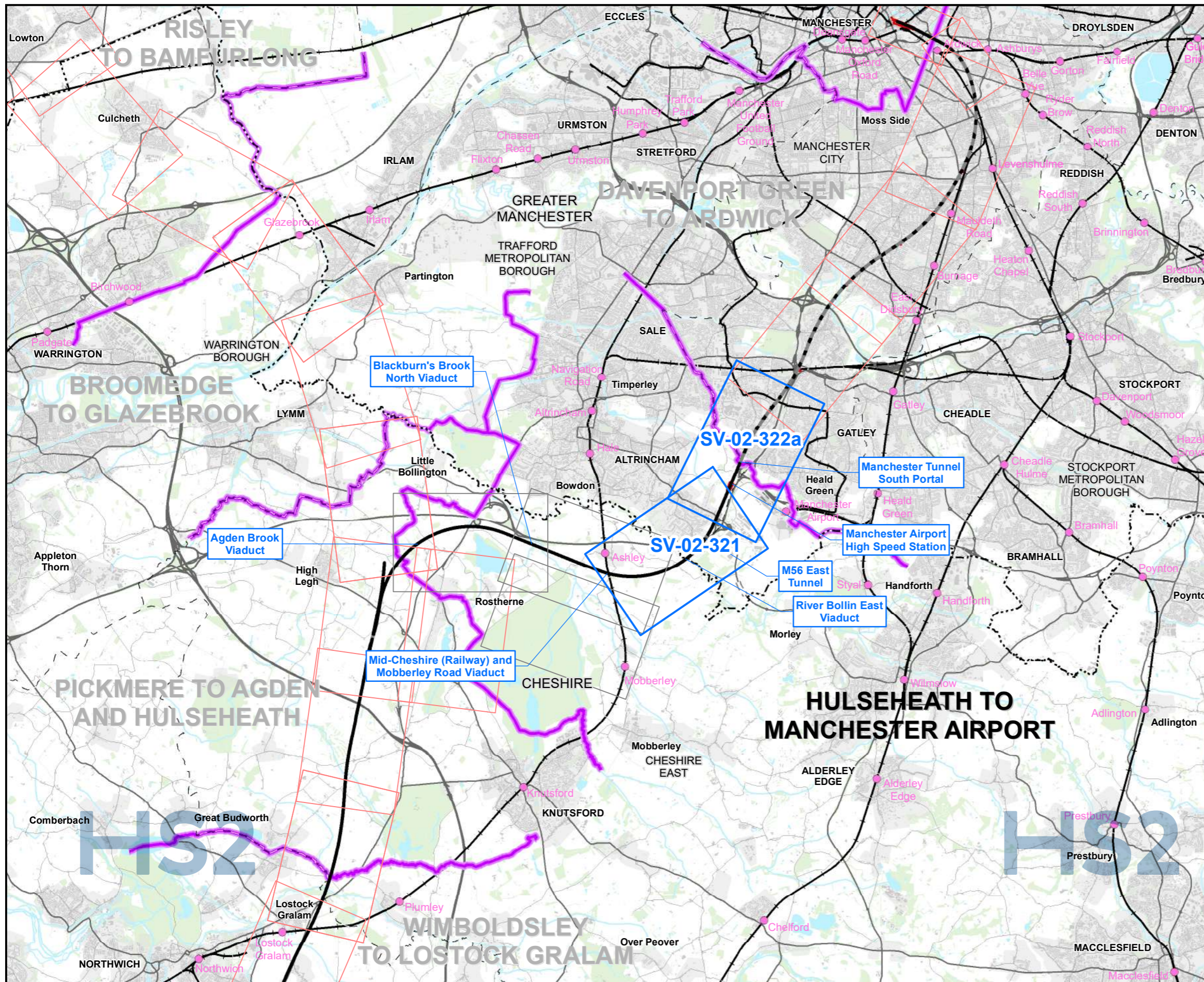
MA06: Hulseheath to Manchester Airport

SV-02 – Operational Airborne Noise and Vibration Impacts and
Likely Significant Effects

SV-03 – Construction Airborne Noise and Vibration
Likely Significant Effects

SV-08 – Daytime Operational Sound Contour Maps

SV-09 – Night-time Operational Sound Contour Maps



Map Series Information:

SV-02 presents the direct operational noise impacts and likely significant effects of the Proposed Scheme. The SV-02 figure series necessarily contains a large amount of information relating to the operational noise and vibration assessment. It is designed to communicate visually the assessment process from the prediction of impacts to the determination of likely residual significant effects. The corresponding text is included in Volume 2 and Volume 5. Key items on the map include the following:

- The Proposed Scheme (the proposed railway alignments and surrounding associated earthworks/roads);
- blue and green lines representing the wayside airborne noise mitigation measures included in the Proposed Scheme;
- the study areas, which indicate the areas within which direct sound and vibration impacts of the Proposed Scheme have been quantitatively assessed;
- the calculated direct operational impacts of the scheme, displayed as colour-coded buildings and symbols representing buildings that would potentially qualify for noise insulation;
- sound contours representing sound produced by the new railway (displayed in a simpler manner than on SV-08 and SV-09 in order not to obscure the features on the map series);
- the assessment locations at which a quantitative prediction of sound and impacts have been carried out (representing a number of nearby buildings). These are labelled with a unique reference number to enable cross-reference to further detail regarding the assessments in main ES Volume 5: Appendix SV-003-0MA0X or, Volume 5: Appendix SV-002-0MA0X; and
- labels indicating where the likely residual direct noise or vibration significant effects have been identified. These are labelled with a unique reference number to enable cross-reference to further detail regarding the assessments in main ES Volume 5: Appendix SV-003-0MA0X or, Volume 5: Appendix SV-002-0MA0X.

The design of the Proposed Scheme will be informed through stakeholder engagement and further engineering and environmental studies. A more detailed explanation of each legend item included on the figures and on the separate legend page can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

Main Map Legend

Route in tunnel	Map sheets included in this community area
Route on surface	Map sheets included in this community area with no amendment
Depot, station, headhouse or portal building	Map sheets not included in this community area
Community area boundary	
Existing railway station	
County boundary	
District/Borough boundary	

Map Number	SV-02-INDEX-MA06
Map Name	Index Map of: Operational Airborne Noise and Vibration Impacts and Likely Significant Effects SES2 and AP2 ES Community Area MA06: Hulseheath to Manchester Airport

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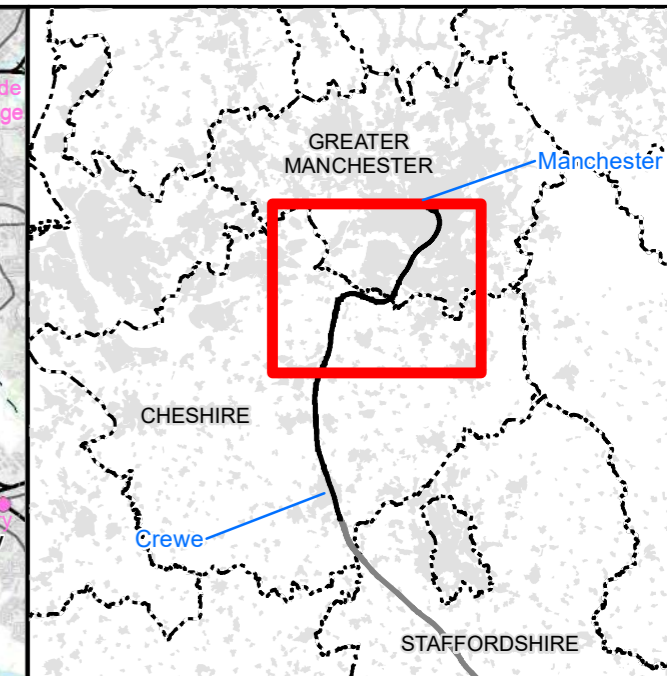
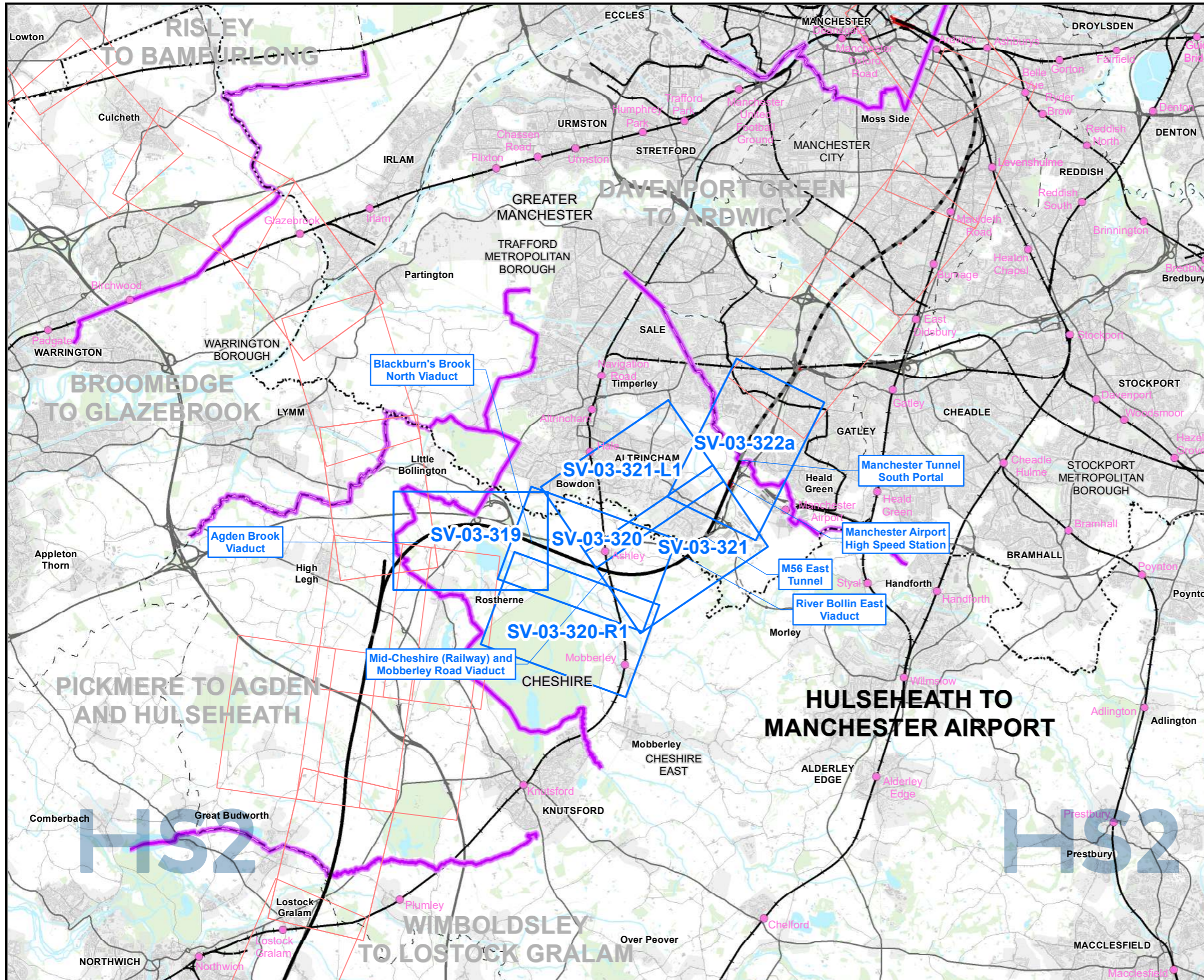
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Doc Number: 2PT27-MWJ-EV-MAP-M000-002042-P01

Date: 13/04/23



Map Series Information:

The SV-03 figure series accompanies the construction noise & vibration assessments. It shows the locations at which a quantitative assessment of the direct effects of construction noise and/or vibration has been carried out. These are labelled as assessment locations with a reference number to enable cross-reference to the construction noise and vibration reports contained in Volume 5: Appendix SV-002-00000.

The figure series also shows locations at which baseline sound measurements were carried out.

These baseline measurement locations are labelled with a reference number to enable cross-reference to the baseline sound reports contained in Volume 5: Appendix SV-002-00000.

The design of the Proposed Scheme will be informed through stakeholder engagement and further engineering and environmental studies.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

Main Map Legend	
	Route in tunnel
	Route on surface
	Depot, station, headhouse or portal building
	Community area boundary
	Existing railway station
	County boundary
	District/Borough boundary
	Map sheets included in this community area
	Map sheets included in this community area with no amendment
	Map sheets not included in this community area

Map Number	SV-03-INDEX-MA06
Map Name	Index Map of: Construction Airborne Noise and Vibration Likely Significant Effects SES2 and AP2 ES Community Area MA06: Hulseheath to Manchester Airport

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Doc Number: 2PT27-MWJ-EV-MAP-M000-002088-P01
Date: 20/04/23

HS2 (rail only) noise level $L_{p,Aeq,T}$		Potential noise effect ^{1, 2}	
Night-time $L_{p,Aeq,T}$ (T=23:00 to 07:00)	Daytime $L_{p,Aeq,T}$ (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
> 55 dB	> 65 dB	Likely significant effect on dwellings indicated by ○, * or X avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV-003-00000. Likely significant effect indicated by MA0X-O-N# ²
40 to 55 dB	50 to 65 dB	Effect dependent on noise level change and significance criteria. Likely significant effects on groups of dwellings and any shared community open areas indicated by MA0X-O-C# ²	
< 40 dB	< 50 dB	Generally no adverse effect expected ¹	

Operational airborne noise impacts at residential buildings¹

-  Major adverse
-  Moderate adverse
-  Minor adverse
-  Negligible
-  Beneficial

-  Potential additional noise insulation (triggered by maximum noise levels at night)¹
-  Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)¹
-  Potential noise insulation (triggered by Noise Insulation Regulations 1996)¹
-  L_{pAFmax} exceeds 60dB façade
HS2 train only L_{pAFmax} +2.5dB façade correction




 Ground-borne noise or vibration impact at residential buildings

See text for full description and extent of likely significant effect. (*Where SES/AP is reason for likely significant effect)

Likely significant effect removed/added/different (as a result of amendment*: AP2-XXX-YYY).

SES2/AP2 change ref.

Significant effect descriptor

 Removed effect  Added effect  Different effect



¹ For further information see Volume 5 Appendix SV-001-00000 of the Main ES

² For further details of the SES2/AP2 ES assessment see Volume 5 Appendix SV-003-00000

Map Number	SV-02 - Legend
Map Name	Operational Airborne Noise and Vibration Impacts and Likely Significant Effects SES2 and AP2 ES



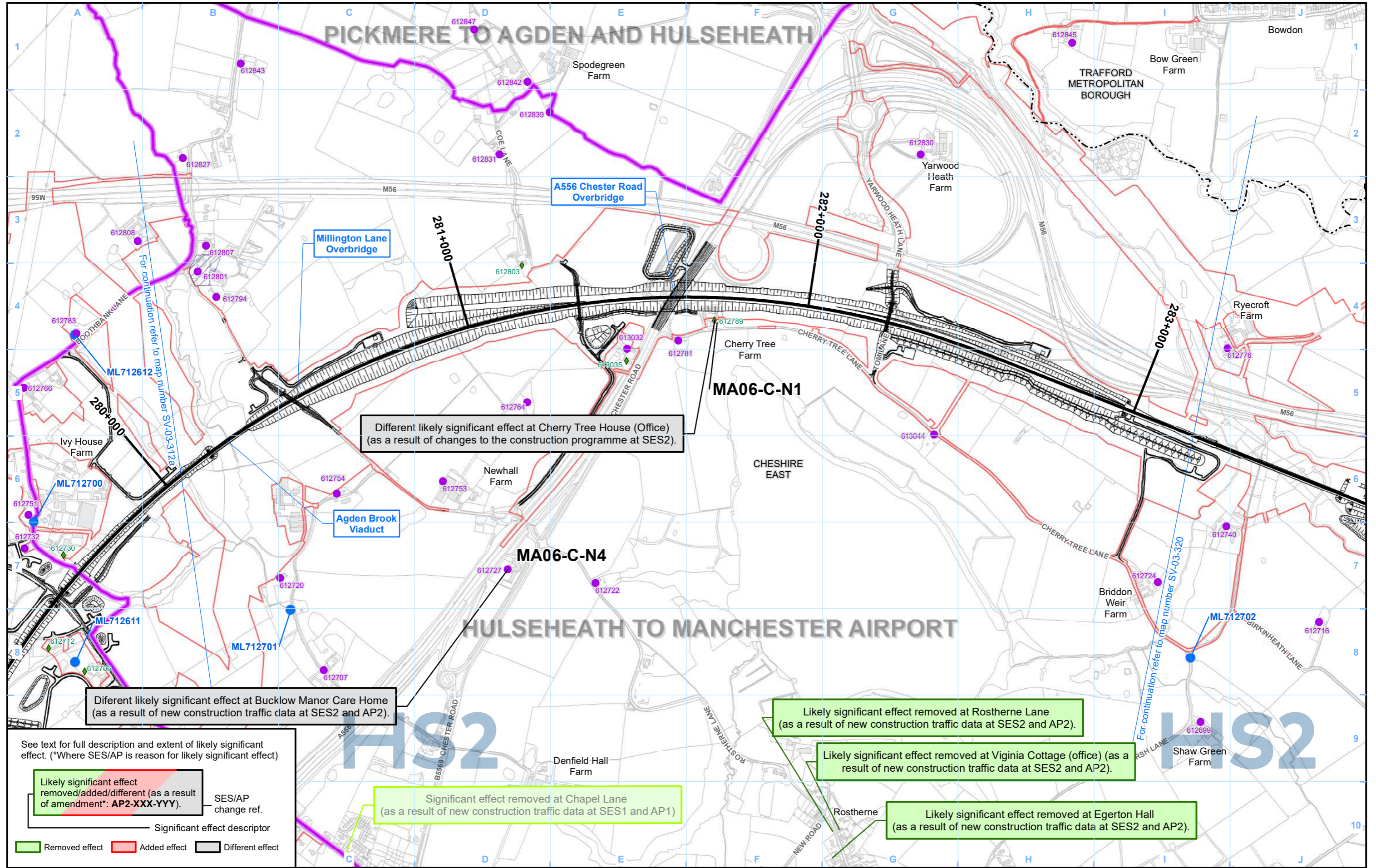
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Doc Number: -

Date:

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Diferent likely significant effect at Bucklow Manor Care Home (as a result of new construction traffic data at SES2 and AP2).

Different likely significant effect at Cherry Tree House (Office) (as a result of changes to the construction programme at SES2).

Likely significant effect removed at Rostherne Lane (as a result of new construction traffic data at SES2 and AP2).

Likely significant effect removed at Virginia Cottage (office) (as a result of new construction traffic data at SES2 and AP2).

Likely significant effect removed at Egerton Hall (as a result of new construction traffic data at SES2 and AP2).

Significant effect removed at Chapel Lane (as a result of new construction traffic data at SES1 and AP1)

See text for full description and extent of likely significant effect. (*Where SES/AP is reason for likely significant effect)

Likely significant effect removed/added/different (as a result of amendment*: AP2-XXX-YYY).	SES/AP change ref.
—	Significant effect descriptor
	Removed effect
	Added effect
	Different effect

- Legend - General features**
- Route in bored tunnel
 - Route in green tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Community area boundary
 - County boundary
 - District/Borough boundary

- Engineering earthworks:**
- Embankment
 - Cutting
- Non engineering earthworks:**
- Embankment
 - Cutting
 - Land potentially required during construction

- Legend - Sound related features**
- Committed developments - SV Only
 - Construction airborne sound assessment location
 - Construction vibration assessment location
 - Construction airborne sound and vibration assessment location
 - Baseline measurement location

labelled with assessment location ID reference number (for details of the SES2/AP2 ES assessment results see Volume 5 Appendix SV-002-00000) (labelled with measurement location reference code).

Likely significant effects from construction noise and /or vibration on groups of dwellings and any shared community open areas, and non-residential receptors, are indicated by MA06-C-C# and MA06-C-N#, respectively.

Map Number	SV-03-319
Map Name	Construction Airborne Noise and Vibration Likely Significant Effects SES2 and AP2 ES
Community Area MA06: Hulseheath to Manchester Airport	

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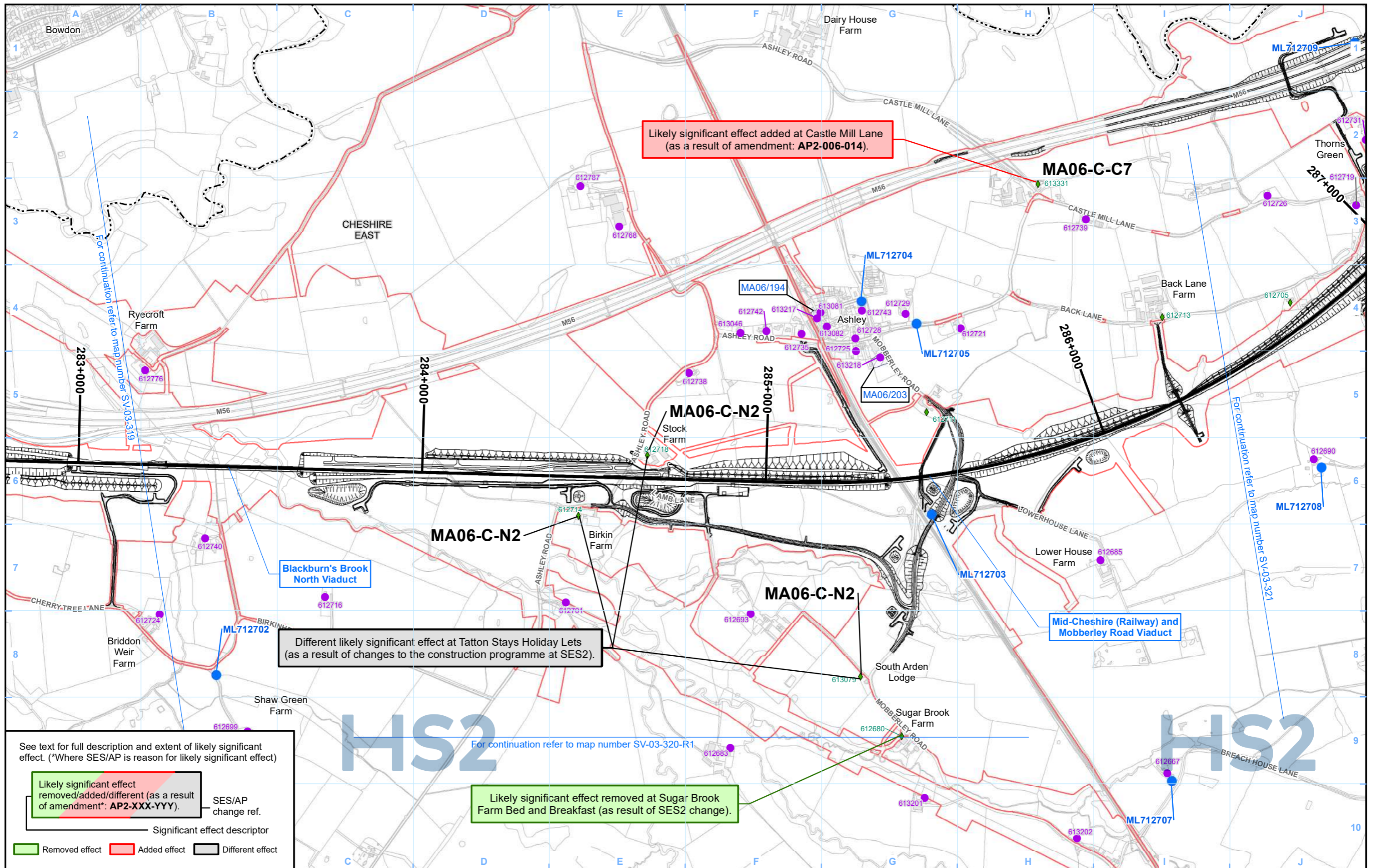
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Doc Number: 2PT27-MWJ-EV-MAP-M000-002070-P01

Date: 25/04/23

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See text for full description and extent of likely significant effect. (*Where SES/AP is reason for likely significant effect)

Likely significant effect removed/added/different (as a result of amendment*: AP2-XXX-YYY).	SES/AP change ref.
Likely significant effect removed/added/different (as a result of amendment*: AP2-XXX-YYY).	SES/AP change ref.
Likely significant effect removed/added/different (as a result of amendment*: AP2-XXX-YYY).	SES/AP change ref.
—	Significant effect descriptor
Removed effect	Added effect
Different effect	

Different likely significant effect at Tatton Stays Holiday Lets (as a result of changes to the construction programme at SES2).

Likely significant effect added at Castle Mill Lane (as a result of amendment: AP2-006-014).

Likely significant effect removed at Sugar Brook Farm Bed and Breakfast (as result of SES2 change).

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- County boundary
- District/Borough boundary
- Engineering earthworks: Embankment, Cutting
- Non engineering earthworks: Embankment, Cutting
- Land potentially required during construction

Legend - Sound related features

- Committed developments - SV Only
 - Construction airborne sound assessment location
 - Construction vibration assessment location
 - Construction airborne sound and vibration assessment location
 - Baseline measurement location
- labelled with assessment location ID reference number (for details of the SES2/AP2 ES assessment results see Volume 5 Appendix SV-002-00000) (labelled with measurement location reference code).
- Likely significant effects from construction noise and /or vibration on groups of dwellings and any shared community open areas, and non-residential receptors, are indicated by MA06-C-C# and MA06-C-N#, respectively.

Map Number: SV-03-320

Map Name: Construction Airborne Noise and Vibration Likely Significant Effects SES2 and AP2 ES

Community Area MA06: Hulseheath to Manchester Airport

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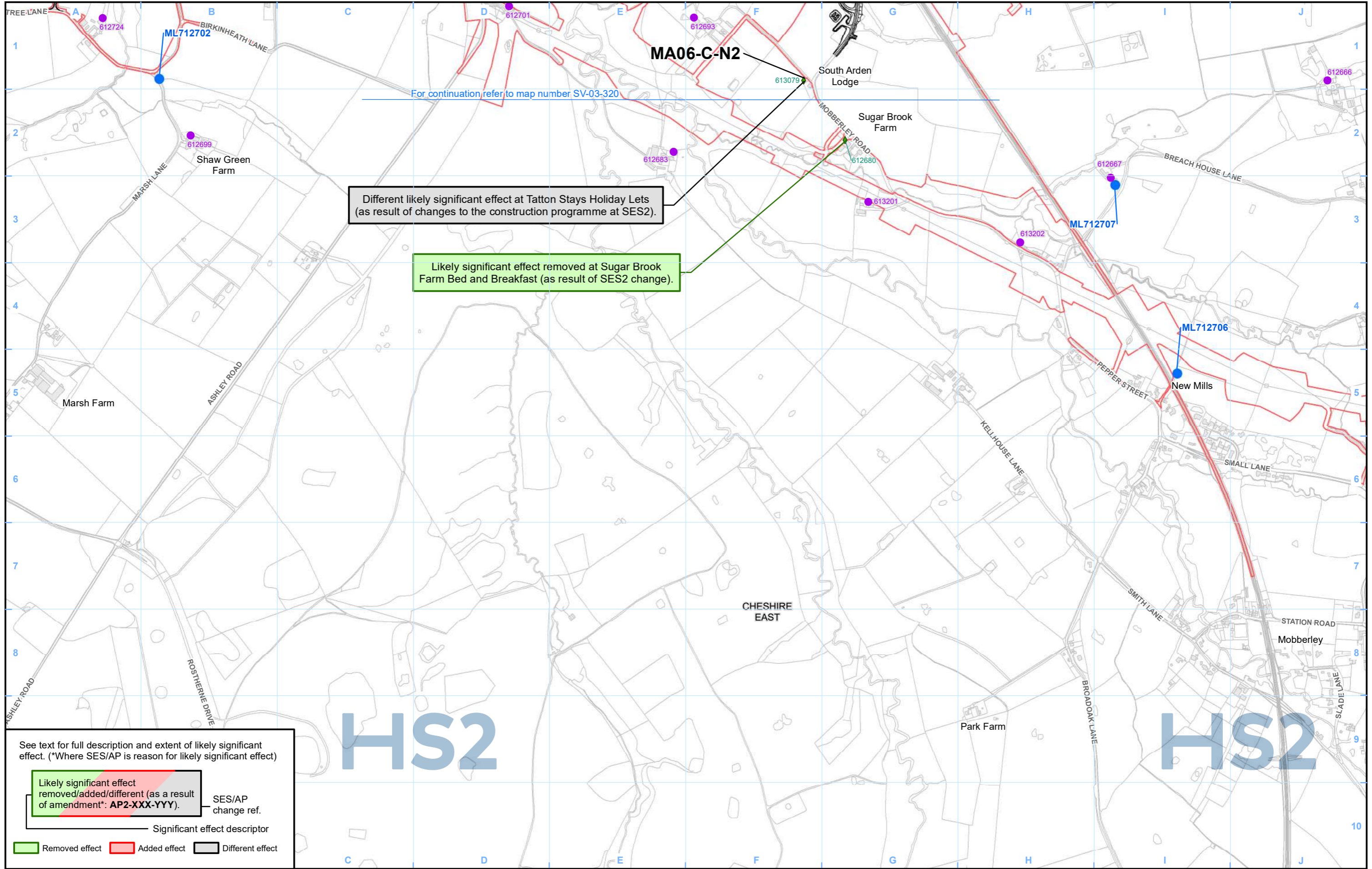
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Doc Number: 2PT27-MWJ-EV-MAP-M000-002071-P01

Date: 25/04/23

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Hs2

Hs2

See text for full description and extent of likely significant effect. (*Where SES/AP is reason for likely significant effect)

Likely significant effect removed/added/different (as a result of amendment*: AP2-XXX-YYY). — SES/AP change ref.

— Significant effect descriptor

Removed effect
 Added effect
 Different effect

- Legend - General features**
- Route in bored tunnel
 - Route in green tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Community area boundary
 - County boundary
 - District/Borough boundary

- Engineering earthworks:**
- Embankment
 - Cutting
 - Land potentially required during construction
- Non engineering earthworks:**
- Embankment
 - Cutting

- Legend - Sound related features**
- Committed developments - SV Only
 - Construction airborne sound assessment location
 - Construction vibration assessment location
 - ◆ Construction airborne sound and vibration assessment location
 - Baseline measurement location

labelled with assessment location ID reference number (for details of the SES2/AP2 ES assessment results see Volume 5 Appendix SV-002-00000) (labelled with measurement location reference code).

Likely significant effects from construction noise and /or vibration on groups of dwellings and any shared community open areas, and non-residential receptors, are indicated by MA06-C-C# and MA06-C-N#, respectively.

Map Number: **SV-03-320-R1**

Map Name: **Construction Airborne Noise and Vibration Likely Significant Effects SES2 and AP2 ES**

Community Area MA06: Hulseheath to Manchester Airport

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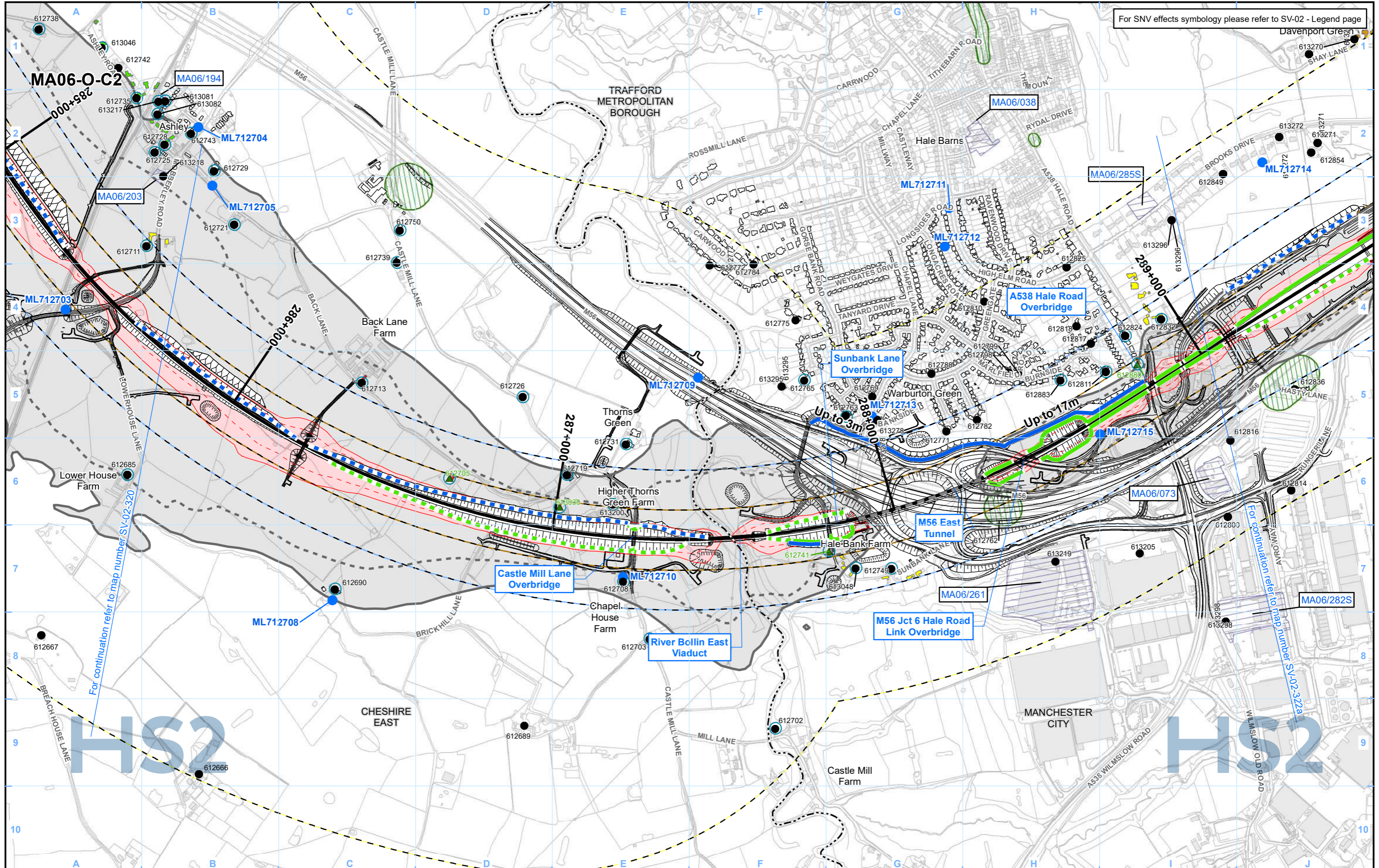
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Date: 25/04/23

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Metres



For SNV effects symbology please refer to SV-02 - Legend page

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- County boundary
- District/Borough boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Noise related features

Envisaged mitigation to avoid / reduce significant noise effects:

- Landscaping and/or fence barriers (labelled with total noise barrier height above rail)
- Engineering e.g. cuttings (green tunnels separately marked)

Envisaged features further reducing noise effects:

- Other environmental e.g. landscaping
- Engineering e.g. cuttings

Noise Important Areas defined in national noise action plans (Defra 2014)

Committed developments - SV Only

Airborne noise study area

Ground-borne noise & vibration study area (residential and non-residential)

Ground-borne noise & vibration study area (highly sensitive non-residential)

- Airborne noise assessment location
- Airborne noise and vibration assessment location
- Ground-borne noise and/or vibration assessment location
- Airborne noise, ground-borne sound and vibration assessment location
- Baseline measurement locations

Map Number: SV-02-321

Map Name: Operational Airborne Noise and Vibration Impacts and Likely Significant Effects SES2 and AP2

Community Area MA06: Hulseheath to Manchester Airport

HS2

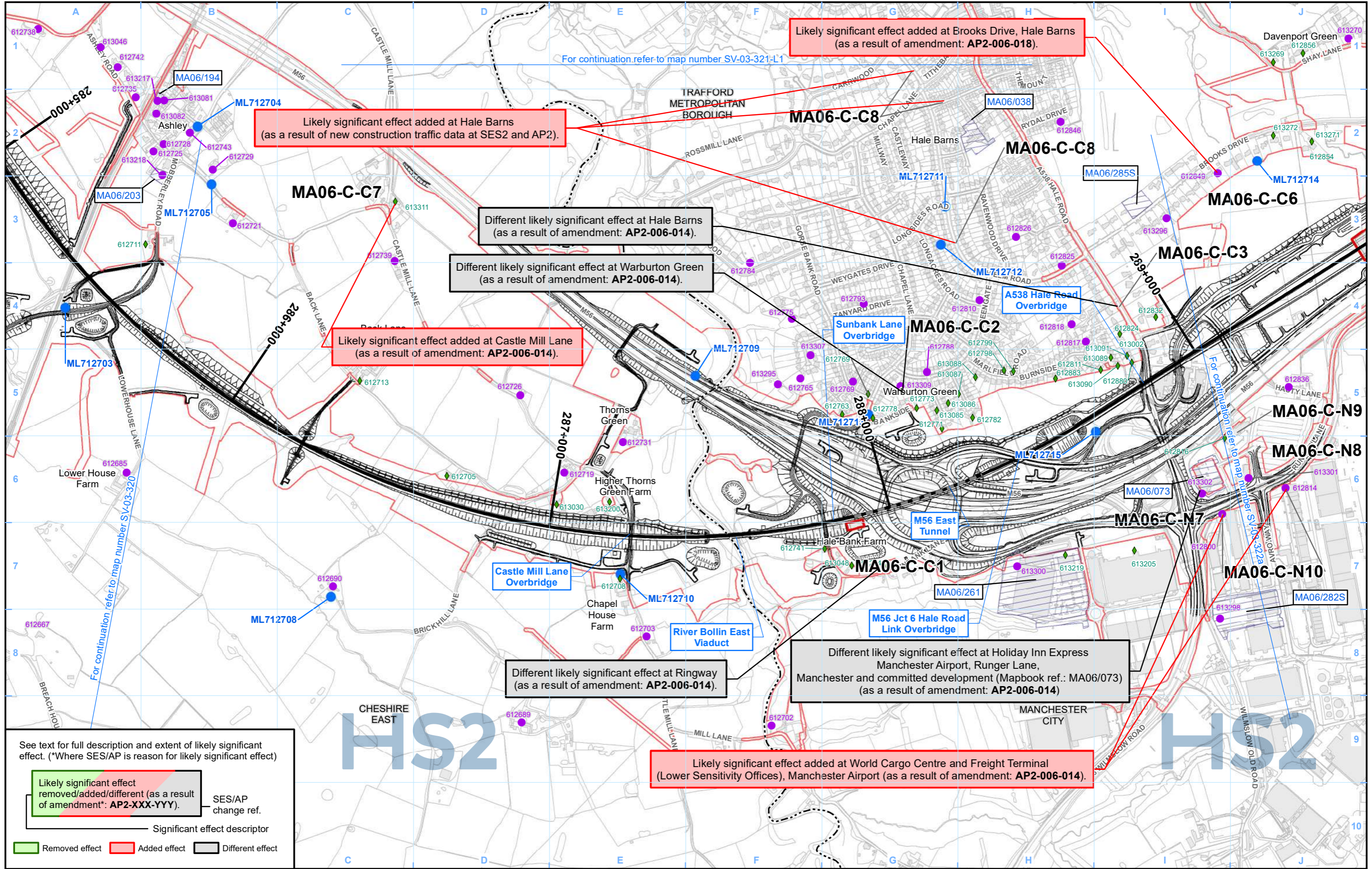
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Date: 13/04/23



See text for full description and extent of likely significant effect. (*Where SES/AP is reason for likely significant effect)

Likely significant effect removed/added/different (as a result of amendment*: AP2-XXX-YYY).	SES/AP change ref.
—	Significant effect descriptor
Removed effect	Added effect
Different effect	

- Legend - General features**
- Route in bored tunnel
 - Route in green tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Community area boundary
 - County boundary
 - District/Borough boundary

- Engineering earthworks:**
- Embankment
 - Cutting
 - Land potentially required during construction
- Non engineering earthworks:**
- Embankment
 - Cutting

- Legend - Sound related features**
- Committed developments - SV Only
 - Construction airborne sound assessment location
 - Construction vibration assessment location
 - Construction airborne sound and vibration assessment location
 - Baseline measurement location

labelled with assessment location ID reference number (for details of the SES2/AP2 ES assessment results see Volume 5 Appendix SV-002-00000) (labelled with measurement location reference code).

Likely significant effects from construction noise and/or vibration on groups of dwellings and any shared community open areas, and non-residential receptors, are indicated by MA06-C-C# and MA06-C-N#, respectively.

Map Number: SV-03-321

Map Name: Construction Airborne Noise and Vibration Likely Significant Effects SES2 and AP2 ES

Community Area MA06: Hulseheath to Manchester Airport

HS2

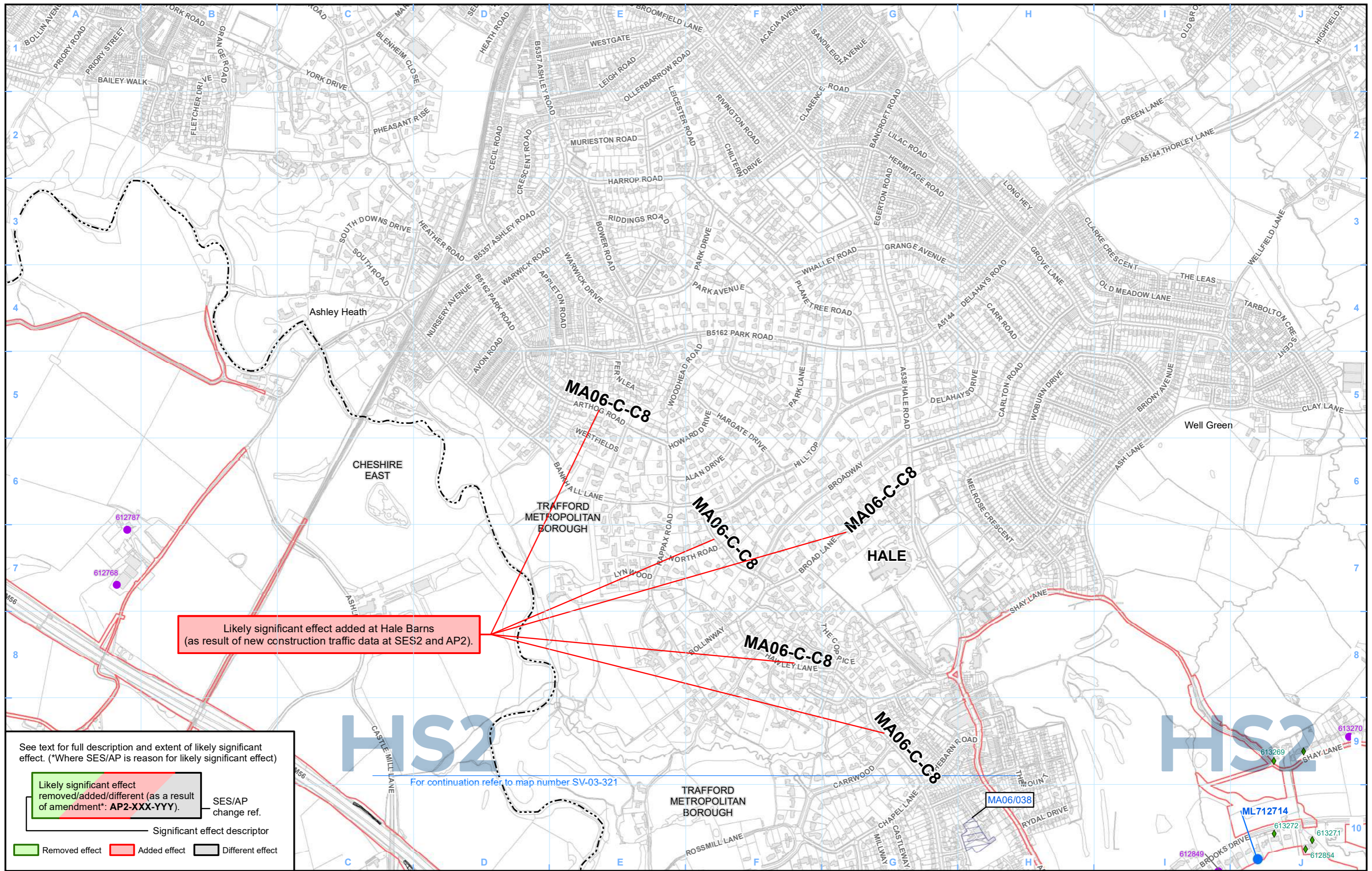
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Doc Number: 2PT27-MWJ-EV-MAP-M000-002072-P01

Date: 25/04/23

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Likely significant effect added at Hale Barns
(as result of new construction traffic data at SES2 and AP2).

See text for full description and extent of likely significant effect. (*Where SES/AP is reason for likely significant effect)

Likely significant effect removed/added/different (as a result of amendment*: AP2-XXX-YYY).	SES/AP change ref.
—	Significant effect descriptor
Removed effect	Added effect
Different effect	

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- County boundary
- District/Borough boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Land potentially required during construction

Legend - Sound related features

- Committed developments - SV Only
- Construction airborne sound assessment location
- Construction vibration assessment location
- Construction airborne sound and vibration assessment location
- Baseline measurement location

labelled with assessment location ID reference number (for details of the SES2/AP2 ES assessment results see Volume 5 Appendix SV-002-00000) (labelled with measurement location reference code).

Likely significant effects from construction noise and /or vibration on groups of dwellings and any shared community open areas, and non-residential receptors, are indicated by MA06-C-C# and MA06-C-N#, respectively.

Map Number: SV-03-321-L1

Map Name: Construction Airborne Noise and Vibration Likely Significant Effects SES2 and AP2 ES

Community Area MA06: Hulseheath to Manchester Airport

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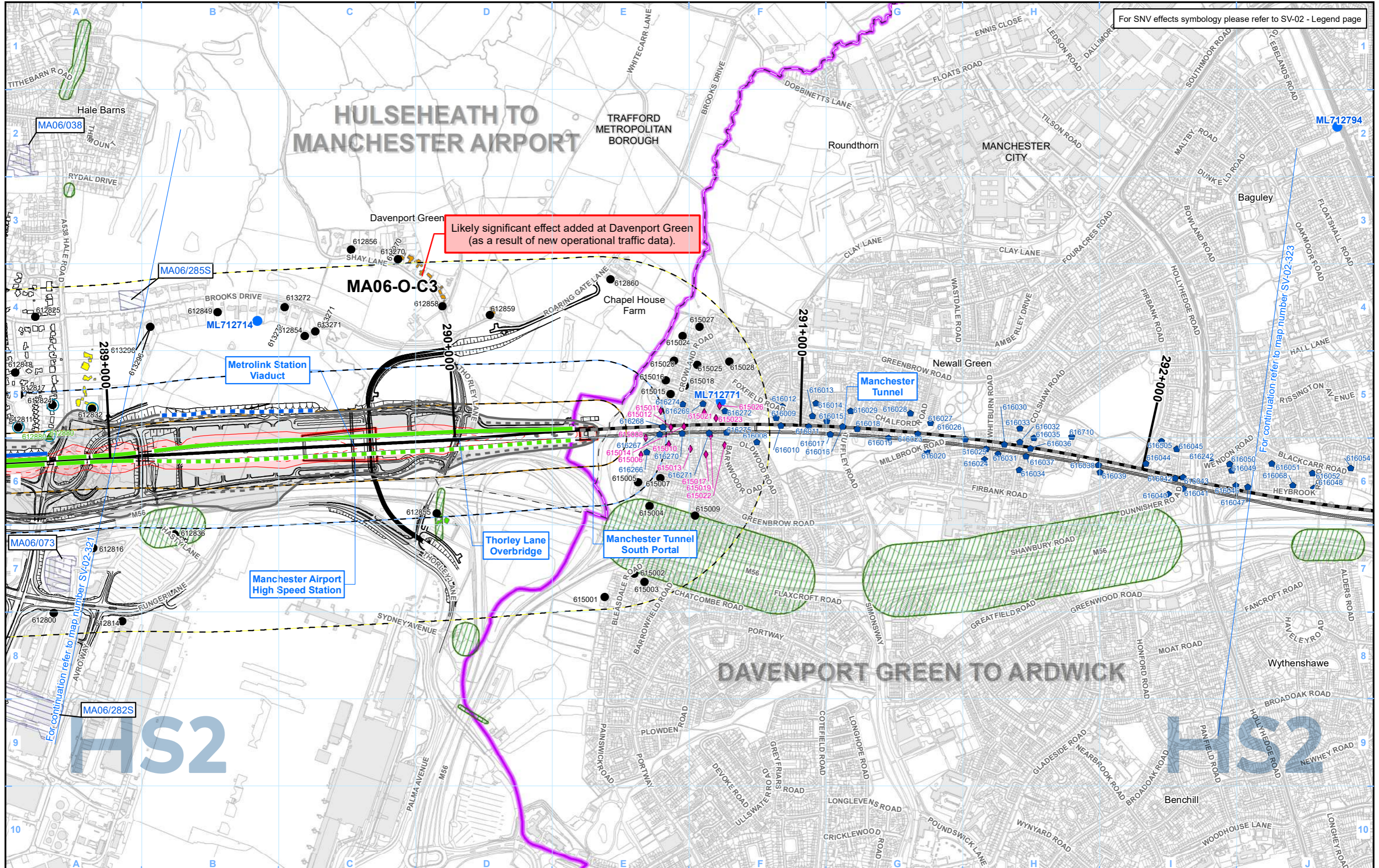
Date: 25/04/23

HULSEHEATH TO MANCHESTER AIRPORT

TRAFFORD METROPOLITAN BOROUGH

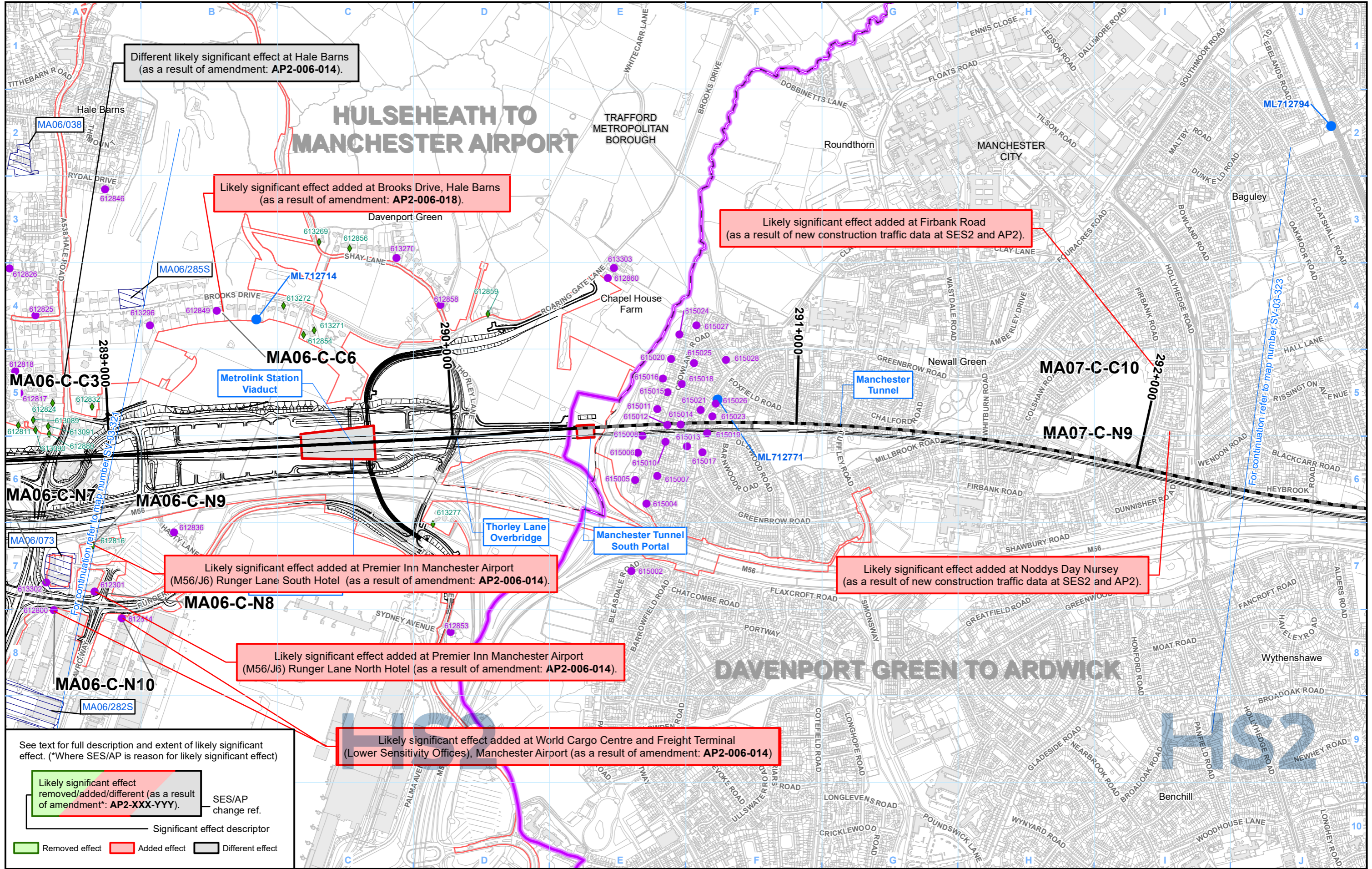
MANCHESTER CITY

DAVENPORT GREEN TO ARDWICK



Likely significant effect added at Davenport Green (as a result of new operational traffic data).

<p>Legend - General features</p> <ul style="list-style-type: none"> Route in bored tunnel Route in green tunnel Route on surface Depot, station, headhouse or portal building Community area boundary County boundary District/Borough boundary 	<p>Engineering earthworks:</p> <ul style="list-style-type: none"> Embankment Cutting <p>Non engineering earthworks:</p> <ul style="list-style-type: none"> Embankment Cutting 	<p>Legend - Noise related features</p> <p>Envisaged mitigation to avoid / reduce significant noise effects:</p> <ul style="list-style-type: none"> Landscaping and/or fence barriers (labelled with total noise barrier height above rail) Engineering e.g. cuttings (green tunnels separately marked) <p>Envisaged features further reducing noise effects:</p> <ul style="list-style-type: none"> Other environmental e.g. landscaping Engineering e.g. cuttings 	<p>Noise Important Areas defined in national noise action plans (Defra 2014)</p> <p>Committed developments - SV Only</p> <p>Airborne noise study area</p>	<p>Ground-borne noise & vibration study area (residential and non-residential)</p> <p>Ground-borne noise & vibration study area (highly sensitive non-residential)</p> <ul style="list-style-type: none"> Airborne noise assessment location Airborne noise and vibration assessment location Ground-borne noise and/or vibration assessment location Airborne noise, ground-borne sound and vibration assessment location Baseline measurement locations 	<p>Map Number: SV-02-322a</p> <p>Map Name: Operational Airborne Noise and Vibration Impacts and Likely Significant Effects SES2 and AP2</p> <p>Community Area MA06: Hulseheath to Manchester Airport</p>	<p>HS2</p> <p>Registered in England. Registration number 06791686. Registered office: Two Snowhill, Snow Hill Queensway, Birmingham B4 6GA.</p> <p>© Crown copyright and database rights 2022. OS 100049190</p> <p>Doc Number: 2PT27-MWJ-EV-MAP-M000-002027-P01</p> <p>Date: 13/04/23</p> <p>Scale at A3: 1:10,000</p> <p>Metres</p>
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See text for full description and extent of likely significant effect. (*Where SES/AP is reason for likely significant effect)

Likely significant effect removed/added/different (as a result of amendment*: AP2-XXX-YYY).	SES/AP change ref.
—	Significant effect descriptor
Removed effect	Added effect
Different effect	

Likely significant effect added at World Cargo Centre and Freight Terminal (Lower Sensitivity Offices), Manchester Airport (as a result of amendment: AP2-006-014)

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- County boundary
- District/Borough boundary

Legend - Sound related features

- Engineering earthworks:
 - Embankment
 - Cutting
- Non engineering earthworks:
 - Embankment
 - Cutting
- Land potentially required during

Legend - Sound related features

- Committed developments - SV Only
- Construction airborne sound assessment location
- Construction vibration assessment location
- Construction airborne sound and vibration assessment location
- Baseline measurement location

labelled with assessment location ID reference number (for details of the SES2/AP2 ES assessment results see Volume 5 Appendix SV-002-00000) (labelled with measurement location reference code).

Likely significant effects from construction noise and /or vibration on groups of dwellings and any shared community open areas, and non-residential receptors, are indicated by MA06-C-C# and MA06-C-N#, respectively.

Map Number	SV-03-322a
Map Name	Construction Airborne Noise and Vibration Likely Significant Effects SES2 and AP2 ES
Community Area MA06: Hulseheath to Manchester Airport	

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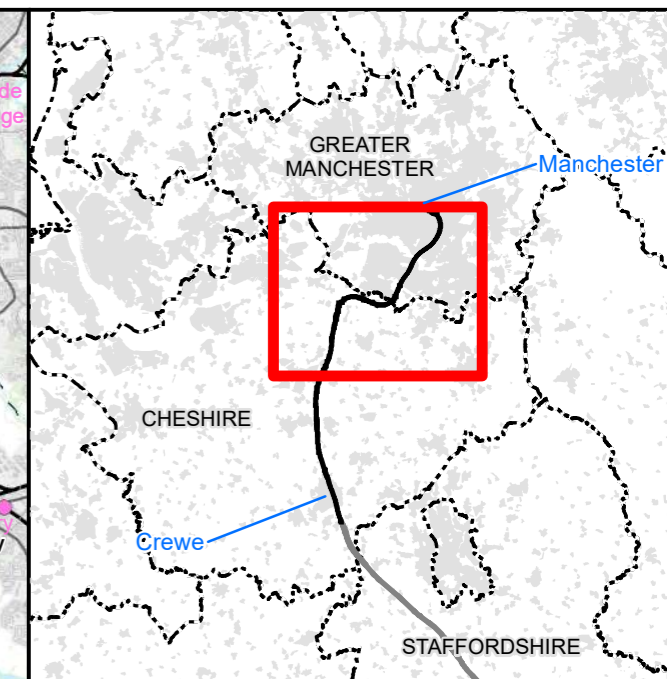
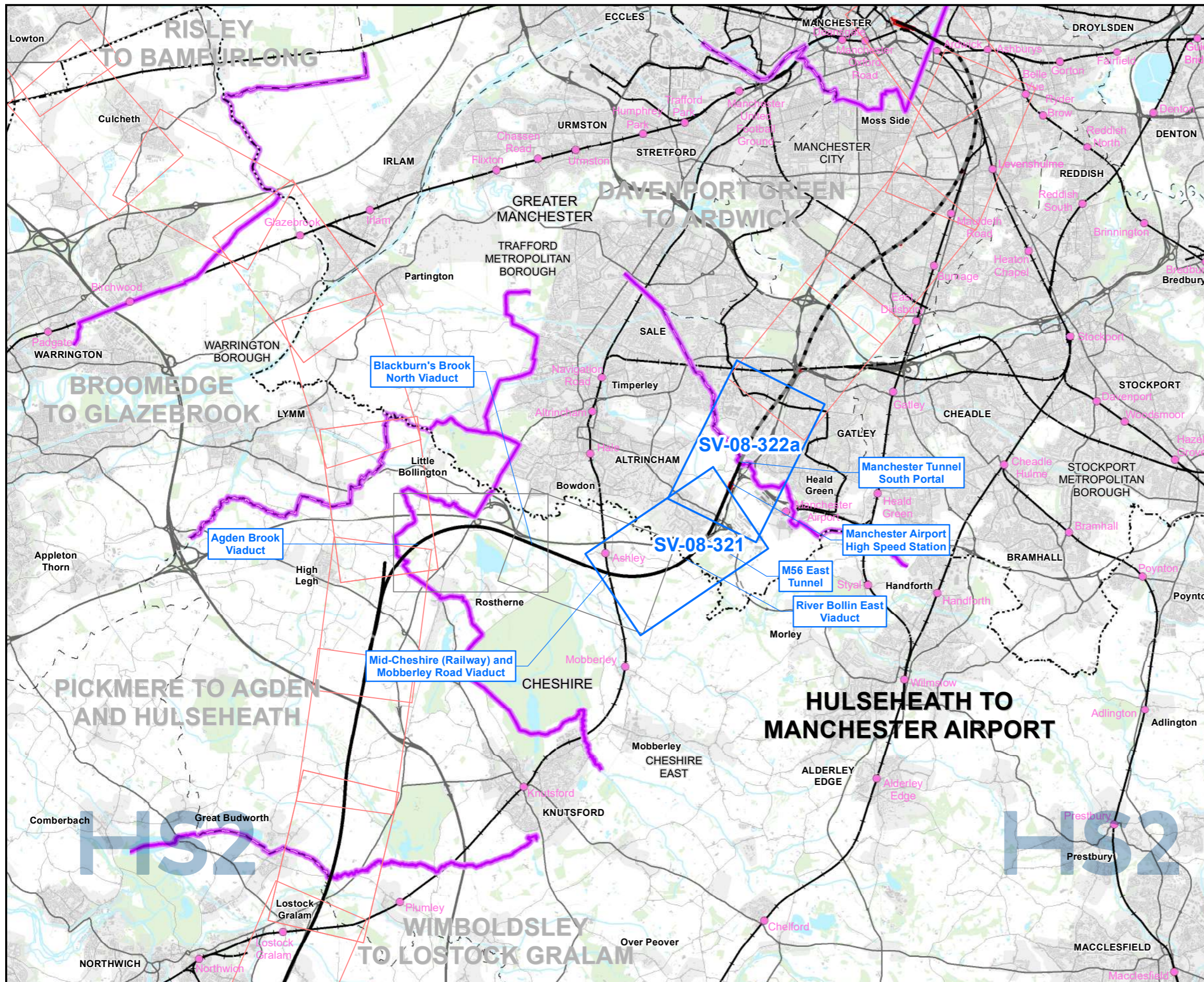
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Date: 21/04/23



Map Series Information:

SV-08 presents the predicted daytime operational sound from the new railway.

The sound levels from the new railway (expressed as LpAeq,T) are presented in typical noise mapping colours in 5 dB steps. There is a panel at the top right of the figure; this panel contains a key communicating the daytime sound levels represented by the various colours. A corresponding and similar panel is found on SV-02 and SV-09, along with the key sound contours that were used within the environmental assessment.

Also presented on SV-08 are the following (which are also included on SV-02):

- A representation of the Proposed Scheme, including the railway alignment (indicating whether it is on the surface or in tunnel), any new and altered roads and all associated engineering and environmental mitigation earthworks;
- blue and green lines representing the wayside airborne noise mitigation measures included in the Proposed Scheme;
- the extent of the study area within which the direct impacts and effects of the Proposed Scheme have been quantitatively assessed.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

The design of the Proposed Scheme will be informed through stakeholder engagement and further engineering and environmental studies.

Note: Not all data layers in the legend are represented on every map.

Main Map Legend

Route in tunnel	Map sheets included in this community area
Route on surface	Map sheets included in this community area with no amendment
Depot, station, headhouse or portal building	Map sheets not included in this community area
Community area boundary	
Existing railway station	
County boundary	
District/Borough boundary	

Map Number	SV-08-INDEX-MA06
Map Name	Index Map of: Daytime Operational Sound Contour Maps SES2 and AP2 ES Community Area MA06: Hulseheath to Manchester Airport

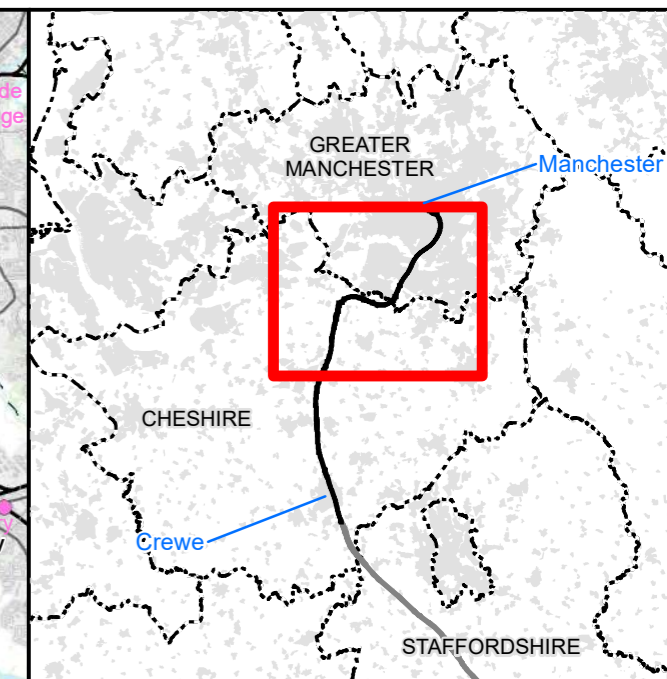
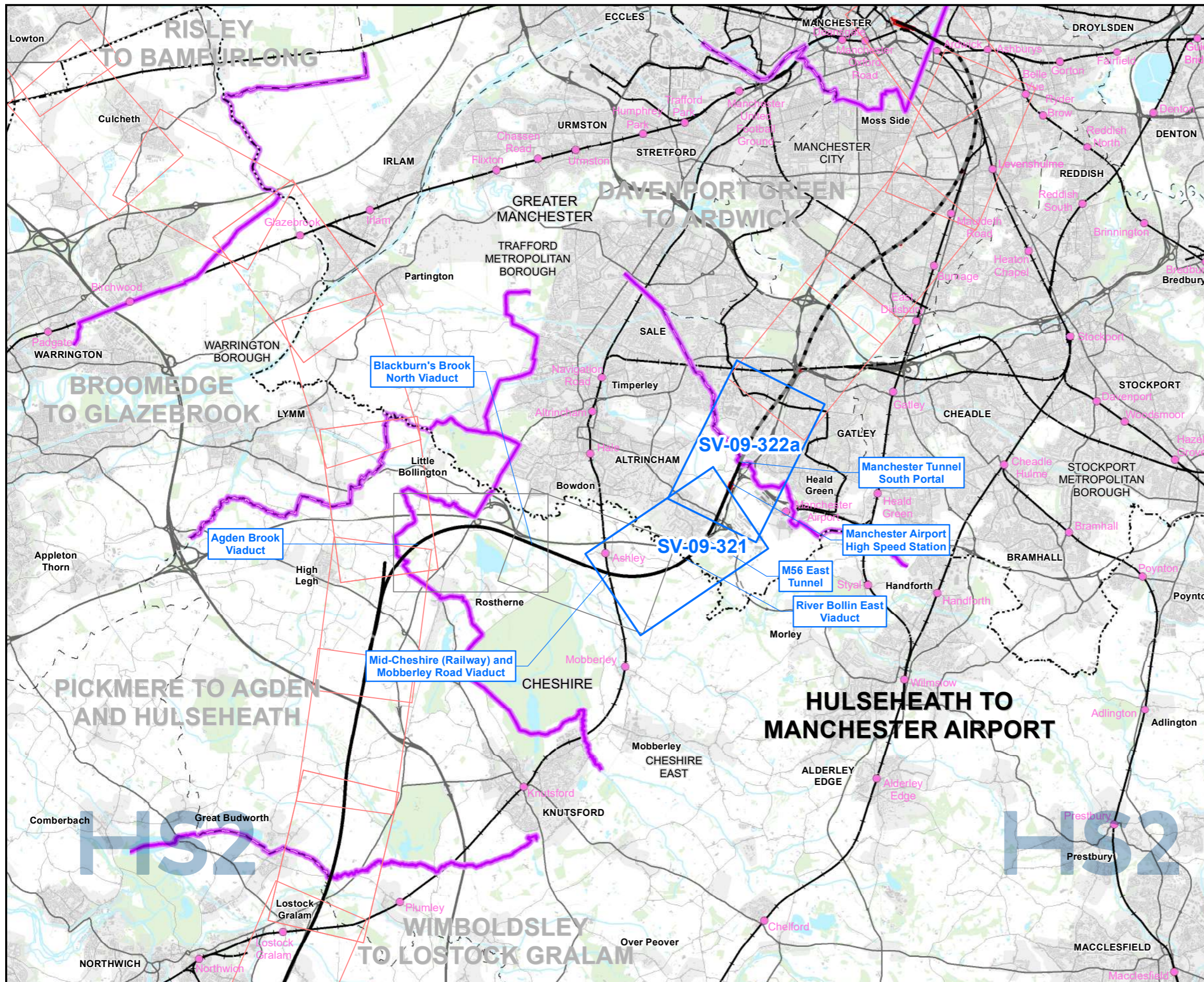
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Doc Number: 2PT27-MWJ-EV-MAP-M000-000235-P01 Date: 31/03/23



Map Series Information:

SV-09 presents the predicted night-time operational sound from the new railway.

The sound levels from the new railway (expressed as LpAeq,T) are presented in typical noise mapping colours in 5 dB steps. There is a panel at the top right of the figure; this panel contains a key communicating the night-time sound levels represented by the various colours. A corresponding and similar panel is found on SV-02 and SV-08, along with the key sound contours that were used within the environmental assessment.

Also presented on SV-09 are the following (which are also included on SV-02):

- A representation of the Proposed Scheme, including the railway alignment (indicating whether it is on the surface or in tunnel), any new and altered roads and all associated engineering and environmental mitigation earthworks;
- blue and green lines representing the wayside airborne noise mitigation measures included in the Proposed Scheme;
- the extent of the study area within which the direct impacts and effects of the scheme have been quantitatively assessed.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

The design of the Proposed Scheme will be informed through stakeholder engagement and further engineering and environmental studies.

Note: Not all data layers in the legend are represented on every map.

Main Map Legend

Route in tunnel	Map sheets included in this community area
Route on surface	Map sheets included in this community area with no amendment
Depot, station, headhouse or portal building	Map sheets not included in this community area
Community area boundary	
Existing railway station	
County boundary	
District/Borough boundary	

Map Number	SV-09-INDEX-MA06
Map Name	Index Map of: Night-time Operational Sound Contour Maps SES2 and AP2 ES Community Area MA06: Hulseheath to Manchester Airport

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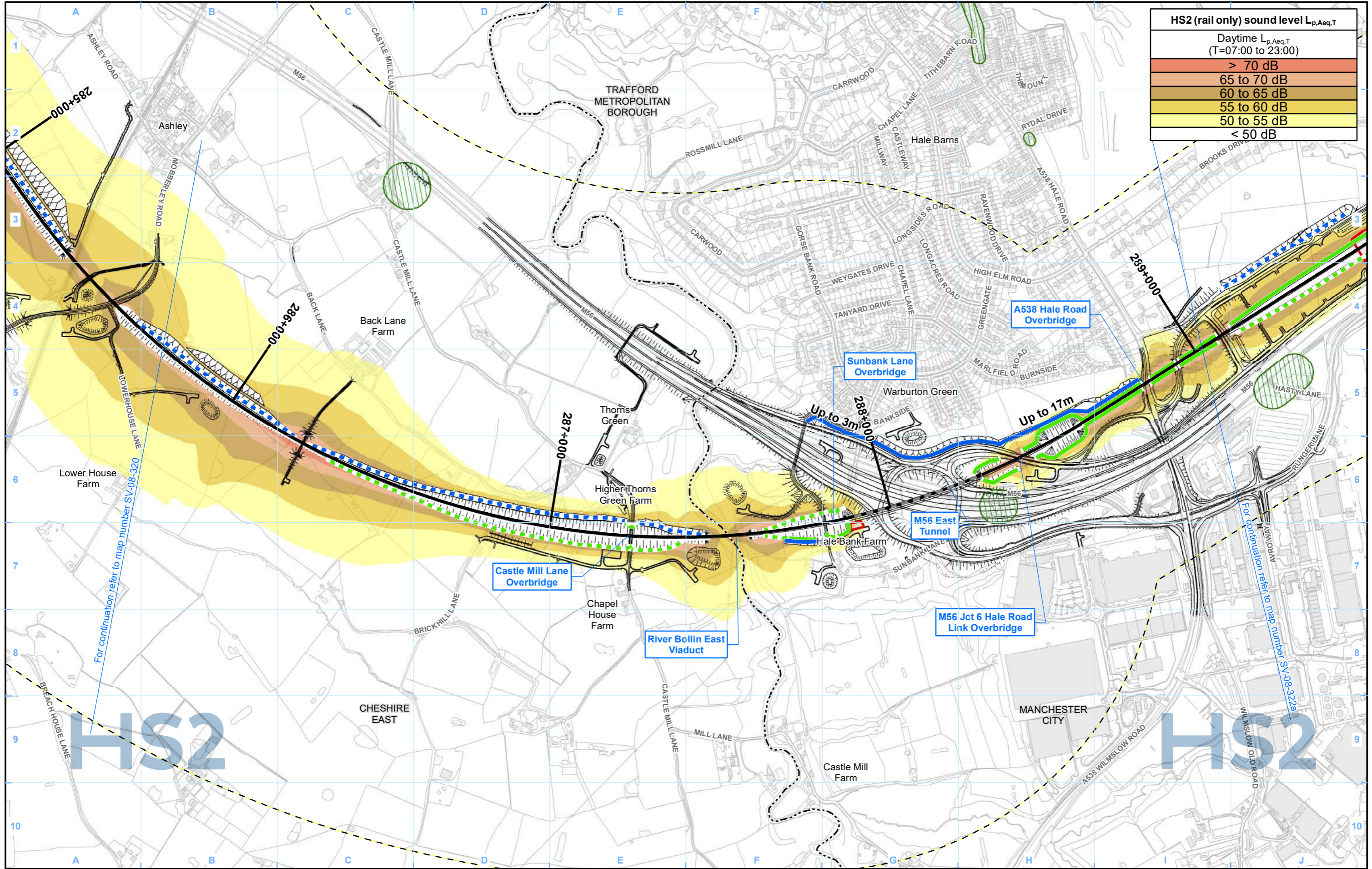
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Doc Number: 2PT27-MWJ-EV-MAP-M000-000235-P01 Date: 31/03/23

HS2 (rail only) sound level $L_{p,Aeq,T}$	
Daytime $L_{p,Aeq,T}$ (T=07:00 to 23:00)	
	> 70 dB
	65 to 70 dB
	60 to 65 dB
	55 to 60 dB
	< 50 dB



Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- County boundary
- District/Borough boundary

Legend - Sound related features

- Engineering earthworks:**
 - Embankment
 - Cutting
- Non engineering earthworks:**
 - Embankment
 - Cutting
- Envisaged mitigation to avoid / reduce significant noise effects:**
 - Landscaping and/or fence barriers*
 - Engineering e.g. cuttings (green tunnels separately marked)
- Envisaged features further reducing noise effects:**
 - Other environmental e.g. landscaping
 - Engineering e.g. cuttings

Legend - Sound related features

- Airborne noise study area
- Noise Important Areas defined in national noise action plans (Defra 2019)

* Labelled with total barrier height above rail level

Map Number	SV-08-321
Map Name	Daytime Operational Sound Contour Maps SES2 and AP2 ES
	Community Area MA06: Hulse Heath to Manchester Airport

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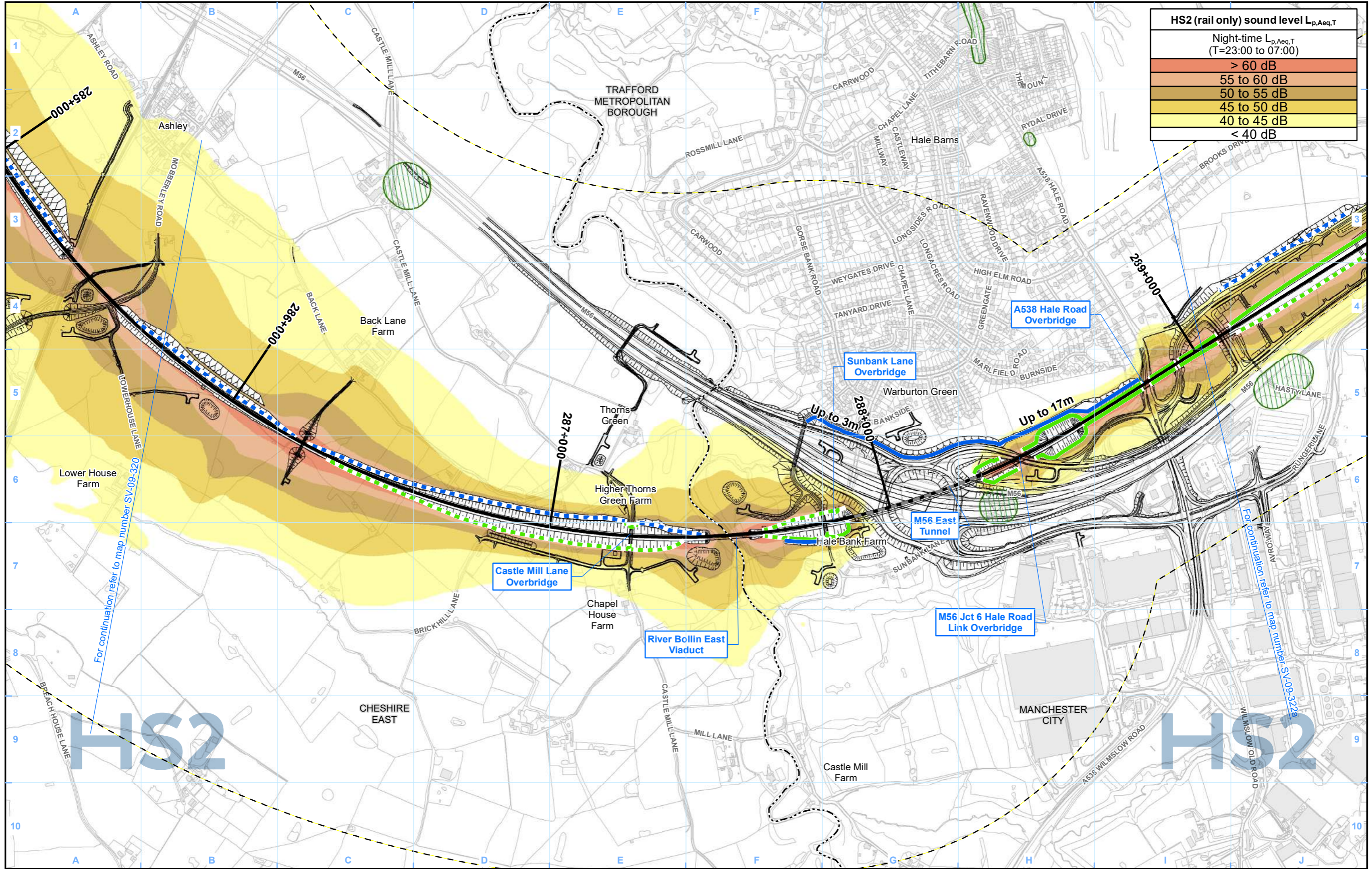
Doc Number: 2PT27-MWJ-EV-MAP-M000-003105-P01

Scale at A3: 1:10,000

Metres

Date: 31/03/23

HS2 (rail only) sound level $L_{p,Aeq,T}$	
Night-time $L_{p,Aeq,T}$ (T=23:00 to 07:00)	
	> 60 dB
	55 to 60 dB
	50 to 55 dB
	45 to 50 dB
	40 to 45 dB
	< 40 dB



Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- County boundary
- District/Borough boundary

Legend - Sound related features

- | | |
|-------------------------|-----------------------------|
| Engineering earthworks: | Non engineering earthworks: |
| Embankment | Embankment |
| Cutting | Cutting |

Legend - Sound related features

- Envisaged mitigation to avoid / reduce significant noise effects:
- Landscaping and/or fence barriers*
- Engineering e.g. cuttings (green tunnels separately marked)
- Envisaged features further reducing noise effects:
- Other environmental e.g. landscaping
- Engineering e.g. cuttings

Legend - Sound related features

- Airborne noise study area
- Noise Important Areas defined in national noise action plans (Defra 2019)

* Labelled with total barrier height above rail level

Map Number	SV-09-321
Map Name	Night-time Operational Sound Contour Maps SES2 and AP2 ES
	Community Area MA06: Hulseheath to Manchester Airport

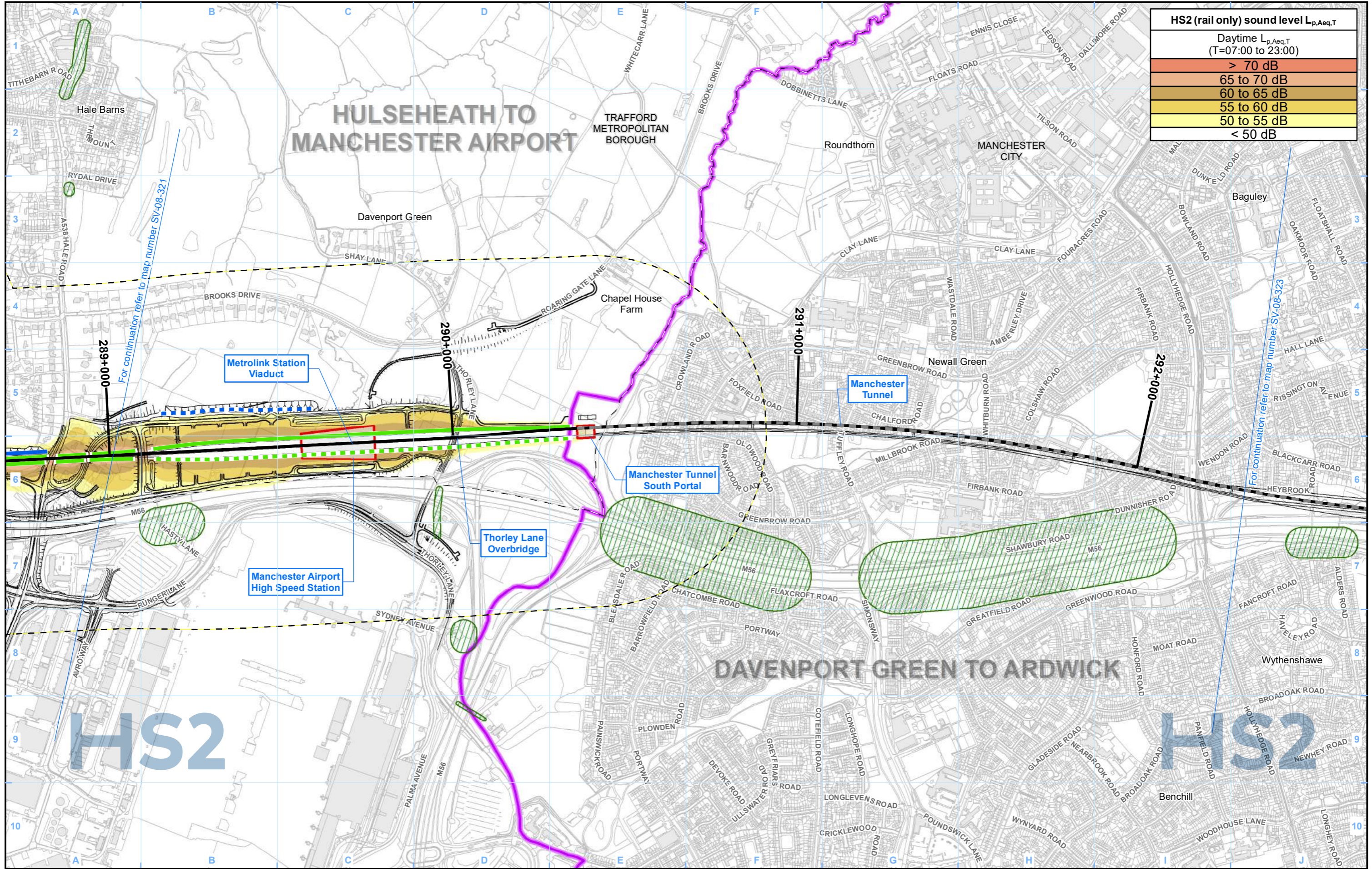
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Doc Number: 2PT27-MWJ-EV-MAP-M000-003146-P01

Scale at A3: 1:10,000

Date: 31/03/23



HS2 (rail only) sound level $L_{p,Aeq,T}$	
Daytime $L_{p,Aeq,T}$ (T=07:00 to 23:00)	
	> 70 dB
	65 to 70 dB
	60 to 65 dB
	55 to 60 dB
	50 to 55 dB
	< 50 dB

- Legend - General features**
- Route in bored tunnel
 - Route in green tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Community area boundary
 - County boundary
 - District/Borough boundary

- Engineering earthworks:**
- Embankment
 - Cutting
- Non engineering earthworks:**
- Embankment
 - Cutting

- Legend - Sound related features**
- Envisaged mitigation to avoid / reduce significant noise effects:
 - Landscaping and/or fence barriers*
 - Engineering e.g. cuttings (green tunnels separately marked)
 - Envisaged features further reducing noise effects:
 - Other environmental e.g. landscaping
 - Engineering e.g. cuttings
- * Labelled with total barrier height above rail level

- Airborne noise study area
- Noise Important Areas defined in national noise action plans (Defra 2019)

Map Number: SV-08-322a

Map Name: Daytime Operational Sound Contour Maps SES2 and AP2 ES

Community Area MA06: Hulseheath to Manchester Airport

HS2

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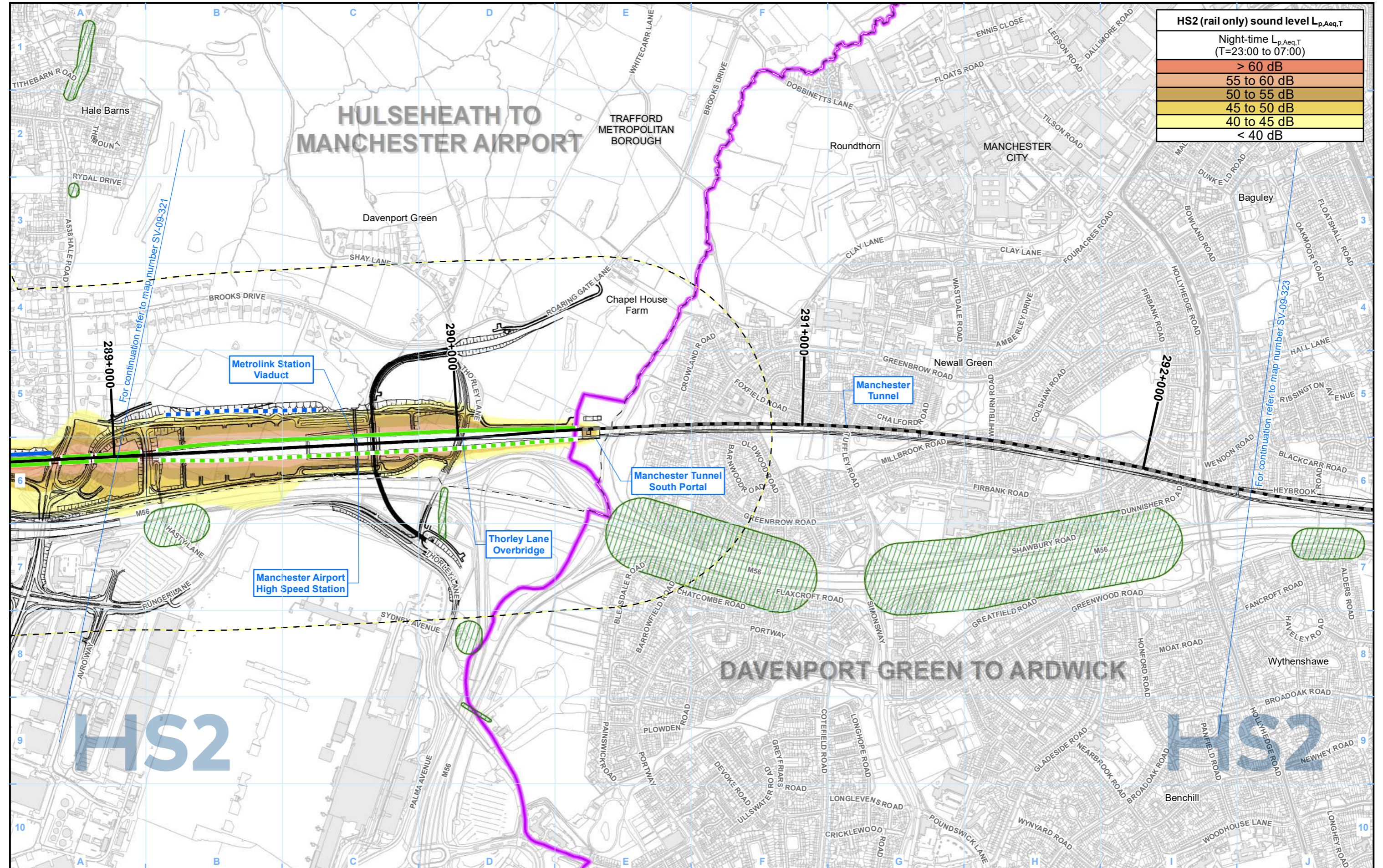
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Doc Number: 2PT27-MWJ-EV-MAP-M000-003106-P01

Date: 31/03/23

Scale at A3: 1:10,000

0 100 200 300 400 Metres



HS2 (rail only) sound level $L_{p,Aeq,T}$	
Night-time $L_{p,Aeq,T}$ (T=23:00 to 07:00)	
	> 60 dB
	55 to 60 dB
	50 to 55 dB
	45 to 50 dB
	< 40 dB

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- County boundary
- District/Borough boundary

- Engineering earthworks:
- Embankment
 - Cutting
- Non engineering earthworks:
- Embankment
 - Cutting

Legend - Sound related features

- Envisaged mitigation to avoid / reduce significant noise effects: Landscaping and/or fence barriers*
 - Engineering e.g. cuttings (green tunnels separately marked)
 - Envisaged features further reducing noise effects: Other environmental e.g. landscaping
 - Engineering e.g. cuttings
 - Airborne noise study area
 - Noise Important Areas defined in national noise action plans (Defra 2019)
- * Labelled with total barrier height above rail level

Map Number: SV-09-322a

Map Name: Night-time Operational Sound Contour Maps SES2 and AP2 ES

Community Area MA06: Hulseheath to Manchester Airport

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Date: 31/03/23

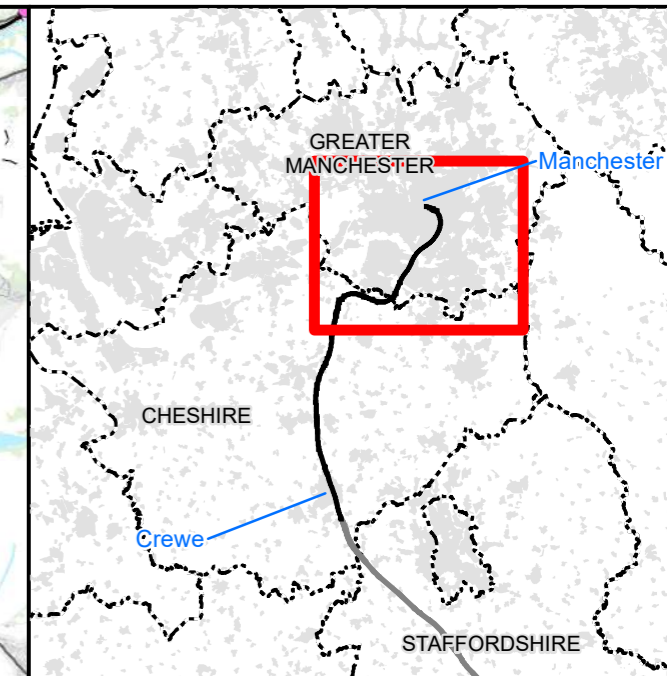
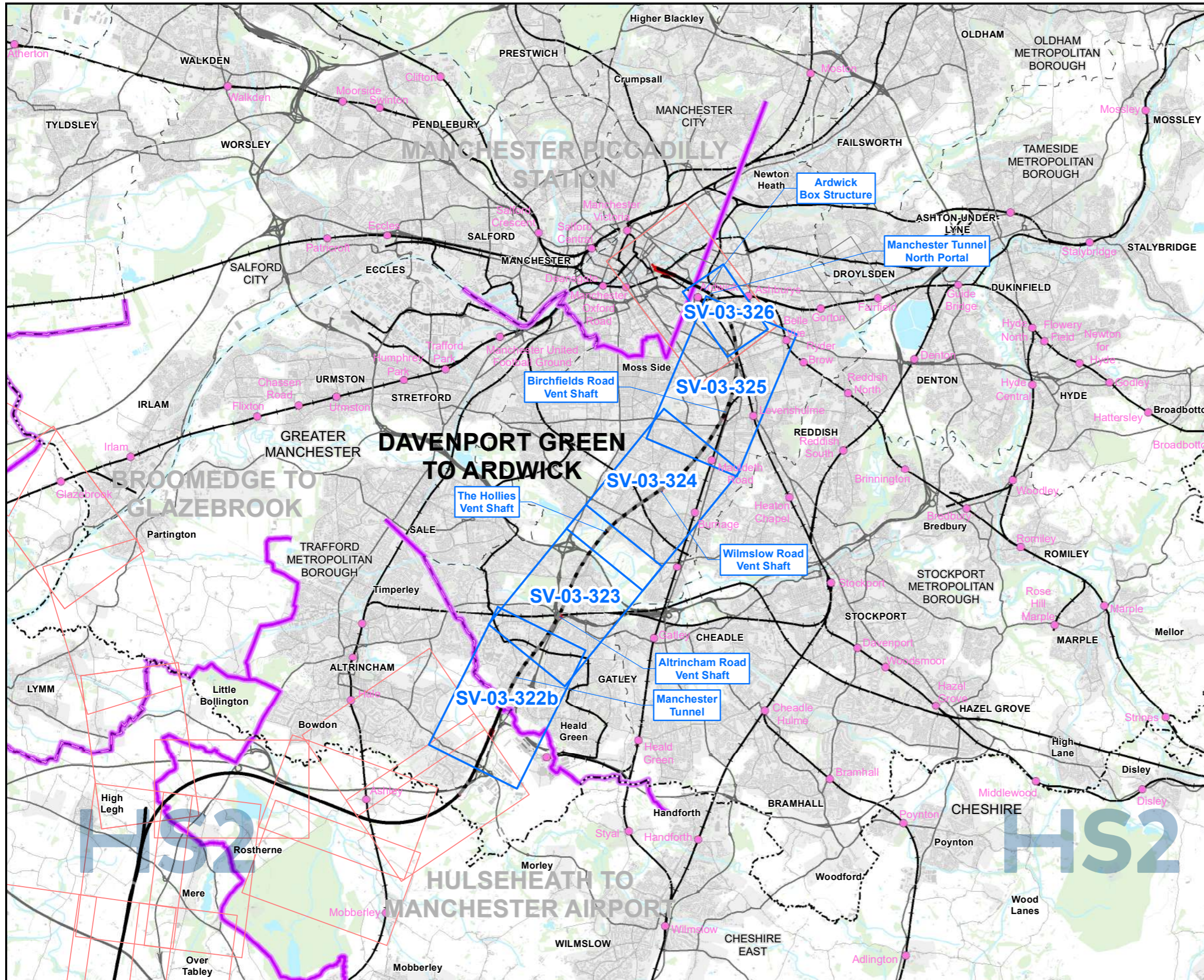
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High Speed Rail (Crewe – Manchester)

Supplementary Environmental Statement 2 and Additional Provision 2 Environmental Statement

MA07: Davenport Green to Ardwick

SV-03 – Construction Airborne Noise and Vibration
Likely Significant Effects



Map Series Information:

The SV-03 figure series accompanies the construction noise & vibration assessments. It shows the locations at which a quantitative assessment of the direct effects of construction noise and/or vibration has been carried out. These are labelled as assessment locations with a reference number to enable cross-reference to the construction noise and vibration reports contained in Volume 5: Appendix SV-002-00000.

The figure series also shows locations at which baseline sound measurements were carried out.

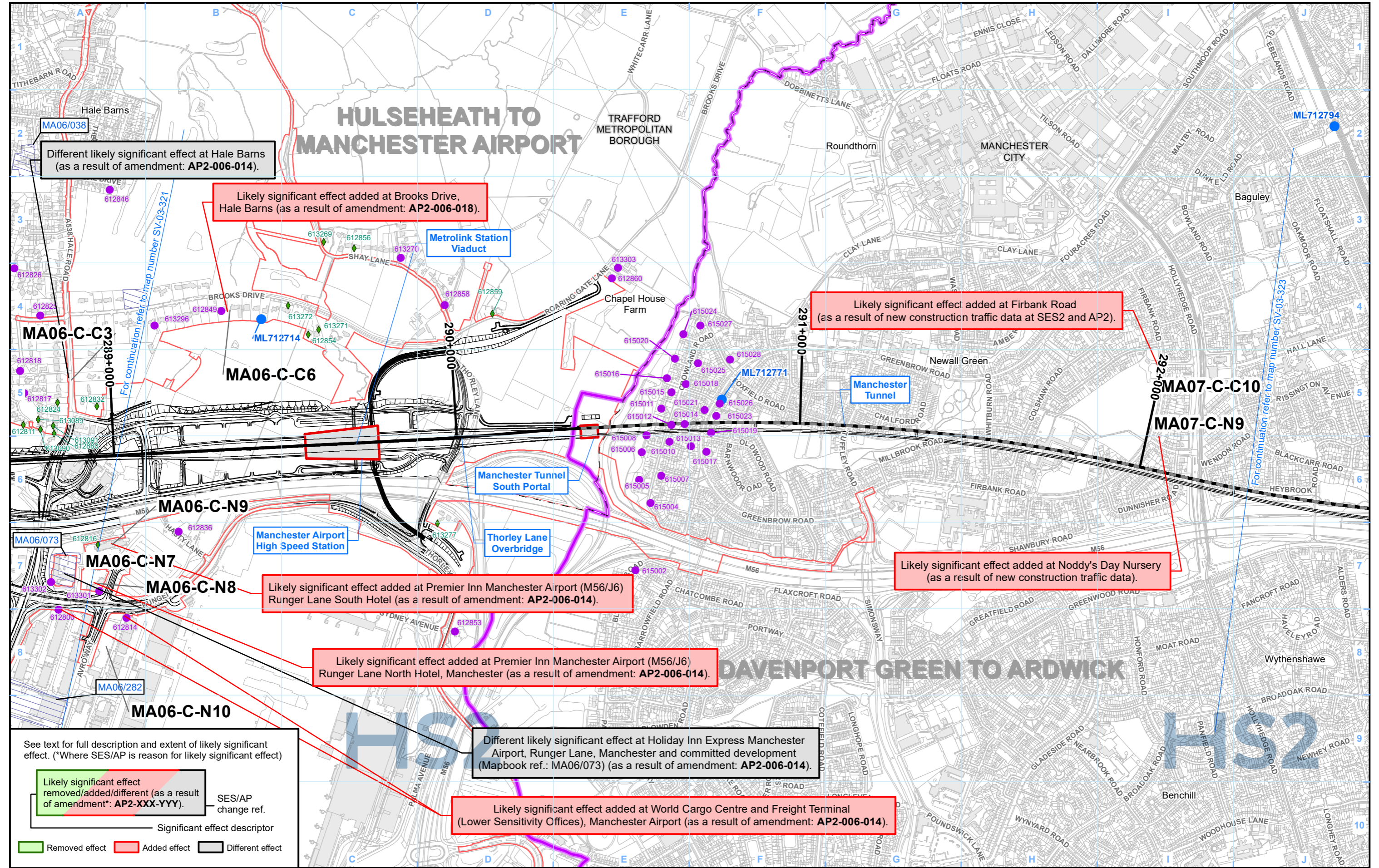
These baseline measurement locations are labelled with a reference number to enable cross-reference to the baseline sound reports contained in Volume 5: Appendix SV-002-00000.

The design of the Proposed Scheme will be informed through stakeholder engagement and further engineering and environmental studies.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

<p>Main Map Legend</p> <ul style="list-style-type: none"> Route in tunnel Route on surface Depot, station, headhouse or portal building Community area boundary Existing railway station County boundary District/Borough boundary Map sheets included in this community area Map sheets included in this community area with no amendment Map sheets not included in this community area 		<p>Map Number: SV-03-INDEX-MA07</p> <p>Map Name: Index Map of: Construction Airborne Noise and Vibration Likely Significant Effects SES2 and AP2 ES Community Area MA07: Davenport Green to Ardwick</p>
<p>HS2</p>		<p>HS2</p> <p>Registered in England. Registration number 06791686. Registered office: Two Snowhill, Snow Hill Queensway, Birmingham B4 6GA.</p> <p>Scale at A3: 1:100,000</p> <p>0 1,000 2,000 3,000 4,000 Metres</p> <p>Doc Number: 2PT27-MWJ-EV-MAP-M000-002089-P01</p> <p>Date: 20/04/23</p>

Note: Not all data layers in the legend are represented on every map.



Different likely significant effect at Hale Barns (as a result of amendment: AP2-006-014).

Likely significant effect added at Brooks Drive, Hale Barns (as a result of amendment: AP2-006-018).

Likely significant effect added at Firbank Road (as a result of new construction traffic data at SES2 and AP2).

Likely significant effect added at Premier Inn Manchester Airport (M56/J6) Runger Lane South Hotel (as a result of amendment: AP2-006-014).

Likely significant effect added at Noddy's Day Nursery (as a result of new construction traffic data).

Likely significant effect added at Premier Inn Manchester Airport (M56/J6) Runger Lane North Hotel, Manchester (as a result of amendment: AP2-006-014).

Different likely significant effect at Holiday Inn Express Manchester Airport, Runger Lane, Manchester and committed development (Mapbook ref.: MA06/073) (as a result of amendment: AP2-006-014).

Likely significant effect added at World Cargo Centre and Freight Terminal (Lower Sensitivity Offices), Manchester Airport (as a result of amendment: AP2-006-014).

See text for full description and extent of likely significant effect. (*Where SES/AP is reason for likely significant effect)

Likely significant effect removed/added/different (as a result of amendment*: AP2-XXX-YYY).	SES/AP change ref.
Significant effect descriptor	
Removed effect	Added effect
Added effect	Different effect

- Legend - General features**
- Route in bored tunnel
 - Route in green tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Community area boundary
 - County boundary
 - District/Borough boundary

- Legend - Sound related features**
- Engineering earthworks: Non engineering earthworks:
- Embankment
 - Cutting
 - Land potentially required during

- Legend - Sound related features**
- Committed developments - SV Only
 - Construction airborne sound assessment location
 - Construction vibration assessment location
 - Construction airborne sound and vibration assessment location
 - Baseline measurement location

labelled with assessment location ID reference number (for details of the SES2/AP2 ES assessment results see Volume 5 Appendix SV-002-00000) (labelled with measurement location reference code).

Likely significant effects from construction noise and /or vibration on groups of dwellings and any shared community open areas, and non-residential receptors, are indicated by MA07-C-C# and MA07-C-N#, respectively.

Map Number: SV-03-322b

Map Name: Construction Airborne Noise and Vibration Likely Significant Effects SES2 and AP2 ES

Community Area MA07: Davenport Green to Ardwick

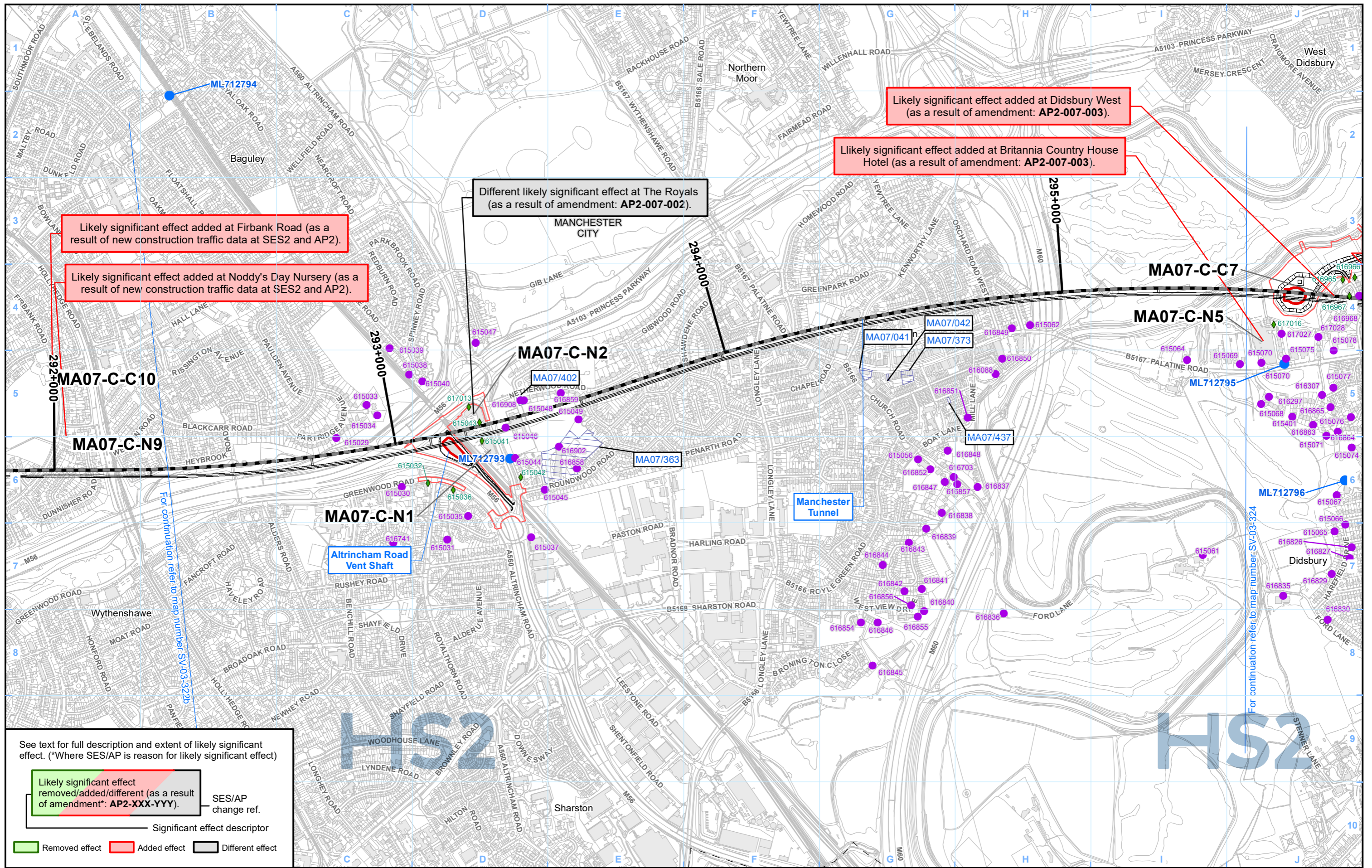
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Doc Number: 2PT27-MWJ-EV-MAP-M000-002074-P01

Date: 21/04/23



See text for full description and extent of likely significant effect. (*Where SES/AP is reason for likely significant effect)

Likely significant effect removed/added/different (as a result of amendment*: AP2-XXX-YYY).	SES/AP change ref.
—	Significant effect descriptor
Removed effect	Added effect
Different effect	

- Legend - General features**
- Route in bored tunnel
 - Route in green tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Community area boundary
 - County boundary
 - District/Borough boundary

- Engineering earthworks:**
- Embankment
 - Cutting
 - Land potentially required during
- Non engineering earthworks:**
- Embankment
 - Cutting

- Legend - Sound related features**
- Committed developments - SV Only
 - Construction airborne sound assessment location
 - Construction vibration assessment location
 - Construction airborne sound and vibration assessment location
 - Baseline measurement location

labelled with assessment location ID reference number (for details of the SES2/AP2 ES assessment results see Volume 5 Appendix SV-002-00000) (labelled with measurement location reference code).

Likely significant effects from construction noise and /or vibration on groups of dwellings and any shared community open areas, and non-residential receptors, are indicated by MA07-C-C# and MA07-C-N#, respectively.

Map Number	SV-03-323
Map Name	Construction Airborne Noise and Vibration Likely Significant Effects SES2 and AP2 ES
	Community Area MA07: Davenport Green to Ardwick

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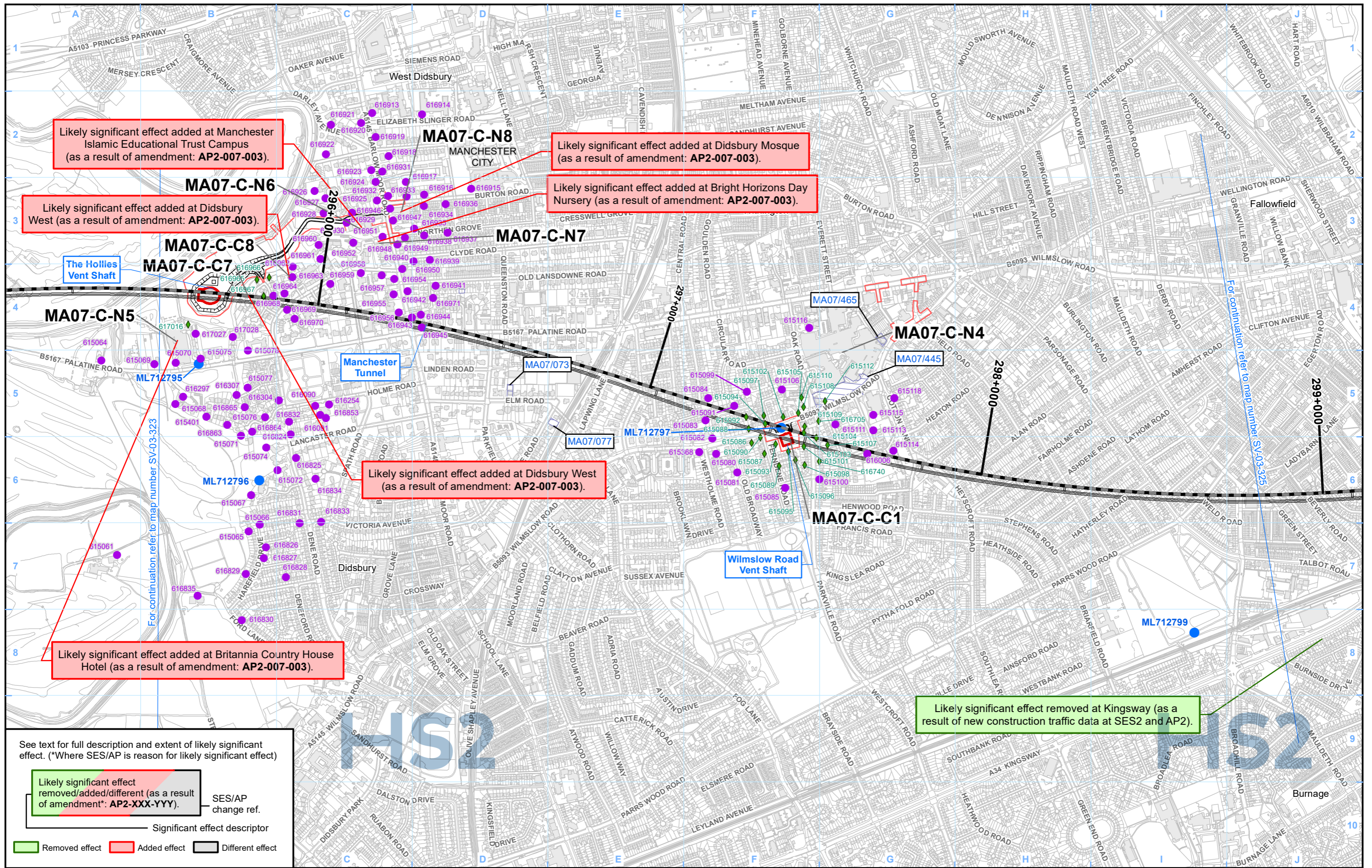
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Scale at A3: 1:10,000

Date: 21/04/23



Likely significant effect added at Manchester Islamic Educational Trust Campus (as a result of amendment: AP2-007-003).

Likely significant effect added at Didsbury Mosque (as a result of amendment: AP2-007-003).

Likely significant effect added at Bright Horizons Day Nursery (as a result of amendment: AP2-007-003).

Likely significant effect added at Didsbury West (as a result of amendment: AP2-007-003).

Likely significant effect added at Didsbury West (as a result of amendment: AP2-007-003).

Likely significant effect added at Britannia Country House Hotel (as a result of amendment: AP2-007-003).

Likely significant effect removed at Kingsway (as a result of new construction traffic data at SES2 and AP2).

See text for full description and extent of likely significant effect. (*Where SES/AP is reason for likely significant effect)

Likely significant effect removed/added/different (as a result of amendment*: AP2-XXX-YYY).	SES/AP change ref.
—	Significant effect descriptor
Removed effect	Added effect
Different effect	

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- County boundary
- District/Borough boundary

Legend - Sound related features

Engineering earthworks:	Non engineering earthworks:
Embankment	Embankment
Cutting	Cutting
Land potentially required during	

Legend - Sound related features

- Committed developments - SV Only
- Construction airborne sound assessment location
- Construction vibration assessment location
- Construction airborne sound and vibration assessment location
- Baseline measurement location

labelled with assessment location ID reference number (for details of the SES2/AP2 ES assessment results see Volume 5 Appendix SV-002-00000) (labelled with measurement location reference code).

Likely significant effects from construction noise and/or vibration on groups of dwellings and any shared community open areas, and non-residential receptors, are indicated by MA07-C-C# and MA07-C-N#, respectively.

Map Number: SV-03-324

Map Name: Construction Airborne Noise and Vibration Likely Significant Effects SES2 and AP2 ES

Community Area MA07: Davenport Green to Ardwick

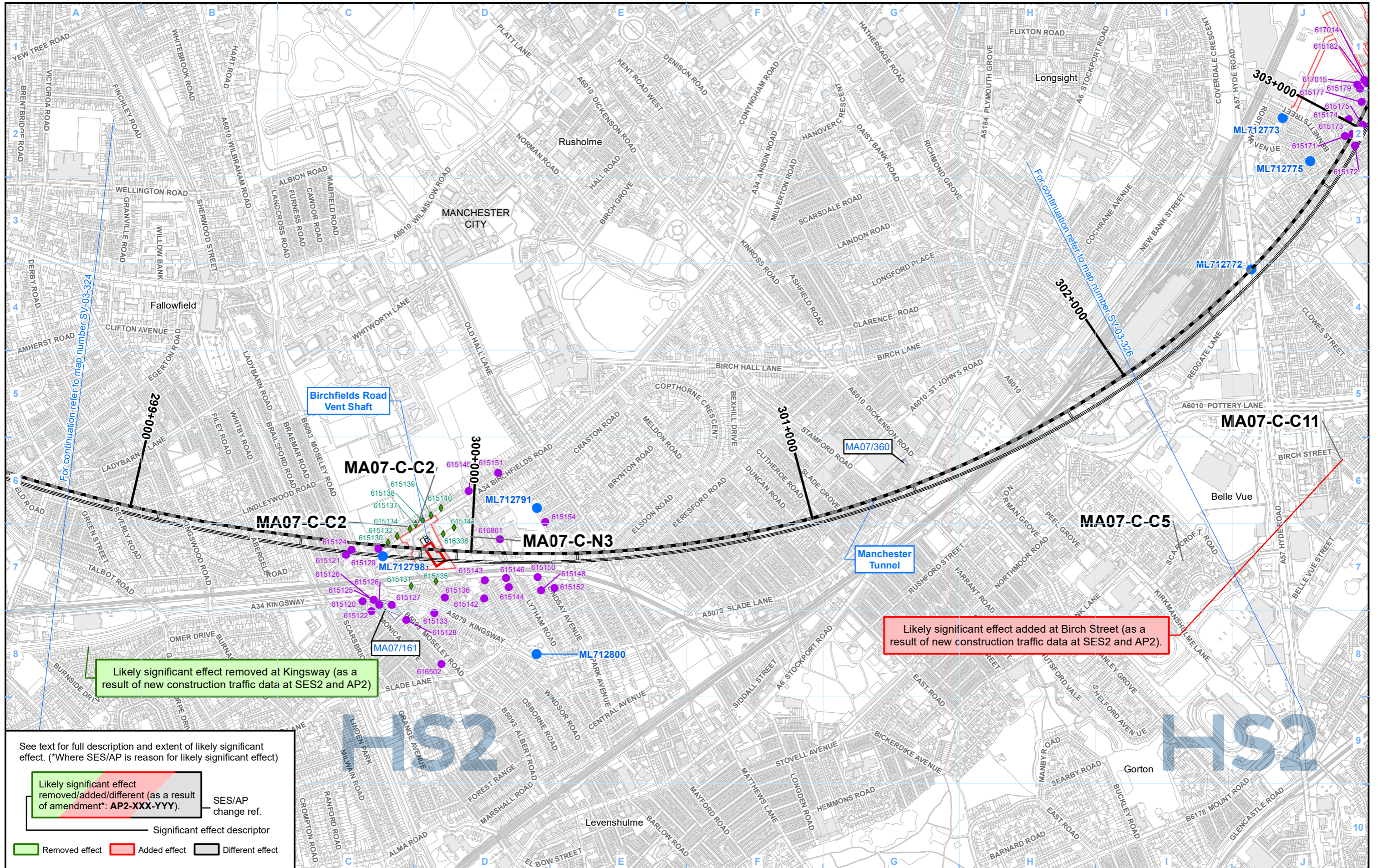
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Date: 21/04/23



See text for full description and extent of likely significant effect. (*Where SES/AP is reason for likely significant effect)

Likely significant effect removed/added/different (as a result of amendment*: AP2-XXX-YYY).	SES/AP change ref.
—	Significant effect descriptor
Removed effect	Added effect
Different effect	

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- County boundary
- District/Borough boundary

Engineering earthworks:

- Embankment
- Cutting
- Land potentially required during

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

- Committed developments - SV Only
- Construction airborne sound assessment location
- Construction vibration assessment location
- Construction airborne sound and vibration assessment location
- Baseline measurement location

labelled with assessment location ID reference number (for details of the SES2/AP2 ES assessment results see Volume 5 Appendix SV-002-00000) (labelled with measurement location reference code).

Likely significant effects from construction noise and /or vibration on groups of dwellings and any shared community open areas, and non-residential receptors, are indicated by MA07-C-C# and MA07-C-N#, respectively.

Map Number: SV-03-325

Map Name: Construction Airborne Noise and Vibration Likely Significant Effects SES2 and AP2 ES

Community Area MA07: Davenport Green to Ardwick

HS2

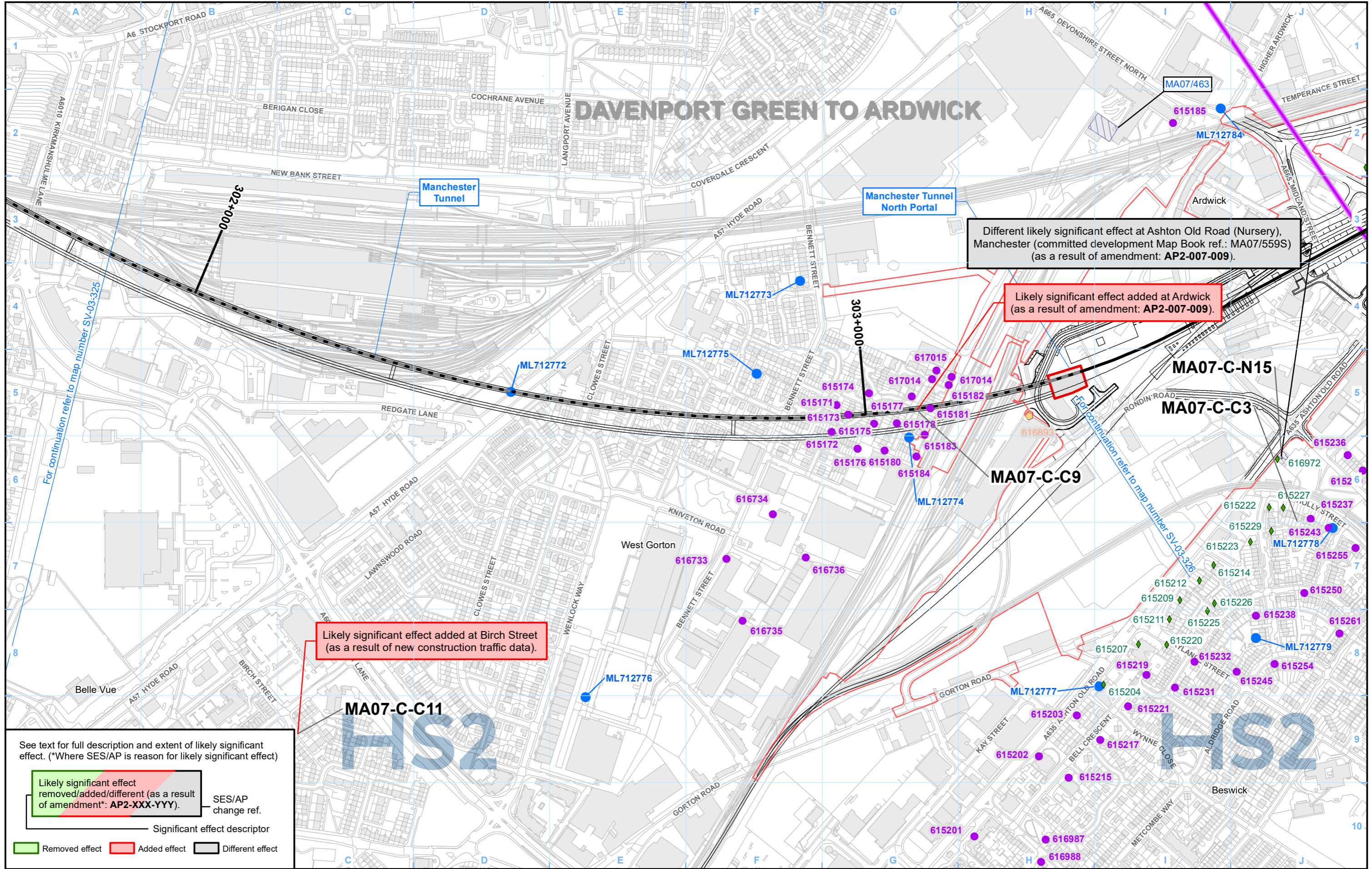
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Doc Number: 2PT27-MWJ-EV-MAP-M000-002077-P01

Date: 21/04/23

DAVENPORT GREEN TO ARDWICK



See text for full description and extent of likely significant effect. (*Where SES/AP is reason for likely significant effect)

Likely significant effect removed/added/different (as a result of amendment*: AP2-XXX-YYY).	SES/AP change ref.
—	Significant effect descriptor
Removed effect	Added effect
Different effect	

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- County boundary
- District/Borough boundary

Legend - Sound related features

Engineering earthworks:	Non engineering earthworks:
Embankment	Embankment
Cutting	Cutting
Land potentially required during	

Legend - Sound related features

- Committed developments - SV Only
- Construction airborne sound assessment location
- Construction vibration assessment location
- Construction airborne sound and vibration assessment location
- Baseline measurement location

labelled with assessment location ID reference number (for details of the SES2/AP2 ES assessment results see Volume 5 Appendix SV-002-00000) (labelled with measurement location reference code).

Likely significant effects from construction noise and /or vibration on groups of dwellings and any shared community open areas, and non-residential receptors, are indicated by MA07-C-C# and MA07-C-N#, respectively.

Map Number: SV-03-326

Map Name: Construction Airborne Noise and Vibration Likely Significant Effects SES2 and AP2 ES

Community Area MA07: Davenport Green to Ardwick

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Doc Number: 2PT27-MWJ-EV-MAP-M000-002053-P01

Date: 03/02/23

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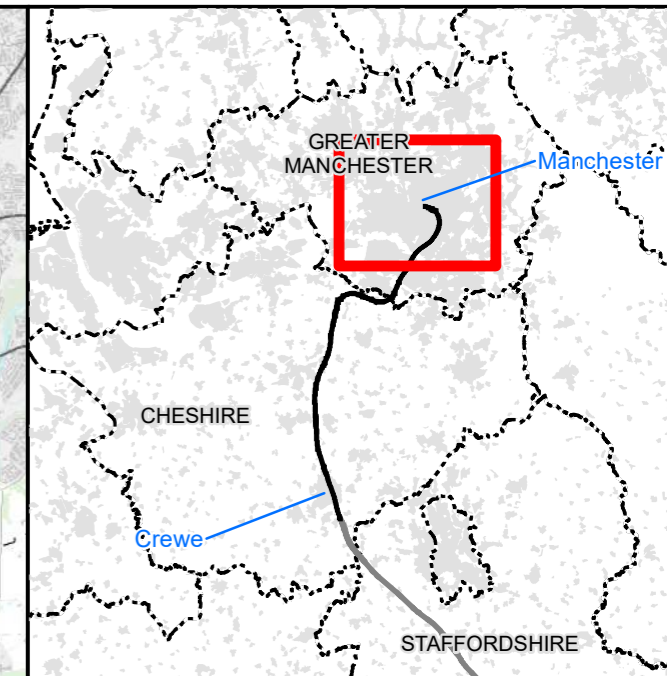
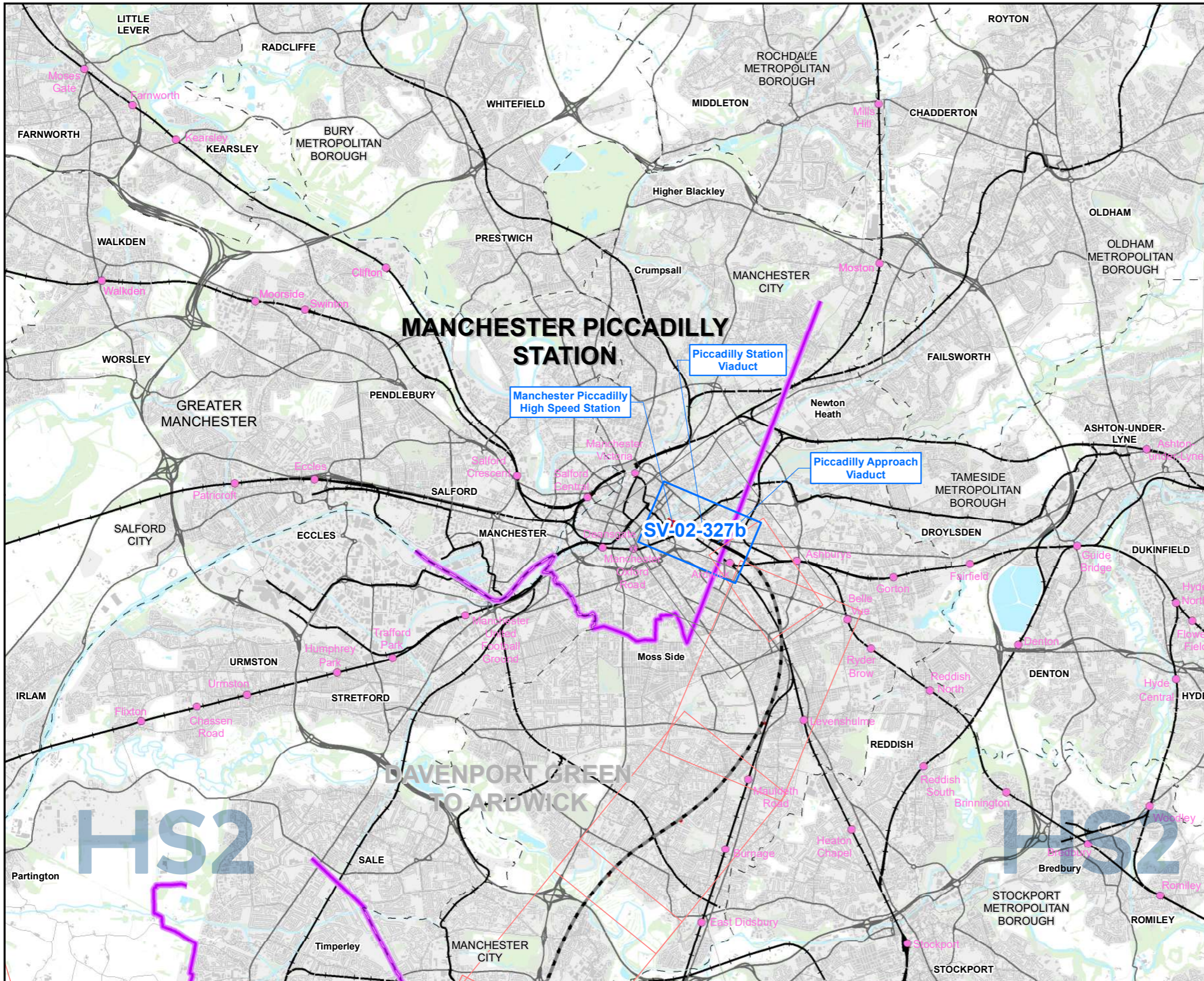
High Speed Rail (Crewe – Manchester)

Supplementary Environmental Statement 2 and Additional Provision 2 Environmental Statement

MA08: Manchester Piccadilly Station

SV-02 – Operational Airborne Noise and Vibration Impacts and
Likely Significant Effects

SV-03 – Construction Airborne Noise and Vibration
Likely Significant Effects



Map Series Information:

SV-02 presents the direct operational noise impacts and likely significant effects of the Proposed Scheme.

The SV-02 figure series necessarily contains a large amount of information relating to the operational noise and vibration assessment. It is designed to communicate visually the assessment process from the prediction of impacts to the determination of likely residual significant effects. The corresponding text is included in Volume 2 and Volume 5.

- Key items on the map include the following:
- The Proposed Scheme (the proposed railway alignments and surrounding associated earthworks/roads);
 - blue and green lines representing the wayside airborne noise mitigation measures included in the Proposed Scheme;
 - the study areas, which indicate the areas within which direct sound and vibration impacts of the Proposed Scheme have been quantitatively assessed;
 - the calculated direct operational impacts of the scheme, displayed as colour-coded buildings and symbols representing buildings that would potentially qualify for noise insulation;
 - sound contours representing sound produced by the new railway (displayed in a simpler manner than on SV-08 and SV-09 in order not to obscure the features on the map series);
 - the assessment locations at which a quantitative prediction of sound and impacts have been carried out (representing a number of nearby buildings). These are labelled with a unique reference number to enable cross-reference to further detail regarding the assessments in main ES Volume 5: Appendix SV-003-0MA0X or, Volume 5: Appendix SV-002-0MA0X; and
 - labels indicating where the likely residual direct noise or vibration significant effects have been identified. These are labelled with a unique reference number to enable cross-reference to further detail regarding the assessments in main ES Volume 5: Appendix SV-003-0MA0X or, Volume 5: Appendix SV-002-0MA0X.

The design of the Proposed Scheme will be informed through stakeholder engagement and further engineering and environmental studies. A more detailed explanation of each legend item included on the figures and on the separate legend page can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

Main Map Legend	
	Route in tunnel
	Route on surface
	Depot, station, headhouse or portal building
	Community area boundary
	Existing railway station
	County boundary
	District/Borough boundary
	Map sheets included in this community area
	Map sheets included in this community area with no amendment
	Map sheets not included in this community area

Map Number	SV-02-INDEX-MA08
Map Name	Index Map of: Operational Airborne Noise and Vibration Impacts and Likely Significant Effects SES2 and AP2 ES Community Area MA08: Manchester Piccadilly Station

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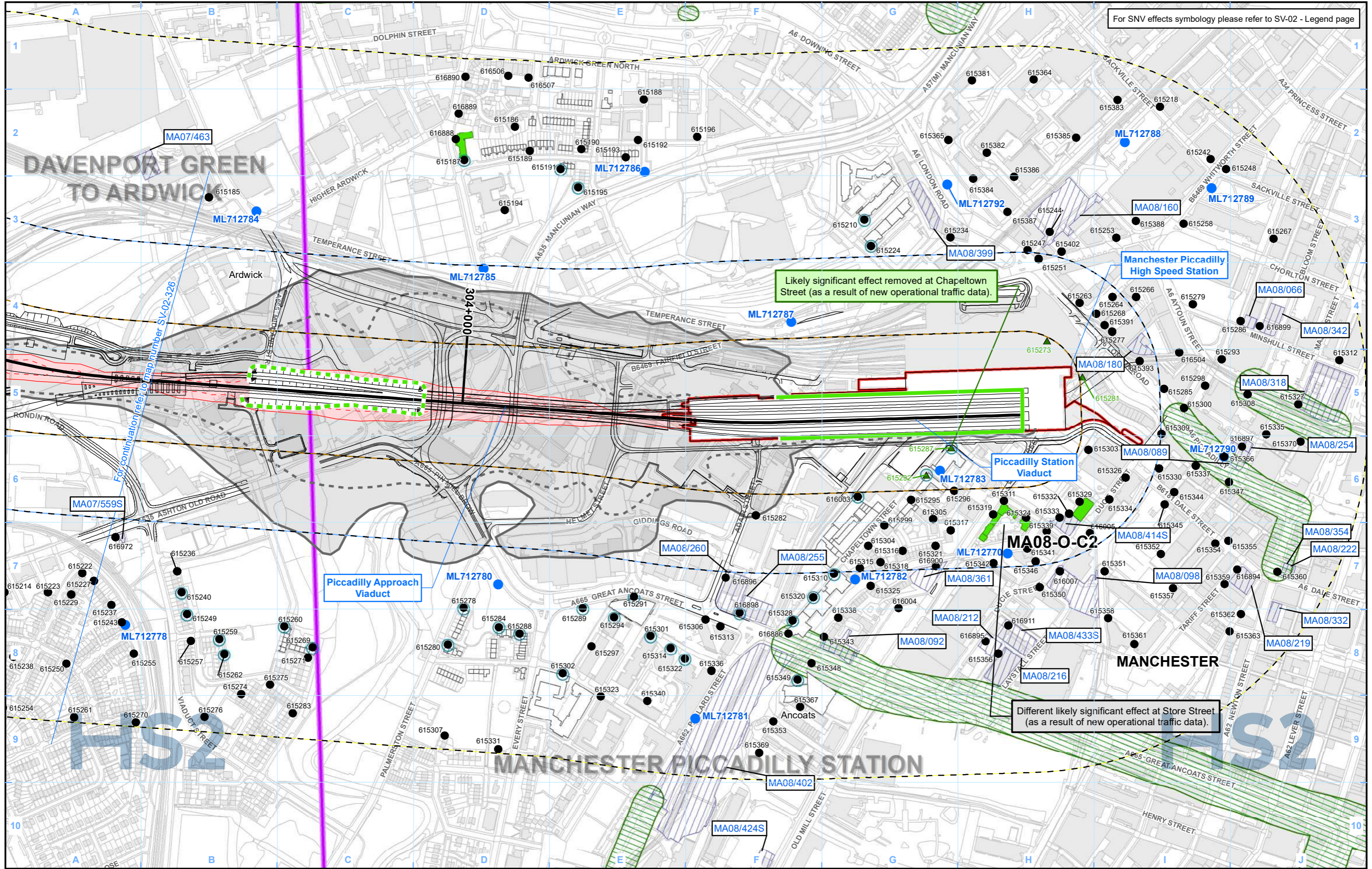
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Doc Number: 2PT27-MWJ-EV-MAP-M000-002044-P01 Date: 13/04/23

For SNV effects symbology please refer to SV-02 - Legend page



Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- County boundary
- District/Borough boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Noise related features

Envisaged mitigation to avoid / reduce significant noise effects:

- Landscaping and/or fence barriers (labelled with total noise barrier height above rail/road)
- Engineering e.g. cuttings (green tunnels separately marked)

Envisaged features further reducing noise effects:

- Other environmental e.g. landscaping
- Engineering e.g. cuttings

Noise Important Areas defined in national noise action plans (Defra 2014)

Committed developments - SV Only

Airborne noise study area

Ground-borne noise & vibration study area (residential and non-residential)

Ground-borne noise & vibration study area (highly sensitive non-residential)

- Airborne noise assessment location
- Airborne noise and vibration assessment location
- Ground-borne noise and/or vibration assessment location
- Airborne noise, ground-borne sound and vibration assessment location
- Baseline measurement locations

Map Number: SV-02-327b

Map Name: Operational Airborne Noise and Vibration Impacts and Likely Significant Effects

Community Area MA08: Manchester Piccadilly Station

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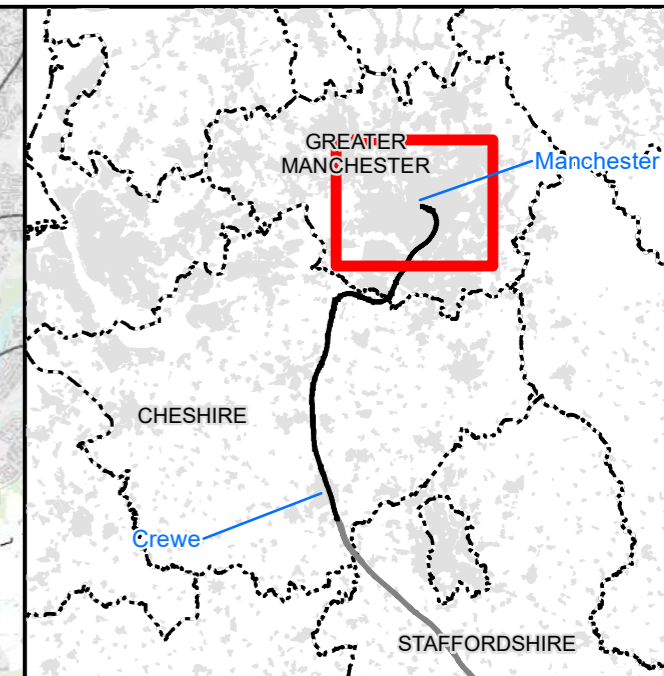
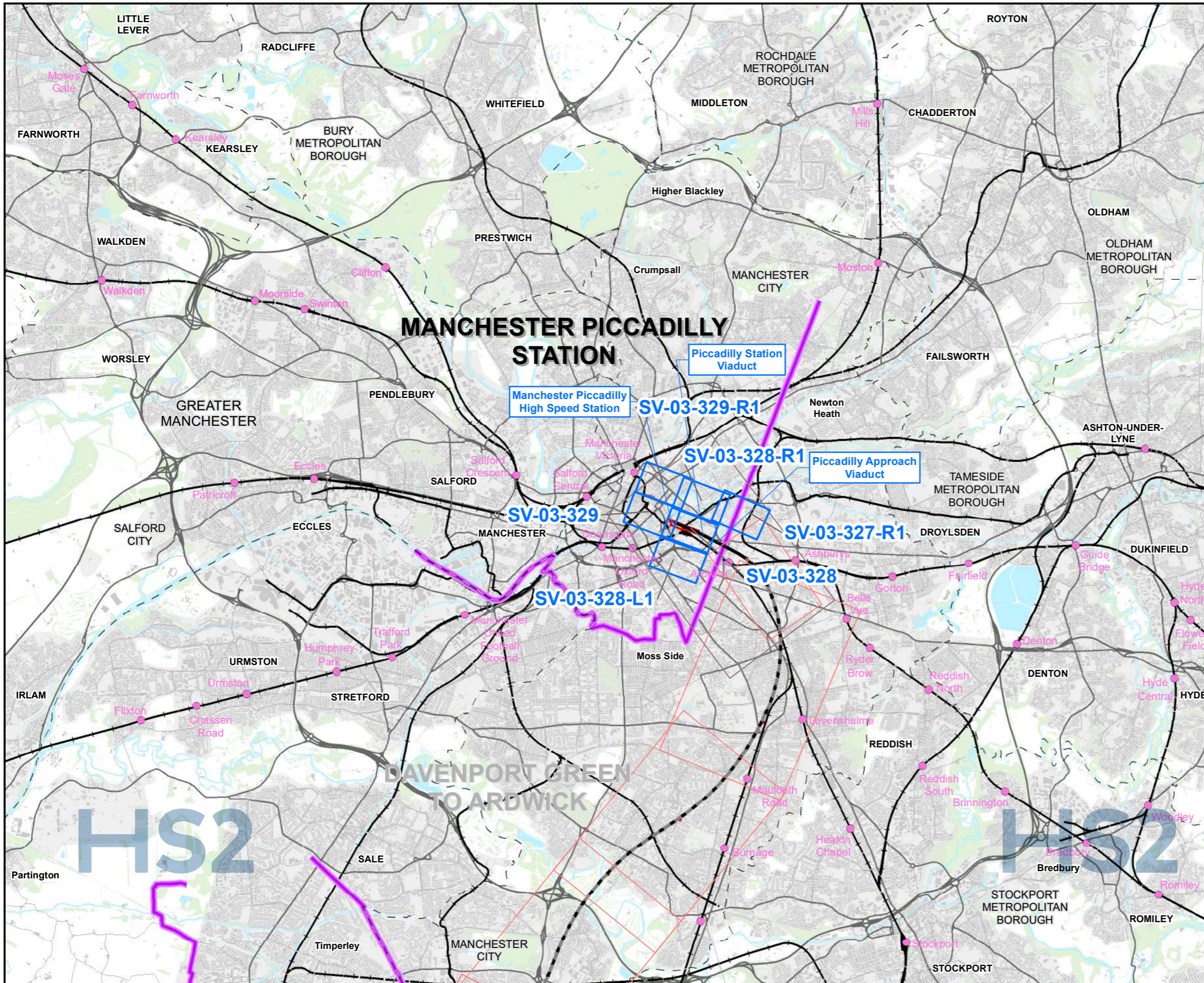
Doc Number: 2PT27-MWJ-EV-MAP-M000-002591-P01

Date: 13/04/23

Scale at A3: 1:5,000

Metres

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Map Series Information:

The SV-03 figure series accompanies the construction noise & vibration assessments. It shows the locations at which a quantitative assessment of the direct effects of construction noise and/or vibration has been carried out. These are labelled as assessment locations with a reference number to enable cross-reference to the construction noise and vibration reports contained in Volume 5: Appendix SV-002-00000.

The figure series also shows locations at which baseline sound measurements were carried out.

These baseline measurement locations are labelled with a reference number to enable cross-reference to the baseline sound reports contained in Volume 5: Appendix SV-002-00000.

The design of the Proposed Scheme will be informed through stakeholder engagement and further engineering and environmental studies.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

- Main Map Legend**
- Route in tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Community area boundary
 - Existing railway station
 - County boundary
 - District/Borough boundary
 - Map sheets included in this community area
 - Map sheets included in this community area with no amendment
 - Map sheets not included in this community area

Map Number	SV-03-INDEX-MA08
Map Name	Index Map of: Construction Airborne Noise and Vibration Likely Significant Effects SES2 and AP2 ES Community Area MA08: Manchester Piccadilly Station

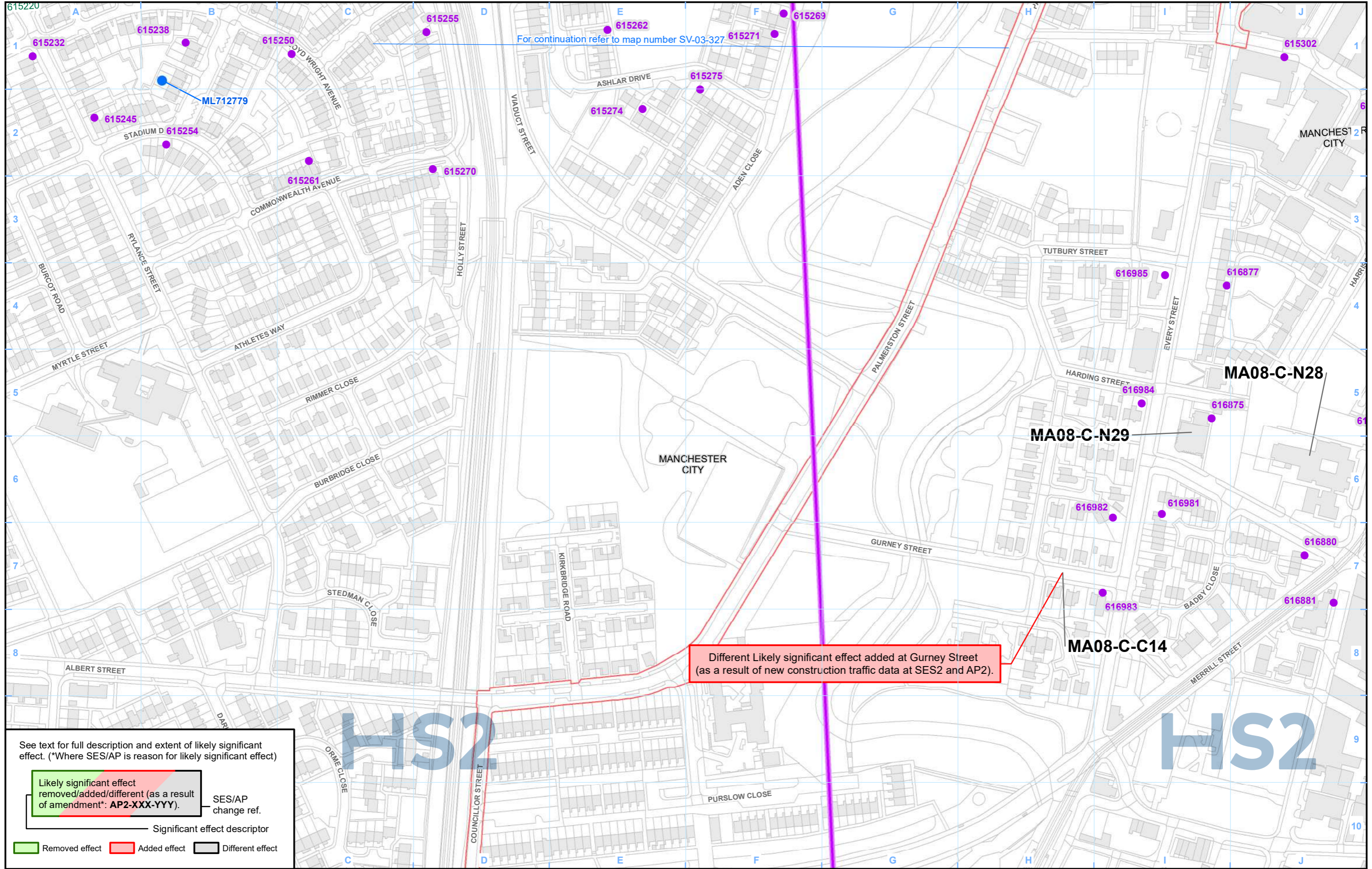
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Doc Number: 2PT27-MWJ-EV-MAP-M000-002090-P01 Date: 19/04/23



See text for full description and extent of likely significant effect. (*Where SES/AP is reason for likely significant effect)

Likely significant effect removed/added/different (as a result of amendment*: AP2-XXX-YYY).	SES/AP change ref.
Significant effect descriptor	
Removed effect	Added effect
Different effect	

- Legend - General features**
- Route in bored tunnel
 - Route in green tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Community area boundary
 - County boundary
 - District/Borough boundary

- Legend - Sound related features**
- | | |
|---|-----------------------------|
| Engineering earthworks: | Non engineering earthworks: |
| Embankment | Embankment |
| Cutting | Cutting |
| Land potentially required during construction | |

- Legend - Sound related features**
- Committed developments - SV Only
 - Construction airborne sound assessment location
 - Construction vibration assessment location
 - Construction airborne sound and vibration assessment location
 - Baseline measurement location

labelled with assessment location ID reference number (for details of the SES2/AP2 ES assessment results see Volume 5 Appendix SV-002-00000) (labelled with measurement location reference code).

Likely significant effects from construction noise and /or vibration on groups of dwellings and any shared community open areas, and non-residential receptors, are indicated by MA08-C-C# and MA08-C-N#, respectively.

Map Number	SV-03-327-R1
Map Name	Construction Airborne Noise and Vibration Likely Significant Effects SES2 and AP2 ES
	Community Area MA08: Manchester Piccadilly Station

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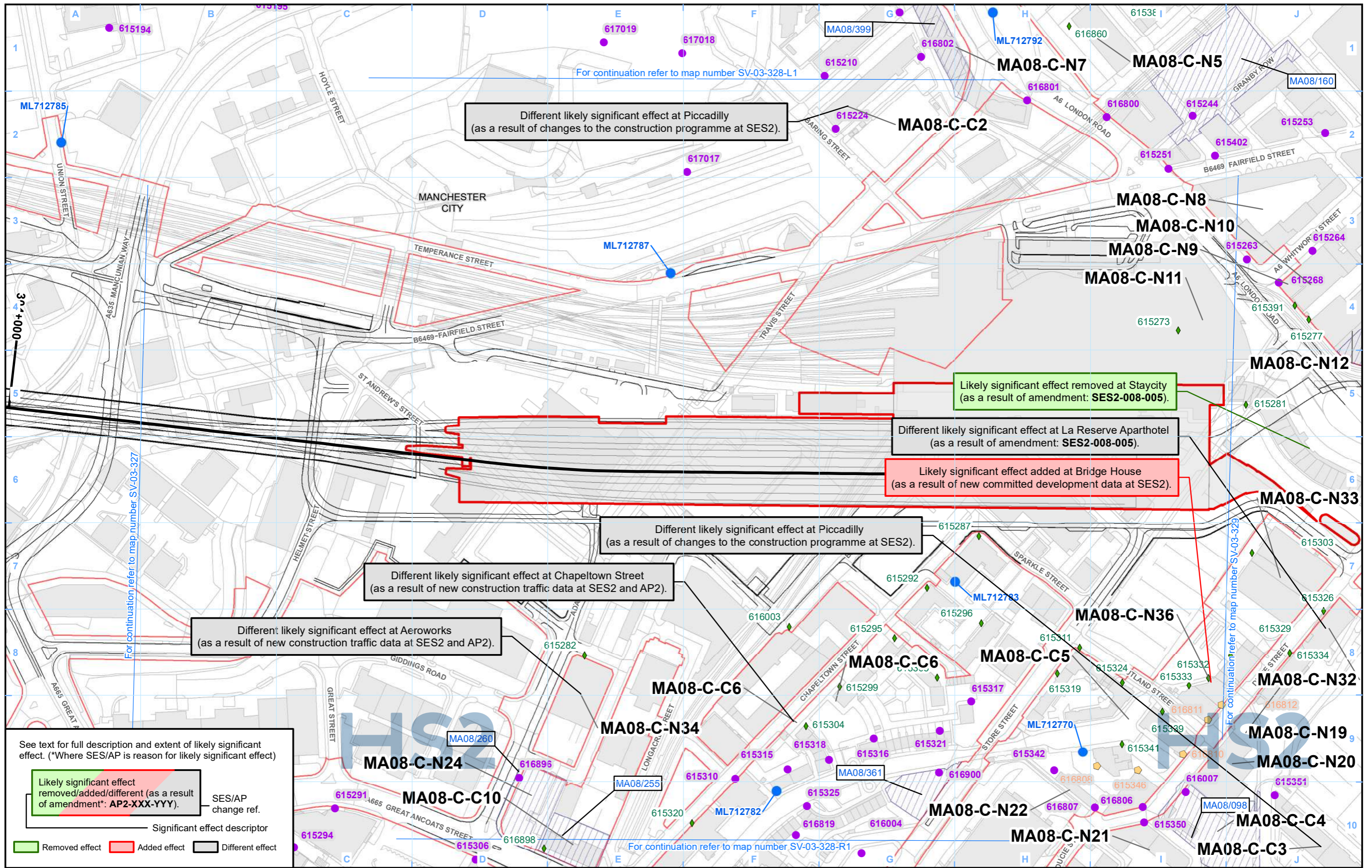
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Date: 25/04/23



See text for full description and extent of likely significant effect. (*Where SES/AP is reason for likely significant effect)

Likely significant effect removed/added/different (as a result of amendment*: AP2-XXX-YYY).	SES/AP change ref.
Significant effect descriptor	
Removed effect	Added effect
Different effect	

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- County boundary
- District/Borough boundary

Legend - Sound related features

Engineering earthworks:	Non engineering earthworks:
Embankment	Embankment
Cutting	Cutting
Land potentially required during construction	

Legend - Sound related features

- Committed developments - SV Only
- Construction airborne sound assessment location
- Construction vibration assessment location
- Construction airborne sound and vibration assessment location
- Baseline measurement location

labelled with assessment location ID reference number (for details of the SES2/AP2 ES assessment results see Volume 5 Appendix SV-002-00000) (labelled with measurement location reference code).

Likely significant effects from construction noise and/or vibration on groups of dwellings and any shared community open areas, and non-residential receptors, are indicated by MA08-C-C# and MA08-C-N#, respectively.

Map Number: SV-03-328

Map Name: Construction Airborne Noise and Vibration Likely Significant Effects SES2 and AP2 ES

Community Area MA08: Manchester Piccadilly Station

HS2

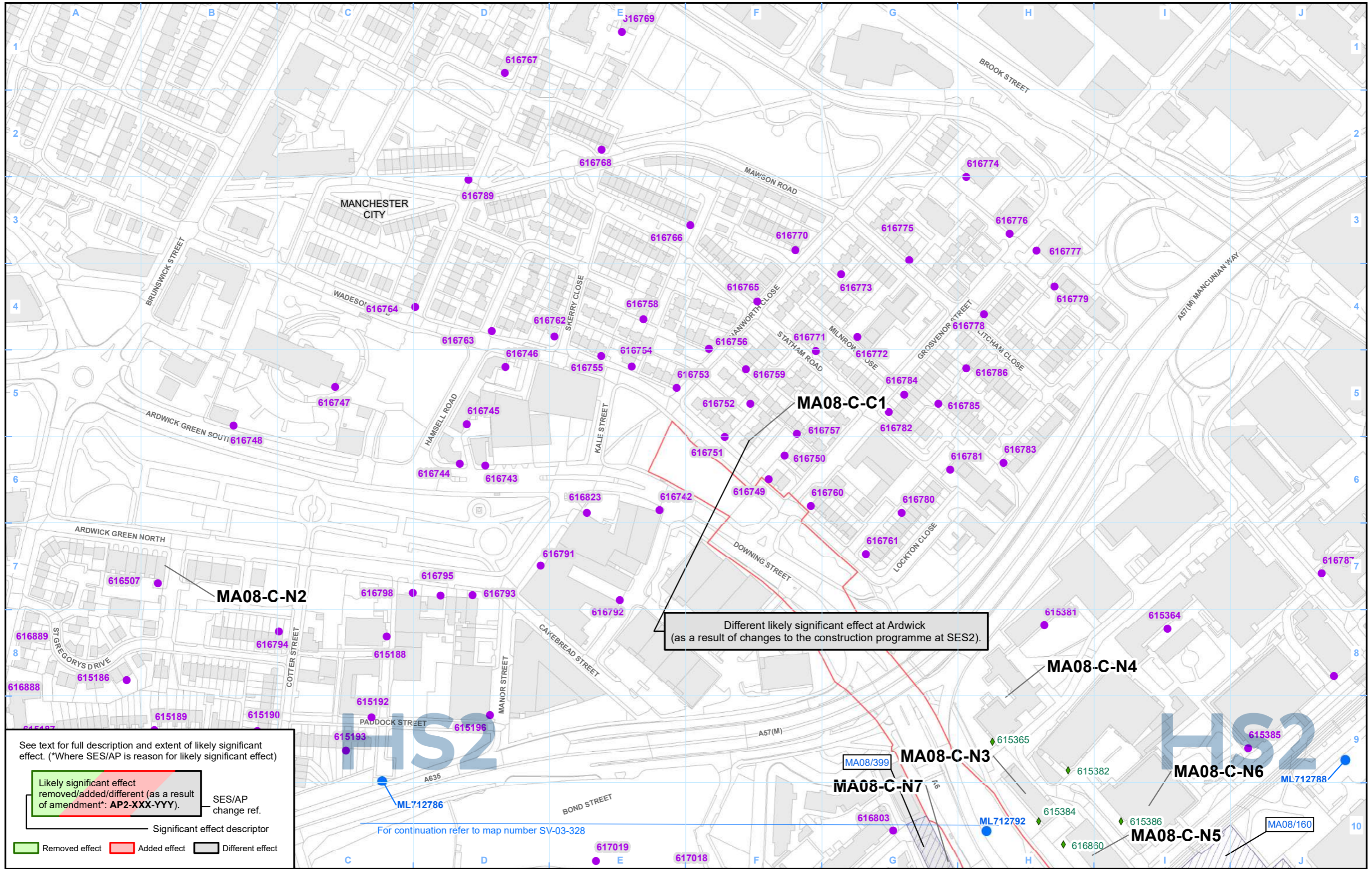
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Date: 25/04/23



See text for full description and extent of likely significant effect. (*Where SES/AP is reason for likely significant effect)

	Likely significant effect removed/added/different (as a result of amendment*: AP2-XXX-YYY).	SES/AP change ref.
	Significant effect descriptor	
	Removed effect	Added effect
	Different effect	

For continuation refer to map number SV-03-328

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- County boundary
- District/Borough boundary
- Engineering earthworks:**
 - Embankment
 - Cutting
- Non engineering earthworks:**
 - Embankment
 - Cutting
- Land potentially required during construction

Legend - Sound related features

- Committed developments - SV Only
- Construction airborne sound assessment location
- Construction vibration assessment location
- Construction airborne sound and vibration assessment location
- Baseline measurement location

labelled with assessment location ID reference number (for details of the SES2/AP2 ES assessment results see Volume 5 Appendix SV-002-00000) (labelled with measurement location reference code).

Likely significant effects from construction noise and /or vibration on groups of dwellings and any shared community open areas, and non-residential receptors, are indicated by MA08-C-C# and MA08-C-N#, respectively.

Map Number	SV-03-328-L1
Map Name	Construction Airborne Noise and Vibration Likely Significant Effects SES2 and AP2 ES
Community Area MA08: Manchester Piccadilly Station	

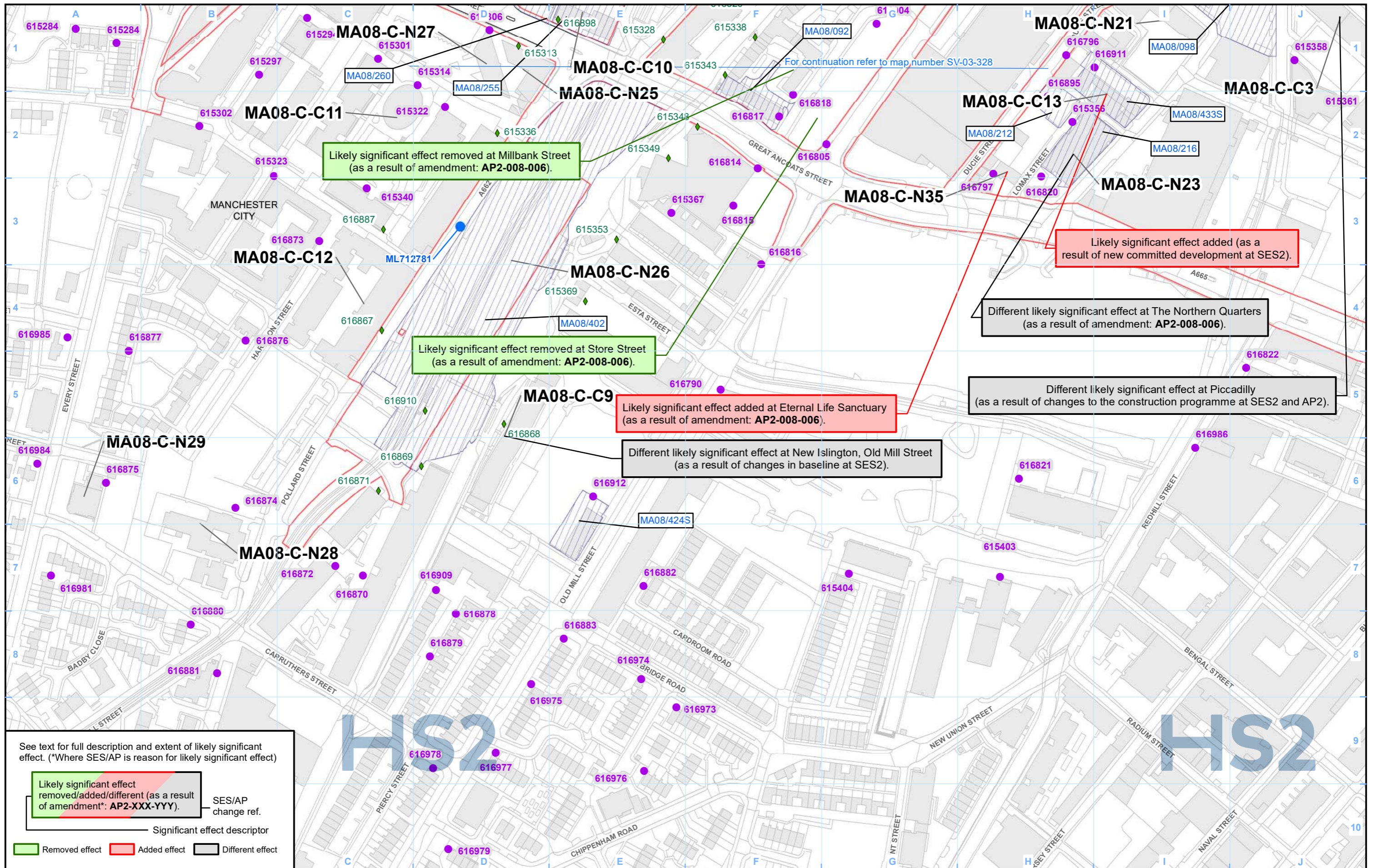
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Likely significant effect removed/added/different (as a result of amendment*: AP2-XXX-YYY).	SES/AP change ref.	
Significant effect descriptor		
Removed effect	Added effect	Different effect

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- County boundary
- District/Borough boundary
- Engineering earthworks:**
 - Embankment
 - Cutting
- Non engineering earthworks:**
 - Embankment
 - Cutting
- Land potentially required during construction

Legend - Sound related features

- Committed developments - SV Only
 - Construction airborne sound assessment location
 - Construction vibration assessment location
 - Construction airborne sound and vibration assessment location
 - Baseline measurement location
- labelled with assessment location ID reference number (for details of the SES2/AP2 ES assessment results see Volume 5 Appendix SV-002-00000) (labelled with measurement location reference code).
- Likely significant effects from construction noise and /or vibration on groups of dwellings and any shared community open areas, and non-residential receptors, are indicated by MA08-C-C# and MA08-C-N#, respectively.

Map Number	SV-03-328-R1
Map Name	Construction Airborne Noise and Vibration Likely Significant Effects SES2 and AP2 ES
Community Area MA08: Manchester Piccadilly Station	

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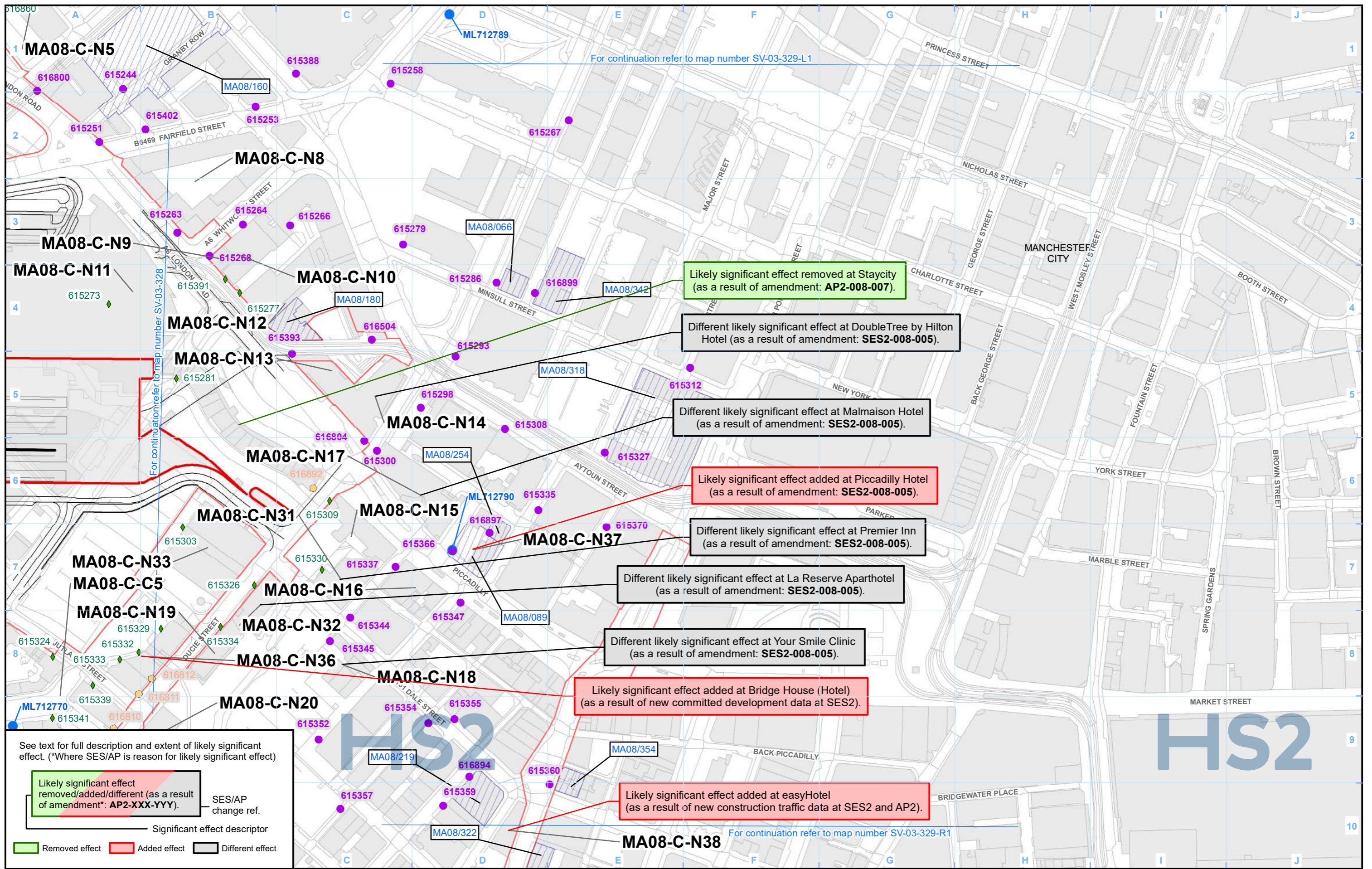
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Likely significant effect removed/added/different (as a result of amendment*: AP2-XXX-YYY).	SES/AP change ref.
—	Significant effect descriptor
Removed effect	Added effect
Different effect	

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- County boundary
- District/Borough boundary

Legend - Sound related features

Engineering earthworks:	Non engineering earthworks:
Embankment	Embankment
Cutting	Cutting
Land potentially required during construction	

Legend - Sound related features

- Committed developments - SV Only
- Construction airborne sound assessment location
- Construction vibration assessment location
- Construction airborne sound and vibration assessment location
- Baseline measurement location

labelled with assessment location ID reference number (for details of the SES2/AP2 ES assessment results see Volume 5 Appendix SV-002-00000) (labelled with measurement location reference code).

Likely significant effects from construction noise and/or vibration on groups of dwellings and any shared community open areas, and non-residential receptors, are indicated by MA08-C-# and MA08-C-N#, respectively.

Map Number: SV-03-329

Map Name: Construction Airborne Noise and Vibration Likely Significant Effects SES2 and AP2 ES

Community Area MA08: Manchester Piccadilly Station

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