# GIS data classes used within the November 2013 Environmental Statement Environmental Maps

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# 1 List of acronyms

| | |
|---|---|
| ENV | Environment |
| GEO | Geophysical |
| HIS | Historic |
| HYD | Hydrology |
| LGL | Legal |
| Ln | Line |
| Ply | Polygon |
| PRP | Property |
| Pt | Point |
| TPT | Transport |

# 2 Introduction

This document provides a list of GIS data classes which have been used within the environmental maps of the November 2013 London-West Midlands Environmental Statement ("the Environmental Statement").

For each legend item, a description is provided and the corresponding GIS data class is listed. The description is taken directly from the *data dictionary and definitions* section of the relevant map book. In some instances, multiple GIS data classes have been used to depict one legend item.

Each section of this document represents one of the 12 environmental topic areas, and each sub-section represents each map series produced for that topic area. All the map series detailed here form part of Volume 5 of the London-West Midlands Environmental Statement, except for LV-02, LV-03 and SV-05 which form part of Volume 2.

This information is provided as a tool to assist in navigating and understanding the information in the Environmental Statement but does not modify or replace these documents. Whilst every effort has been made to ensure that the shapefile information exactly replicates the information in the Environmental Statement, no absolute assurance can be given that there are no discrepancies. If there are any discrepancies, the information in the Environmental Statement documents should be relied on as definitive.

All data classes listed here are released by High Speed Two Ltd under the Open Government Licence agreement. Any alterations to this information may result in inaccuracies between the data and maps published by High Speed Two Ltd as part of the Environmental Statement and could result in misleading information. The purpose, and what this shapefile represents, is contained within the shapefile name. Renaming this shapefile will result in the loss of this information. Any conversions of this shapefile to another geospatial data format may result in inaccuracies and therefore could result in misleading information.

Because of licence restrictions, any third-party data shown on the Environmental Statement mapping has not been released. Therefore, these data classes are not listed within this document.

# 3 Agriculture, forestry and soils

## 3.1 Agricultural Land Quality and Holdings (AG-01)

### 3.1.1 Agricultural and forestry holdings assessed

*Holdings assessed derived from the Farm Impact Surveys undertaken by the environmental consultants for HS2 Ltd, augmented where access was not available by published information from Defra.*

- PRP_ARP_C250_FarmHoldings_Ply_ES

### 3.1.2 Main operational agricultural and forestry buildings

*Main operational buildings derived from the Farm Impact Surveys undertaken by the environmental consultants for HS2 Ltd.*

- PRP_ARP_C250_MainOperationalFarmBuildings_Pt_ES

### 3.1.3 Known extent of agricultural and forestry buildings

*Holdings beyond study area extent derived from the Farm Impact Surveys undertaken by the environmental consultants for HS2 Ltd.*

- PRP_ARP_C250_FarmHoldingsIndicativeBound_Ln_ES

# 4 Air Quality

## 4.1 Air Quality Monitoring Locations and Receptors (AQ-01)

### 4.1.1 Air quality modelled receptors

*Air quality modelled receptors.*

- ENV_ARP_C250_AirQualityReceptors_Pt_ES

### 4.1.2 Monitoring location type

*A full explanation of a Passive (Diffusion tube) and Automatic (Continuous) monitoring location type is provided in the Glossary & Abbreviations document.*

- ENV_ARP_C250_AirQualityMonitoringLocations_Pt_ES

## 4.2 Air Quality Receptor Sites for Construction Dust Assessment (AQ-02)

### 4.2.1 Receptor assessment sites

*Air quality receptor sites for construction dust assessment.*

- ENV_ARP_C250_AirQualityReceptors_Ply_ES

# 5 Community

## 5.1 Significantly Affected Community Resources (CM-01)

### 5.1.1 Resources significantly affected during construction / operation / both construction and operation

*Community resources and residential properties identified as significantly affected by either construction or operation of the scheme. Derived from Ordnance Survey Mastermap data.*

- PRP_ARP_C250_SignificantlyAffectedResources_Pt_ES

# 6 Cultural Heritage

## 6.1 Heritage Assets within Study Area (CH-01)

### 6.1.1 Study area

*250m for urban and 500m for rural.*

- HIS_ARP_C250_CH01StudyArea_Ply_ES

### 6.1.2 Gazetter ID group boundary

*The boundary that defines a grouping of heritage assets identified for the purposes of assessment in the Environmental Statement.*

- HIS_ARP_C250_CHGazetteerIDBoundaries_Ply_ES

## 6.2 Designated Heritage Assets (CH-02)

### 6.2.1 Study area; zone of theoretical visibility (ZTV)

*Area within which all non-designated and designated assets that may be affected by the proposals have been identified and assessed.*

- HIS_ARP_C250_CH02StudyArea_Ply_ES

## 6.3 Archaeological Character Sub-zones (CH-03)

### 6.3.1 Archaeological character sub-zones

*Areas of archaeological potential defined and characterised by current land use, topography, geology, historic character and distribution of known archaeological finds, sites and assets.*

- HIS_ARP_C250_ArchaeologicalCharacterSubZones_Ply_ES

# 7 Ecology

## 7.1 Phase 1 Habitat (1:10,000) (EC-02)

### 7.1.1 Phase 1 Habitat survey data

*Results from Phase 1 habitat surveys.*

- ENV_ARP_C250_Phase1Habitats_Pt_ES
- ENV_ARP_C250_Phase1Habitats_Ln_ES
- ENV_ARP_C250_Phase1Habitats_Ply_ES

## 7.2 Phase 1 Habitat (1:2,500) (EC-03)

### 7.2.1 Phase 1 Habitat survey data

*Results from Phase 1 habitat surveys.*

- ENV_ARP_C250_Phase1Habitats_Pt_ES
- ENV_ARP_C250_Phase1Habitats_Ln_ES
- ENV_ARP_C250_Phase1Habitats_Ply_ES

## 7.3 Amphibians (EC-04)

### 7.3.1 Great Crested Newt (GCN) survey locations

*Results from Great Crested Newt pond surveys.*

- ENV_ARP_C250_AmphibiansPondSurvey_GCN_Pt_ES

### 7.3.2 50m radius from all water bodies where presence of Great Crested Newts is confirmed

*50m radius from all water bodies where presence of Great Crested Newt (GCN) is confirmed.*

- ENV_ARP_C250_Amphibians_GCNWaterbodies50m_Ply_ES

### 7.3.3 250m radius from all water bodies where presence of Great Crested Newts is confirmed

*250m radius from all water bodies where presence of Great Crested Newt (GCN) is confirmed.*

- ENV_ARP_C250_Amphibians_GCNWaterbodies250m_Ply_ES

### 7.3.4 500m radius from all water bodies where presence of Great Crested Newts is confirmed

*500m radius from all water bodies where presence of Great Crested Newt (GCN) is confirmed.*

- ENV_ARP_C250_Amphibians_GCNWaterbodies500m_Ply_ES

## 7.4 Bats – Roost (EC-05)

### 7.4.1 Confirmed bat roost – trees / Potential to support roosting bats – trees

*Locations where bat roost survey has been completed within trees. Trees are categorised into those with potential to support bat roosts (high and medium potential) and those that have confirmed roosts. Confirmed roosts are further categorised into Hibernation, Maternity, Other or Multiple roosts.*

- ENV_ARP_C250_Bats_Tree_Roosts_Pt_ES

### 7.4.2 Confirmed bat roost – buildings / Potential to support roosting bats – buildings

*Locations where bat roost survey has been completed within buildings. Buildings are categorised into those with potential to support bat roosts (high and medium potential) and those that have confirmed roosts. Confirmed roosts are further categorised into Hibernation, Maternity, Other or Multiple roosts.*

- ENV_ARP_C250_Bats_Building_Roosts_Pt_ES

## 7.5 Bats – Activity (EC-06)

### 7.5.1 Bat activity static detector location

*Location where bat activity static detectors were used during survey period.*

- ENV_ARP_C250_BatActivity_StaticDetector_Pt_ES

### 7.5.2 Activity transect route

*Transect route that was surveyed during bat activity surveys.*

- ENV_ARP_C250_BatActivity_ActivityTransectRoute_Ln_ES

### 7.5.3 Assumed key commuting route

*Key commuting and foraging bat routes that have been identified by an ecologist after review of available survey data and application of professional judgement.*

- ENV_ARP_C250_BatActivity_AssumedCommuteRoute_Ln_ES

### 7.5.4 Assumed key area of foraging habitat

*Likely areas of bat foraging habitat for local bat populations, derived from bat activity survey results.*

- ENV_ARP_C250_BatActivity_AssumedForagingAreas_Ply_ES

## 7.6 Reptiles (EC-07)

### 7.6.1 Extent of areas subject to reptiles survey

*Areas where a reptile survey was completed. Survey varies from population size class assessment, presence/absence survey or scoping visit only where it was then scoped out or it was identified as requiring further survey.*

- ENV_ARP_C250_Reptiles_Survey_Extent_Ply_ES

### 7.6.2 Population size class assessment

*Identifies population size classes of adder, common lizard, grass snake and slow worm based on a scale from high, medium, low and absent.*

- ENV_ARP_C250_Reptiles_PopulationAssessment_Pt_ES

## 7.7 Breeding Birds – Protected and Notable Species (EC-08)

### 7.7.1 Breeding birds - survey extent

*Area where breeding birds survey was conducted.*

- ENV_ARP_C250_Breeding_Birds_Surv_Extent_Ply_ES

## 7.8 Wintering and Passage Birds – Protected and Notable Species (EC-09)

### 7.8.1 Wintering and passage birds - survey extent

*Area where wintering and passage birds survey was conducted.*

- ENV_ARP_C250_Wintering_Birds_Surv_Extent_Ply_ES

## 7.9 Phase 2 Habitat Survey (EC-10)

### 7.9.1 National Vegetation Classification survey

*Extent of National Vegetation Classification surveys.*

- ENV_ARP_C250_National_Vegetation_Classification_Ply_ES

### 7.9.2 Ditch vegetation survey

*Extent of Ditch vegetation surveys.*

- ENV_ARP_C250_DitchVegetation_Survey_Extent_Ply_ES

### 7.9.3 'Important' hedgerow confirmed by field survey / Possible 'Important' hedgerow - no access available for survey

*Location of those hedgerows that have been identified as 'important hedgerows' or possible 'important hedgerows' under the wildlife and landscape criteria in the Hedgerows Regulations (2007).*

- ENV_ARP_C250_Important_Hedgerow_Ln_ES

### 7.9.4 River corridor survey extent

Extent of river corridor surveys.

- ENV_ARP_C250_River_Corridor_Habitat_SurvExtent_Ply_ES

### 7.9.5 River habitat survey extent

Extent of river habitat surveys.

- ENV_ARP_C250_River_Corridor_Habitat_SurvExtent_Ply_ES

### 7.9.6 Lake habitat

- ENV_ARP_C250_LakeHabitat_Ply_ES

## 7.10 Other Protected and Notable Species (1) (EC-11)

### 7.10.1 Otter

*Location of active otter holts and potential otter holts found during field survey.*

- ENV_ARP_C250_Otter_Holt_Location_Pt_ES

### 7.10.2 Otter terrestrial habitat

*Areas of terrestrial habitat within 100m of the Proposed Scheme that are identified as having 'high' potential to act as otter breeding sites (i.e. those ranked as having a score of 5 on the scale devised by Chanin).*

- ENV_ARP_C250_Otter_Terrestrial_Habitat_Ply_ES

### 7.10.3 White clawed crayfish

*Location where white clawed crayfish survey was conducted. Location categorised as to whether presence was confirmed, assumed absent or no access was available.*

- ENV_ARP_C250_White_Clawed_Crayfish_Location_Pt_ES

### 7.10.4 Pond survey

*Location and type of pond surveys conducted.*

- ENV_ARP_C250_Pond_Survey_Pt_ES

### 7.10.5 Fish survey location

*Location where fish survey was conducted.*

- ENV_ARP_C250_FishSurvey_Location_Pt_ES

### 7.10.6 Terrestrial invertebrate survey extent

*Extent of terrestrial invertebrate survey.*

- ENV_ARP_C250_TerrestrialInverte_Survey_Extent_Ply_ES

## 7.11 Other Protected and Notable Species (2) (EC-12)

### 7.11.1 Aquatic invertebrate survey location

*Location of aquatic invertebrate survey.*

- ENV_ARP_C250_AquaticInvertebratesSurvey_Location_Pt_ES

### 7.11.2 Water vole

*Extent of water vole survey. Those areas where access was available either had confirmed presence or water voles were assumed absent.*

- ENV_ARP_C250_WaterVole_Survey_Extent_Ply_ES

### 7.11.3 Dormouse

*Extent of Dormouse survey using nest tube and/or nut search. Those areas where access was available either had confirmed presence or no signs were found.*

- ENV_ARP_C250_Dormouse_Survey_Extent_Ply_ES

# 8 Land Quality

## 8.1 Land Quality (LQ-01)

### 8.1.1 Areas assessed as not posing a contaminative risk to the proposed scheme

*Areas of land that have been inferred from existing information such as historical use maps, borehole records and testing not to be at risk of containing concentrations of contaminants above background levels.*

- GEO_ARP_C250_PotentialLandContaminationSites_Ply_ES

### 8.1.2 Areas assessed as potentially posing a contaminative risk to the proposed scheme

*Areas of land that have been inferred from existing information such as historical use maps, borehole records and testing to be at risk of containing concentrations of contaminants above background levels, and combined with features that may allow exposure of those contaminants to a viable environmental receptor (which may include humans and buildings). These sites do not automatically equate to identify 'potentially contaminated land' as defined by EPA 1990.*

- GEO_ARP_C250_HighRiskPotentialLandContaminationSites_Ply_ES

# 9 Landscape and Visual

## 9.1 Landscape Character Areas (LV-02)

### 9.1.1 Landscape character areas (LCA)

*This dataset represents the landscape character areas that have been assessed route wide as defined by the Landscape Architects. Landscape character areas (LCAs) are single unique areas which are the discrete geographical areas of a particular landscape type.*

- ENV_ARP_C250_LV_LandscapeCharacterAreas_Ply_ES

## 9.2 Construction Phase Significantly Affected Viewpoints (LV-03)

### 9.2.1 Significantly affected viewpoint

*This dataset shows the locations of the visual receptors from which the scheme's visual impact has been assessed and shows whether or not the impact is significant or non-significant during construction and operation.*

- ENV_ARP_C250_LV_Viewpoints_Pt_ES

### 9.2.2 Photomontage location

*Shows the locations from which verifiable photomontages have been produced. The locations are based on a fully surveyed point.*

- ENV_ARP_C250_LV_PhotomontageLocations_Pt_ES

## 9.3 Operational Phase Significantly Affected Viewpoints (LV-04)

### 9.3.1 Significantly affected viewpoint

*This dataset shows the locations of the visual receptors from which the scheme's visual impact has been assessed and shows whether or not the impact is significant or non-significant during construction and operation.*

- ENV_ARP_C250_LV_Viewpoints_Pt_ES

### 9.3.2 Photomontage location

*Shows the locations from which verifiable photomontages have been produced. The locations are based on a fully surveyed point.*

- ENV_ARP_C250_LV_PhotomontageLocations_Pt_ES

## 9.4 Construction Phase Zone of Theoretical Visibility (ZTV) & Viewpoints (LV-07)

### 9.4.1 Zone of Theoretical Visibility (ZTV) Construction

*This is a computer-generated model showing areas of land within which the activities undertaken during the construction of the scheme may be theoretically visible. ZTV has been used as a tool for identifying likely areas for survey and assessment based on initial scheme design.*

- ENV_ARP_C250_LV_ZTV_Construction_Ply_ES

### 9.4.2 Non-significantly affected viewpoint / Significantly affected viewpoint

*This dataset shows the locations of the visual receptors from which the schemes visual impact has been assessed and shows whether or not the impact is significant or non-significant during construction and operation.*

- ENV_ARP_C250_LV_Viewpoints_Pt_ES

### 9.4.3 Photomontage location

*Shows the locations from which verifiable photomontages have been produced. The locations are based on a fully surveyed point.*

- ENV_ARP_C250_LV_PhotomontageLocations_Pt_ES

## 9.5 Operational Phase Zone of Theoretical Visibility (ZTV) & Viewpoints (LV-08)

### 9.5.1 Zone of Theoretical Visibility (ZTV) Construction Year 15

*This is a computer-generated model showing areas of land within which the scheme may be theoretically visible after 15 years of operation by incorporating an assumed height of 7.5 metres for any mitigation planting.*

- ENV_ARP_C250_LV_ZTV_OperationYear15_Ply_ES

### 9.5.2 Zone of Theoretical Visibility (ZTV) Construction Year 1

*This is a computer-generated model showing areas of land within which the scheme may be theoretically visible on day 1 of operation.*

- ENV_ARP_C250_LV_ZTV_OperationYear1_Ply_ES

### 9.5.3 Non-significantly affected viewpoint / Significantly affected viewpoint

*This dataset shows the locations of the visual receptors from which the schemes visual impact has been assessed and shows whether or not the impact is significant or non-significant during construction and operation.*

- ENV_ARP_C250_LV_Viewpoints_Pt_ES

### 9.5.4 Photomontage location

*Shows the locations from which verifiable photomontages have been produced. The locations are based on a fully surveyed point.*

- ENV_ARP_C250_LV_PhotomontageLocations_Pt_ES

# 10 Socio-economics

## 10.1 Socio-Economic Significantly Affected Resources (SE-01)

### 10.1.1 Resources affected during the construction / operation / both construction and operation of HS2

*Socio-economic resources identified as significantly affected by either the construction or operation of the scheme. Derived from Ordnance Survey Mastermap data.*

- PRP_ARP_C250_SocioEconomic_SignificantlyAffectedResources_Pt_ES

## 10.2 Demographic Character Areas (SE-02)

### 10.2.1 Demographic character areas

*These are built up from local super output areas and are used to provide a context of the area's socio-economic profile. They have been defined to provide a descriptive, contextual profile of local communities (e.g. living in villages, towns, neighbourhoods) along the HS2 route by using available baseline datasets which capture various demographic/socio-economic characteristics at a lower geographic level.*

- PRP_ARP_C250_DemographicCharacterAreas_Ply_ES

# 11 Sound, noise and vibration

## 11.1 Operational Sound Contour Maps and Likely Significant Effects (SV-01)

### 11.1.1 Sound contours (SV-01)

The sound levels from the Proposed Scheme (expressed as $L_{pAeq,T}$ and representing sound from the new railway only) are presented in 5dB steps. The levels are shown in the panel in the top-right hand corner of SV-01.

- ENV_ARP_C250_SV01SoundGrid_LondonMet
- ENV_ARP_C250_SV01SoundGrid_CountrySouth
- ENV_ARP_C250_SV01SoundGrid_CountryNorth
- ENV_ARP_C250_SV01SoundGrid_WestMidsMet

### 11.1.2 Envisaged mitigation to avoid / reduce significant noise effects

*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 (green tunnels separately marked): 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.*

- ENV_ARP_C250_NoiseMitigationLines_Ln_ES

### 11.1.3 Envisaged measures further reducing noise effects

*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.*

- ENV_ARP_C250_NoiseMitigationLines_Ln_ES

### 11.1.4 Airborne sound 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.*

- ENV_ARP_C250_AirborneSoundStudyArea_Ply_ES

### 11.1.5 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).*

- ENV_ARP_C250_NoiseInsulationMaxs_Pt_ES

### 11.1.6 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).*

- ENV_ARP_C250_NoiseInsulationWHOGuidance_Pt_ES

### 11.1.7 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).*

- ENV_ARP_C250_NoiseInsulationNIRR_Pt_ES

### 11.1.8 Likely significant noise effects

- ENV_ARP_C250_LikelySignificantNoiseEffects_Pt_ES

## 11.2 Operational Airborne Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations) (SV-02)

### 11.2.1 Sound contours (SV-02/SV-05) (Panel A)

*The sound levels from the Proposed Scheme (expressed as $L_{pAeq,T}$ and representing sound from the new railway only) are presented at two sound levels: 40 dB $L_{Aeq,T\ 23:00\ to\ 07:00}$ and 55 dB $L_{Aeq,T\ 23:00\ to\ 07:00}$. The corresponding daytime levels ($L_{Aeq,T\ 07:00\ to\ 23:00}$) are shown in Panel A of SV-02/SV-05.*

- ENV_ARP_C250_SoundContoursSV02SV05_Ply_ES

### 11.2.2 Operational airborne sound impacts at buildings (Panel B)

*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 SV001-000). Panel B on SV-02/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.*

- ENV_ARP_C250_AirborneNoiseImpactsBuildings_Ply_ES

### 11.2.3 Envisaged mitigation to avoid / reduce significant noise effects

*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 (green tunnels separately marked): 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.*

- ENV_ARP_C250_NoiseMitigationHeightChangeMarkers_Pt_ES

### 11.2.4 Envisaged measures further reducing noise effects

*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.*

- ENV_ARP_C250_NoiseMitigationHeightChangeMarkers_Pt_ES

### 11.2.5 Airborne sound 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.*

- ENV_ARP_C250_AirborneSoundStudyArea_Ply_ES

### 11.2.6 Ground-borne sound & vibration study area (residential and non-residential)

*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.*

- ENV_ARP_C250_GBSVStudyAreaResiNonResi_Ply_ES

### 11.2.7 Ground-borne sound & vibration study area (highly sensitive non-residential)

*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.*

- ENV_ARP_C250_GBSVStudyAreaHighlySensitiveNonResi_Ply_ES

### 11.2.8 Airborne sound 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 contained in Volume 5: Appendix SV-004.*

- ENV_ARP_C250_AssessmentLocationsAll_Pt_ES

### 11.2.9 Airborne sound 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 contained in Volume 5: Appendix SV-004.*

- ENV_ARP_C250_AssessmentLocationsAll_Pt_ES

### 11.2.10 Ground-borne sound and/or vibration assessment location

*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-004.*

- ENV_ARP_C250_AssessmentLocationsAll_Pt_ES

### 11.2.11 Airborne sound, 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 & vibration reports contained in Volume 5: Appendix SV-004.*

- ENV_ARP_C250_AssessmentLocationsAll_Pt_ES

### 11.2.12 Minor ground-borne noise or vibration impact

*Buildings at which a minor operational ground-borne sound or vibration impact is predicted from the Proposed Scheme.*

- ENV_ARP_C250_MinorGBSVImpactBuildings_Ply_ES

### 11.2.13 Likely significant noise effects

- ENV_ARP_C250_LikelySignificantNoiseEffects_Pt_ES

## 11.3 Assessment and Monitoring Locations for Construction Sound, Noise & Vibration Assessments (SV-03)

### 11.3.1 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-003.*

- ENV_ARP_C250_AssessmentLocationsAll_Pt_ES

### 11.3.2 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-003.*

- ENV_ARP_C250_AssessmentLocationsAll_Pt_ES

### 11.3.3 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-003.*

- ENV_ARP_C250_AssessmentLocationsAll_Pt_ES

### 11.3.4 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, which also describes how these are linked to baseline levels at assessment locations.*

- ENV_ARP_C250_BaselineMeasurementLocations_Pt_ES

## 11.4 Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments (SV-04)

### 11.4.1 Airborne sound 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 contained in Volume 5: Appendix SV-004.*

- ENV_ARP_C250_AssessmentLocationsAll_Pt_ES

### 11.4.2 Airborne sound 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 contained in Volume 5: Appendix SV-004.*

- ENV_ARP_C250_AssessmentLocationsAll_Pt_ES

### 11.4.3 Ground-borne sound and/or vibration assessment location

*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-004.*

- ENV_ARP_C250_AssessmentLocationsAll_Pt_ES

### 11.4.4 Airborne sound, 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 & vibration reports contained in Volume 5: Appendix SV-004.*

- ENV_ARP_C250_AssessmentLocationsAll_Pt_ES

### 11.4.5 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, which also describes how these are linked to baseline levels at assessment locations.*

- ENV_ARP_C250_BaselineMeasurementLocations_Pt_ES

## 11.5 Operational Airborne Noise and Vibration Impacts and Likely Significant Effects (SV-05)

### 11.5.1 Sound contours (SV-02/SV-05) (Panel A)

*The sound levels from the Proposed Scheme (expressed as $L_{pAeq,T}$ and representing sound from the new railway only) are presented at two sound levels: 40 dB $L_{Aeq,T\ 23:00\ to\ 07:00}$ and 55 dB $L_{Aeq,T\ 23:00\ to\ 07:00}$. The corresponding daytime levels ($L_{Aeq,T\ 07:00\ to\ 23:00}$) are shown in Panel A of SV-02/SV-05.*

- ENV_ARP_C250_SoundContoursSV02SV05_Ply_ES

### 11.5.2 Operational airborne sound impacts at buildings (Panel B)

*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 SV001-000). Panel B on SV-02/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.*

- ENV_ARP_C250_AirborneNoiseImpactsBuildings_Ply_ES

### 11.5.3 Envisaged mitigation to avoid / reduce significant noise effects

*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 (green tunnels separately marked): 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.*

- ENV_ARP_C250_NoiseMitigationHeightChangeMarkers_Pt_ES

### 11.5.4 Envisaged measures further reducing noise effects

*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.*

- ENV_ARP_C250_NoiseMitigationHeightChangeMarkers_Pt_ES

### 11.5.5 Airborne sound 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.*

- ENV_ARP_C250_AirborneSoundStudyArea_Ply_ES

### 11.5.6 Ground-borne sound & vibration study area (residential and non-residential)

*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.*

- ENV_ARP_C250_GBSVStudyAreaResiNonResi_Ply_ES

### 11.5.7 Ground-borne sound & vibration study area (highly sensitive non-residential)

*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.*

- ENV_ARP_C250_GBSVStudyAreaHighlySensitiveNonResi_Ply_ES

### 11.5.8 Minor ground-borne noise or vibration impact

*Buildings at which a minor operational ground-borne sound or vibration impact is predicted from the Proposed Scheme.*

- ENV_ARP_C250_MinorGBSVImpactBuildings_Ply_ES

### 11.5.9 Likely significant noise effects

- ENV_ARP_C250_LikelySignificantNoiseEffects_Pt_ES

# 12 Traffic and Transport

## 12.1 Station Impacts (Operational) (TR-01)

### 12.1.1 Cycle parking

*Location of proposed cycle parking provision at HS2 Phase One stations.*

- TPT_ARP_C250_CycleParking_Ply_ES

### 12.1.2 Bus and/or coach stops

*Existing or proposed stop locations available for HS2 rail passengers within the vicinity of proposed HS2 Phase One stations.*

- TPT_ARP_C250_BusAndOrCoachStops_Ply_ES

### 12.1.3 Station access points

*Pedestrian access points (entrances/exits) within proposed HS2 Phase One station buildings.*

- TPT_ARP_C250_StationAccessPoints_Ply_ES

### 12.1.4 Taxi ranks

*Location of proposed taxi ranks at HS2 Phase One stations.*

- TPT_ARP_C250_TaxiRanks_Ply_ES

### 12.1.5 Kiss and ride

*Area located within the vicinity of proposed HS2 Phase One station for private vehicle drop-off/pick-up of rail passengers.*

- TPT_ARP_C250_KissAndRide_Ply_ES

## 12.2 Significant Residual Transport Effects Arising during Construction and Construction Lorry Routes (TR-03)

### 12.2.1 Construction Significant Effects

*Adverse – deterioration in existing conditions as a result of the Proposed Scheme*
*Beneficial – improvement of existing conditions as a result of the Proposed Scheme*
*Permanent – permanent change as a result of the Proposed Scheme*
*Temporary – temporary change as a result of the Proposed Scheme (likely within construction phase of scheme).*

- TPT_ARP_C250_AdverseConstructionEffects_Pt_ES
- TPT_ARP_C250_BeneficialConstructionEffects_Pt_ES

## 12.3 Significant Residual Transport Effects Arising from Operation (TR-04)

### 12.3.1 Operational Significant Effects

*Adverse – deterioration in existing conditions as a result of the Proposed Scheme*
*Beneficial – improvement of existing conditions as a result of the Proposed Scheme*
*Permanent – permanent change as a result of the Proposed Scheme, effects can be for 2026, 2041 or both operational assessment years*
*Temporary – temporary change as a result of the Proposed Scheme.*

- TPT_ARP_C250_AdverseOperationalEffects_Pt_ES
- TPT_ARP_C250_BeneficialOperationalEffects_Pt_ES

# 13 Water Resources

## 13.1 Surface Water Baseline (WR-01)

### 13.1.1 Surface water crossing location

*Locations where the route crosses a watercourse.*

- HYD_ARP_C250_WatercourseCrossingPoints_Pt_ES

# 14 Cross-Topic Appendix 1

## 14.1 Committed Developments (CT-13)

### 14.1.1 Committed consent and development allocations

*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.*

- LGL_ARP_C250_CommittedConsentDevelopmentAllocations_Ply_ES