

High Speed Rail (Crewe to Manchester and West Midlands to Leeds)

Working Draft Environmental Statement
Glossary of terms and list of abbreviations

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Glossary of terms and list of abbreviations**



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.

High Speed Two (HS2) Limited,
Two Snowhill
Snow Hill Queensway
Birmingham B4 6GA

Telephone: 08081 434 434

General email enquiries: HS2enquiries@hs2.org.uk

Website: www.hs2.org.uk

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

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1 Glossary of terms

| Term | Definition |
|------------------------------------|---|
| 10mm settlement contour | The area in which ground settlement is estimated to be 10mm in depth. |
| absolute vibration criteria | Threshold levels that identify whether vibration is, for example, likely to affect a person's activities or the operation of vibration sensitive equipment. |
| Abutment | A point where two structures meet, which support or anchor the end of a bridge. |
| accommodation bridge | A bridge under or over the route of the Proposed Scheme that serves an area of land or residential property and is not considered a public highway. |
| accommodation/access road or track | A new or altered access road or track serving a piece of land or residential property affected by the Proposed Scheme. Such accesses are not public highways. |
| accumulated temperature | The average temperature above 0°C recorded between January and June for any given year. This is a measure of the relative warmth of a locality and can be used to calculate soil drying potential and correlates with crop growth and yield. |
| Additional Provision | An amendment to a hybrid Bill being considered by Parliament. Additional Provisions cover changes that involve the acquisition or use of land outside the original limits of the Bill, additional access rights, or other extensions of the powers conferred by the Bill. |
| adit | A horizontal or near-horizontal passage or tunnel that provides access to and from underground workings in a tunnel or mine. |
| advisory cycle lane | An area intended for, but not legally restricted to, cyclists' use. Other vehicles are permitted to enter or cross it if it is safe to do so. |
| advisory cycle route | Any infrastructure that can be legally used by cycles, including, cycle tracks, stepped cycle tracks, cycle lanes, light segregated cycle lanes and carriageways. |
| aftercare | The ongoing management of a restored site to ensure that the restoration is established, is sustainable and delivers the proposed after use. It is usually used in the context of restoration of agricultural land. |
| aggregate | Granular material (e.g. sand and gravel or crushed rock) that can be used for building and/or civil engineering purposes (e.g. to produce concrete). |
| Agricultural Land Classification | The system devised and introduced by the Ministry of Agriculture, Fisheries and Food to classify agricultural land according to the extent to which its physical or chemical characteristics impose long-term limitations on agricultural use. Land is graded from 1 (excellent quality) to 5 (very poor quality), with grade 3 subdivided into agricultural subgrades 3a and 3b. See 'best and most versatile land', 'Grade 1-5' and 'Subgrade 3a and 3b'. |

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| agri-environment scheme | A mechanism by which landowners and other individuals and bodies responsible for land management can be incentivised to manage their land in a manner sympathetic to the environment. |
| air quality action plan | A plan that must be compiled by a local authority if it declares an air quality management area. |
| air quality exceedance | An instance of pollutant concentrations exceeding an air quality standard. |
| air quality limit value | A maximum concentration to be achieved in the atmosphere, either without exception or with a permitted number of exceedances. Limit values are defined in European Union Directives and implemented in United Kingdom legislation. |
| air quality management area | An area within a local authority boundary where the air quality objectives are not likely to be achieved. The local authority is required to declare the area as an air quality management area and to prepare a local air quality action plan. |
| air quality objective | Objectives are policy targets generally expressed as a maximum ambient pollutant concentration to be achieved. The objectives are set out in the UK Government's Air Quality Strategy for the key air pollutants. |
| air quality sensitive receptors | People, property, species or designated sites for nature conservation that may be at risk from exposure to air pollutants potentially arising as a result of a proposed development. |
| air quality standard | Air quality limit values and objectives. |
| ALARP principle | As low as reasonably practicable - A rule which involves weighing a risk against the time and cost needed to control it. |
| alluvial deposits | Natural materials deposited within and adjacent to rivers. |
| alluvium | Loose, unconsolidated material comprising clay, silt, sand, gravel deposited by flowing water, typically in floodplain areas, which can contain layers of peat. |
| ambient sound | The all-encompassing sound at a given location and time. It will generally include sound from many sources near and far. Ambient sound can be quantified in terms of the equivalent continuous sound pressure level, $L_{PAeq,T}$. |
| anaerobic | Absence of oxygen. |
| ancient tree | An ancient tree is one that has passed maturity and is old, or aged, in comparison with other trees of the same species. |
| Ancient Tree Inventory | A map-based record of ancient trees and veteran trees that have been recorded in the UK. |
| ancient woodland | Land that has been continually wooded since at least 1600 AD. |

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| Ancient Woodland Inventory | A map-based record of all ancient woodland in England and Wales over 2ha in area. |
| ancillary works | Activities which may take place prior to work under the main construction contract. This could include: demolition, site clearance and the diversion and upgrade of utilities. |
| annual average rainfall | Average amount of precipitation falling at a specified site recorded by the Meteorological Office. It gives a measure of the overall wetness of the local climate. |
| appraisal of sustainability | An assessment of the impact of plans, policies and programmes from an environmental, economic and social perspective. |
| appropriate assessment | An assessment required by the Habitats Directive and Regulations where a project (or plan) would be likely to have a significant effect on a European site, either alone or in combination with other plans or projects (part of the Habitats Regulations Assessment process). |
| aquifer | A geological formation that is sufficiently porous and permeable to store and yield a significant quantity of water to a borehole, well or spring. |
| ArcGIS | Computer software-based geographic information system used for: creating maps; analysing information that has been mapped; and managing and compiling geographic data. |
| archaeological anomaly | A location identified during a geophysical survey that indicates the presence or possible presence of an archaeological feature or features. |
| archaeological potential | A location where the data collected and reviewed indicate that archaeological assets may be present. |
| archaeological priority area | An area specified by a local planning authority to help protect archaeological remains that might be affected by development. |
| Area of Outstanding Natural Beauty | An area designated under Section 82(1) of the Countryside and Rights of Way Act 2000 for the purpose of conserving and enhancing its natural beauty. |
| assemblage (ecology) | A group of species found in the same location. |
| at grade | At the same height (e.g., when a railway line is at the same height as the existing ground level). |
| attenuation tank | An attenuation tank is usually installed within a drainage system just prior to the point of discharge from a site to help control the rate of water flow during high flow conditions. |
| auger | A drilling device, or drill bit, that usually includes a rotating helical screw blade. The rotation of the blade causes the material to move out of the hole being drilled. |

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| auto-transformer feeder station | A compound located next to the high speed railway that contains equipment to transfer electrical power between the National Grid network and the high speed railway's overhead line equipment. |
| auto-transformer station | A compound located next to the high speed railway at approximately 5km (3 mile) intervals. It contains electrical equipment to provide distribution of power along the high speed railway. |
| avoidance | Prevention of impacts occurring, having regard to predictions about potentially negative environmental effects (e.g. project decisions about site location or design). |
| balancing pond | Part of a drainage system that is used to temporarily store, and thereby attenuate, the flow of surface water run-off. |
| ballast | Graded stone, used for drainage and to form the track bed upon which railway sleepers are laid. |
| basal layer | Unweathered parent material beneath subsoil. A layer upon which subsoil may be re-spread. |
| base flow index | The proportion of a river's flow that comes from groundwater sources. Base flow sustains a river flow in dry weather. |
| baseline | Existing environmental conditions present on, or near a site, against which future changes can be measured or predicted. |
| beam bridge | A beam bridge consists of structural sections spanning longitudinally between piers or abutments. |
| bedrock | Rock that underlies loose deposits such as soil or alluvium. |
| bentonite | A natural clay that, when mixed with water, swells and forms a thixotropic gel (a particular type of viscous behaviour exhibited by some liquids). It can be used temporarily to support trenches or retaining walls, and helps to prevent collapse when they are being backfilled (i.e. refilled) or concreted. |
| best and most versatile land | Land defined as grade 1, 2 or 3a of the Agricultural Land Classification. This land is considered the most flexible, productive and efficient and is most capable of delivering crops for food and non-food uses. |
| best available techniques | The available techniques which are the best for preventing or minimising emissions and impacts on the environment. Techniques include both the technology used and the way an installation is designed, built, maintained, operated and decommissioned. |
| best practicable environmental option | The outcome of a systematic and consultative decision-making procedure which emphasises the protection and conservation of the environment across land, air and water. The best practicable environmental option procedure establishes, for a given set of objectives, the option that provides the most benefits or the least |

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| | damage to the environment as a whole, at acceptable cost, in the long-term as well as the short-term. |
| best practicable means | Defined in the Control of Pollution Act 1974 and Environmental Protection Act 1990. Used to describe measures that are 'reasonably practicable having regard among other things to local conditions and circumstances, to the current state of technical knowledge and to financial implications'. |
| biodiversity | The biological diversity of the earth's living resources. The total variability among organisms and ecosystems. |
| biodiversity action plan | A nationally established programme that seeks to protect and restore threatened species, habitats and biological systems. |
| biodiversity alert site | A non-statutory Staffordshire local wildlife designation, which grades sites that have the potential to be of substantive nature conservation value through appropriate management. |
| blockade | Where construction or maintenance requires a possession period longer than 100 hours, that cannot be accommodated in a weekend (including bank holiday weekends), these are referred to as 'blockades'. |
| bored tunnel | A tunnel constructed using a tunnel boring machine. |
| borehole | A hole bored into the ground, usually as part of investigations, typically to test the depth and quality of soil, rock and groundwater. A borehole can also be used to dewater the ground. |
| borrow pits | Areas excavated to provide material for construction purposes. |
| bridge deck | The road, railway or pedestrian walkway that forms the surface of a bridge. |
| bridge soffit | The underside of a bridge. |
| brine | A concentrated salt solution, formed by the combination of groundwater and highly concentrated rock salt. |
| brinefield | An area of brine extraction, typically by pumping. |
| Bronze Age | The period between 2,600 and 700 BC. |
| British Horse Society | A charity that seeks to protect the interests of horses (including their welfare) and horse riders (equestrians), for example, through increasing bridleway access. |
| built heritage | A heritage asset that is a structure or building visible above ground level. |
| bulk building materials | Construction materials, such as concrete, aggregates or steel. |
| bund | An embankment that acts as a visual or noise screen, or as a barrier to control the spillage of fluids. |

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| buried heritage | A heritage asset beneath ground level. |
| byway open to all traffic | A highway over which the public have a right of way for vehicular and all other kinds of traffic, but which is used by the public mainly for the purpose for which footpaths and bridleways are so used (i.e. walking, horse-riding, cycling). |
| calcareous soil | Soil containing accumulations of calcium and magnesium carbonate, formed by the weathering of calcareous rocks and fossil shell beds. |
| calciole species | A plant which grows only or mainly on acidic soils. |
| cantilever | A structure supported or fixed at one end only. |
| captive trains | Trains that are designed to run only on the new High Speed Two rail network. |
| carbon budget | The total quantity of greenhouse gas emissions permitted in the United Kingdom over a specified period. |
| carbon dioxide equivalent | A measure used to compare the emissions from various greenhouse gases based on their global warming potential relative to that of carbon dioxide. |
| carbon emission | The release of carbon dioxide into the atmosphere. |
| carbon footprint | The total carbon dioxide emissions associated with a particular policy or development. |
| carrying capacity | The maximum number of organisms or amount of biomass that can be supported in a given area or by an ecosystem. |
| catchment (water) | The area of land from which water flows into a watercourse or waterbody. |
| Central Association of Agricultural Valuers | A specialist professional body representing, qualifying and briefing members practicing a diverse range of agricultural and rural work throughout the UK. |
| chainage | The distance (measured in metres) along the centre line of the HS2 route from a defined start point at Euston Station, London. |
| circa | Meaning 'approximately'. Often used in a historic context in reference to a date. |
| civil engineering | A branch of engineering that deals with the design, construction and maintenance of the physical and naturally built environment. Examples of civil engineering works include construction of roads, railways and dams |
| clay | An inorganic component of soil derived from the weathering of rock. It comprises particles less than 0.002mm in equivalent diameter. |
| climate | The climate can be described simply as the 'average weather', typically looked at over a period of 30 years. It can include temperature, rainfall, snow cover, or any other weather characteristic. |

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| climate change | A change in the state of the climate, which can be identified by changes in average climate characteristics that persist for an extended period - typically decades or longer. |
| climate change adaptation | The adjustment in natural or human systems in response to actual or expected climatic changes or their effects, which moderates harm or exploits beneficial opportunities. |
| climate change mitigation | Action to reduce the likelihood of an event occurring or to reduce the impact if it does occur. This can include reducing the causes of climate change (e.g. emissions of greenhouse gases), as well as reducing future risks associated with climate change. |
| climate change projections | Projections of changes in climate variables expressed in terms of the difference between the absolute future climate and a baseline climatology for a given location, time period and emissions scenario of greenhouse gases. |
| climate change resilience | The capacity of natural and human systems to retain their original form and function, and to survive and adapt in the context of the stresses and shocks imposed upon them by climate change. |
| climate change risk assessment | A Government-commissioned assessment of the risks posed to the United Kingdom by the changing climate. |
| Coal Authority | The Coal Authority manages the effects of past coal mining, including subsidence damage claims which are not the responsibility of licensed coal mine operators. It deals with mine water pollution and other mining legacy issues. The Coal Authority is an executive non-departmental public body, sponsored by the Department for Business, Energy and Industrial Strategy. |
| Code of Construction Practice | A document setting out the measures and standards to which a developer or contractor must adhere in order to provide effective planning, management and control of potential impacts on individuals, communities and the environment during construction. |
| cofferdam | A watertight enclosure built within water-filled ground or a body of water that can be pumped dry to enable construction activities below the water line. |
| colliery | A coal mine, including its associated buildings and equipment. |
| combinable crops | All types of crop gathered using a combine harvester. |
| combined two-way vehicle trips | Two-way trips refer to the total number of vehicle movements in both directions (i.e. with 200 westbound vehicles and 100 eastbound there would be 300 two-way trips). |
| combustion plant | An installation that combusts fuel to generate energy. |
| commercial and industrial waste | Commercial waste is defined as any waste arising from a property used for the purposes of trade or business, while industrial waste is any waste arising from |

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| | an industrial activity, such as workshops, and waste from construction or demolition works. |
| committed development | A development that has full or outline planning permission, or is allocated in an adopted development plan. |
| Committee on Climate Change | An independent advisory body, established under Section 32 of the Climate Change Act 2008, tasked with helping the UK Government set and meet carbon budgets and adapt to climate change. |
| community area | Defined areas along the proposed HS2 Phase 2b route (e.g. Hough to Walley's Green community area). They are used as a geographical basis for reporting local community and environmental impacts and effects in the working draft Environmental Statement. |
| compensation (ecology) | Measures taken to make up for the loss of, or permanent damage to, ecological features despite mitigation. Replacement areas should be similar in terms of biological features and ecological functions to that lost or damaged, or with appropriate management have the ability to reproduce the ecological functions and conditions of those biological features. |
| Compensation Code | The collective term for the principles derived from both statute and case law, relating to compensation for compulsory acquisition. It ensures that when land is needed to build an infrastructure project, the owners receive compensation to help them to move house or to relocate a business. The code also ensures that those who experience physical effects from a scheme once it is in operation, for example vibration or noise, are entitled to compensation. |
| concentration response | A known functional relationship between exposure to a stressor (e.g. a pollutant or chemical) and the effect on a biological receptor (e.g. number of people who experience ill health or death). |
| conceptual site model | The method used to identify the various types of risk relating to contaminated land. The conceptual site model includes: categorisation of sources of contamination; categorisation of potential receptors; and identification of potential contamination pathways (i.e. linking sources to receptors). |
| concrete batching plant | A machine that combines various ingredients to form concrete. |
| confined aquifer | An aquifer that is confined between two layers of soil or rock that are much less pervious than the aquifer. |
| congestion | When an increase in vehicular traffic disrupts free movement, causing reduced speeds, increased journey times and increased vehicular queuing. |
| conglomerate | A rock that contains gravel or cobble-sized material within a finer grained matrix. |
| connectivity (ecology) | A measure of the functional availability of the habitats needed for a particular species to move through a given area. Examples include the flight lines used by bats to travel between roosts whilst foraging. |
| conservation | The preservation or enhancement of a species or building/structure. |

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| conservation area | An area designated under Section 69 of the Planning (Listed Buildings and Conservation Areas) Act 1990 as being of special architectural or historic interest and with a character or appearance which is desirable to preserve or enhance. |
| Considerate Constructors Scheme | A UK-wide scheme promoting good construction site practice. Its codes of considerate practice commit the users of registered sites to be: considerate and good neighbours; respectful; environmentally conscious; responsible; and accountable. |
| construction | The works necessary to build a proposed development. |
| construction compound | An enclosed area providing facilities for construction staff and storage of construction equipment. See 'satellite compound' and 'main compound' for further information. |
| construction person year | Used to report construction labour, where one construction person year represents the work done by one person in a year, comprising a standard number of working days. |
| construction plant | Portable construction machinery and equipment. |
| construction sidings | Sites with connections to the National Rail network to allow excavated materials to either join the rail network from the Proposed Scheme construction areas, or to leave the rail network to enter the construction areas. Facilities at construction sidings will include offices and rail sidings to provide for the loading or unloading of construction material from rail wagons. |
| construction worksites | Sites where the construction of the various elements of the Proposed Scheme (e.g. viaducts and tunnels) is undertaken. |
| contiguous bored pile wall | Closely spaced, bored piles used to form an underground wall, for the construction of a deep basement or green tunnel. |
| continuous monitoring station | An air quality monitoring site that continuously measures the levels of pollutants. |
| controlled waters | Rivers, streams, estuaries, lakes, canals, ditches, ponds and groundwater as far out as the UK territorial limit. The statutory definition is provided in Section 104 (1) of the Water Resources Act 1991 and Section 30A (d) of the Control of Pollution Act 1974. |
| conurbation | A region comprising a number of cities, large towns and other urban areas that, through population growth and physical expansion, have merged to form one continuous urban and industrially developed area. |
| conventional compatible trains | Trains that are designed to run on both the new High Speed Two rail network and the existing rail network. |
| conventional line | The existing UK rail network (excluding High Speed One). |
| conventional trains | Trains that are designed to run on the existing conventional speed rail network. |

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| Country Land and Business Association | A membership organisation for owners of land, property and business in rural England and Wales. |
| Country Park | Country Parks were established as a result of the Countryside Act 1968. Natural England recognises Country Parks as significant places that contribute to England's accessible natural greenspace. |
| county wildlife site | A site of important nature conservation value within a county context, but which is not protected under the Wildlife and Countryside Act 1981. |
| crop-adjusted available water capacity | A measure of the moisture available for plants to extract from the soil, as they grow. It is related to the texture, structure, stoniness and depth of the soil that roots can exploit. |
| cropmarks | Differential growth patterns in vegetation, often visible from the air, caused by differences in soil moisture availability due to the presence of underlying near-surface archaeological deposits. |
| Crossrail | A new east-west rail line (also known as the Elizabeth line) linking Reading and Heathrow Airport in the west, to Shenfield and Abbey Wood in the east, via tunnels under central London. |
| Crossrail 2 | A proposed new rail line linking Surrey and Hertfordshire, via tunnels under central London, including an interchange at London Euston Station. |
| culvert | A pipe or small underbridge carrying a watercourse under a road or railway. |
| cumulative | A combination of effects. The EIA Scope and Methodology Report for HS2 Phase 2b defines a cumulative effect as: “incremental effects that result from the accumulation of a number of individual effects. They may result either from: <ul style="list-style-type: none">• a combination of effects arising from the Proposed Scheme (intra-project effects). For example, intra-project effects may arise during construction in cases where the occupiers of residential properties experience noise, visual and traffic effects, resulting from construction activities or the passage of construction vehicles on the local road network; or• an interaction between the effects of the Proposed Scheme with the effects of other developments that are likely to be under construction or to have been completed during construction or operation of the Proposed Scheme (inter-project effects). For example, construction of the Proposed Scheme and Phase One and Phase 2a may give rise to inter-project effects at the interfaces between the two schemes”. |

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| curtilage | The area of land associated with the use of a building for a particular purpose. |
| cut-and-cover tunnel | A tunnel constructed by excavating a cutting constructing a box-type structure and reinstating the ground over the top to its original level. Cut-and-cover tunnels can be constructed in two ways: <ul style="list-style-type: none"> • 'bottom up' where an excavation is created from the surface, before the tunnel floor, walls and roof are then built and the entire structure buried and the surface restored; and • 'top down' where the tunnel walls are inserted into the ground and the roof added, before the material within the tunnel is excavated from either end. |
| cutting | A linear excavation of soil or rock to make way for a new railway or road. Cuttings can help reduce the noise and/or visual impact of passing trains or road vehicles. |
| cryoturbation | The mixing of soils due to alternate freezing and thawing of water (see also: 'solifluction'). |
| decibel | A unit used to express relative differences in sound power or intensity. There is a million to one ratio in sound pressure (measured in Pascal (Pa)) between the quietest audible sound and the loudest tolerable sound. The decibel (dB) scale, based on a logarithmic ratio, is used in sound measurement because of this wide range. Audibility of sound covers a range of approximately 0-140dB. |
| decibel A-weighted | Instrumentation used to measure sound can have its frequency response weighted to represent the performance of the ear, which does not respond uniformly to sound across the detectable frequency range. This is known as the 'A weighting' and is written as 'dB(A)'. |
| deck beam | A horizontal structural support element that is capable of withstanding a vertical load. |
| deck slab | The material that lies on top of the deck beams to create a surface. |
| Defra | The Government Department for Environment, Food and Rural Affairs. The department is responsible for safeguarding the natural environment, supporting the food and farming industry and sustaining a thriving rural economy. |
| delay (pedestrians) | Change in the 'person-minutes' of the journey times of pedestrians and other non-motorised travellers. |
| delay (traffic) | An increase in journey time for drivers and passengers due to increased congestion. |
| Department for Transport | Government department responsible for transport issues in the UK (where powers have not been devolved). |

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| deposition index | A dimensionless index value that indicates the extent of sediment coverage on a stream bed. |
| design development | Process in which technical specialists (e.g. engineering, environmental, socio-economic, community and health specialists) collaboratively refine the design for the various elements of HS2 Phase 2b. |
| design life | The life expectancy of a proposed development. |
| detailed design | The process in which the finer details of the design of a proposed development are developed. |
| development plan document | Documentation that seeks to guide development and planning in a local authority area for a set period. |
| dewatering | Removal or draining of groundwater from soils, superficial deposits or bedrock, typically by pumping, gravity drainage and/or compression. |
| diamicton | Very poorly sorted sediment, often the result of glacial activity, that can contain material from clay to boulder size. |
| diaphragm walls | Embedded walls inserted into the ground. They can be used as foundation walls, groundwater barriers or to isolate areas of contaminated ground. |
| diffusion tube | A passive device used in air quality monitoring to measure weekly or monthly average pollutant concentrations. |
| digital elevation model | A digital model of the surface of the earth without any objects on it (e.g. trees and buildings). |
| digital surface model | A digital model of the surface of the earth with all objects on it (e.g. trees and buildings). |
| dipolar anomaly | A single positive anomaly with an associated negative response identified during a geophysical survey. There should be no separation between the two polarities of response. These responses will be created by a single feature. A very strong anomaly is likely to be caused by a ferrous object. |
| Directive | A legal act of the European Union. Legal obligations imposed on European member states by the European Commission following approval by the European Parliament and European Council. |
| disability-adjusted life year | Indicates the estimated number of healthy life years lost in a population from premature mortality or morbidity, i.e. the health burden. For the Proposed Scheme, this will be calculated using the central disability weighting values from the World Health Organization and an assumption of 2.3 people per residential dwelling. |
| discharge consent | Permission granted by the Environment Agency to discharge material, such as sewage, trade effluent or excess rainwater, directly into surface waters, groundwater or the sea. |

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| displacement (economic) | Loss of local economic activity as a direct consequence of a proposed development. |
| disruptive possession | A possession requiring disruption to passenger and/or freight services. See 'possession'. |
| distribution | The geographic presence of a feature. This can depend on factors such as climate and altitude. |
| dive under | A railway junction at which one or more diverging or converging tracks in a multiple-track route pass under a structure containing other tracks on the route to avoid conflicting train movements. |
| diversion | Used throughout this working draft Environmental Statement to refer to a significant change to the route or direction of a road due to the location of the route of the Proposed Scheme. (See also: 'realignment'). |
| down line | The line of the route heading away from Euston Station, London. |
| drainage stilling pond | A small basin into which water flow is discharged that is used to either dissipate energy or trap solids. |
| Drinking Water Safeguard Zone | A designated area in which the use of certain substances must be carefully managed to prevent the pollution of raw water sources that are used to provide drinking water. |
| drop inlet culvert | A form of culvert used on sloping ground where the water level has to be lowered to pass under a railway or road. |
| droughtiness | A physical limitation to the agricultural use of soils. It is a defined calculation in the Agricultural Land Classification guidelines which uses soil and climatic parameters to provide an estimate of likely moisture stress in 'representative' crops. Moisture stress can arise when the crop's requirements for water exceed the available water capacity of the soil. |
| dry valley | A valley, formed by water erosion, with no permanent surface stream. These valleys typically occur in areas where porous rock (i.e. rock which absorbs water, such as chalk and limestone) is present. |
| dust | All airborne particulate matter. |
| Early Medieval (also referred to as Anglo-Saxon Scandinavian) period | The period between 410 AD and 1066 AD. |
| earthworks | The removal or placement of soils and other excavated material (e.g. rocks), such as in cuttings, embankments and environmental mitigation. |
| East Coast Main Line | The existing rail route connecting London King's Cross, Peterborough, Doncaster, Wakefield, Leeds, York, Darlington, Newcastle and Edinburgh. |

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| Term | Definition |
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| ecological status | The state of a water body, derived from a number of factors, including: the abundance of aquatic flora and fauna; nutrient availability; salinity; temperature; and chemical pollution levels. |
| economic displacement | The proportion of intervention outputs/outcomes accounted for by reduced outputs/outcomes elsewhere in the target area. |
| economic leakage | The amount of economic benefit that leaks out of the area of impact through processes such as commuters or the supply chain spending outside the local area. |
| economic substitution | This effect arises where a firm substitutes one activity for a similar one (such as recruiting a jobless person while another employee loses a job) to take advantage of public sector assistance. It can be thought of as "within firm" displacement. |
| economically active | People who are either in employment or unemployed but actively seeking employment. |
| ecosystem | A dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit. |
| ecosystem services | The benefits that people derive from the natural environment. The natural environment can be considered as a stock of 'natural capital' from which many benefits flow - social , health-related, cultural or economic. |
| edge effect (ecology) | Effects that occur on the edge of a woodland due to increased exposure to wind and light. |
| effect | Used throughout this working draft environmental statement to refer to the consequence of an impact to the receiving environment (see also: 'impact'). |
| effluent | Liquid waste or sewage. |
| electricity pylon | A tall lattice-like structure (usually made of steel) that is used to support overhead power lines. Also known as a transmission tower. |
| electromagnetic field | The field of force associated with electric charge in motion, which has both electric and magnetic components and contains electromagnetic energy. |
| electromagnetic interference | Disturbance that affects an electrical system due to magnetic and electric fields, electromagnetic induction or electromagnetic radiation emitted from an external source. |
| embankment | Artificially raised ground, commonly made of rock or compacted soil, on which a new railway or road is constructed. |
| EMC zone | A bounded area in which specific levels of electromagnetic energy exist. Some EMC zones contain higher levels of electromagnetic energy than others. In the railway environment the zone containing most energy in these EMC zones exists on the trackside of the railway close to traction or non-traction power distribution equipment. |

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| employment density ratio | Standard average floorspace per full-time equivalent member of staff, which varies by building use. It is used to estimate the number of jobs that are accommodated in any given building. |
| employment rate | The proportion of 16-64 year-old residents in employment. Employment comprises the proportion of the total resident population who are 'in employment' and includes full-time students who are employed. |
| English Heritage | Executive non-departmental public body created under Section 32 of the National Heritage Act 1983. English Heritage separated into two organisations in April 2015: the English Heritage charity, which cares for the National Heritage Collection of more than 400 historic places and their collections; and Historic England, the public body that looks after England's historic environment and helps people understand, value and care for historic places. |
| English Woodland Grant Scheme | A portfolio of grants managed by the Forestry Commission to help promote the stewardship of existing woodlands, the creation of new woodlands and the delivery of public benefits from England's woods. |
| enhancement | Improved management of ecological features or provision of new ecological features, resulting in a net benefit to biodiversity, which is unrelated to a negative impact or is 'over and above' that required to mitigate/compensate for an impact. |
| enterprise zone | A geographical area (agreed between the local enterprise partner and Government) that has been designated for specific economic development. The aim is to attract investment, drive economic growth and employ local people. |
| entry level stewardship | The basic level of Defra's Environmental Stewardship Scheme, intended to encourage a large number of farmers across a wide area to adopt simple environmental management practices, such as hedgerow management, low-input grassland, buffer strips and more sustainable arable options. |
| Environment Agency | Government agency established to protect and improve the environment and contribute to sustainable development. Responsibilities include: water quality and resources, flooding and coastal risk management and contaminated land. |
| environmental impact assessment | A process of systematically assessing the likely environmental effects of proposed development projects. EIA is a legal requirement for certain public and private projects in EU countries under Directive 2014/52/EU. This directive is transposed into English legislation by the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (SI 2017/571). |
| environmental permit | Many activities that can cause pollution are prohibited unless authorised by a permit. When either the Environment Agency or a local authority gives someone an environmental permit, they are allowing that person to carry on an activity under certain conditions. A business may need to apply to the Environment Agency for an environmental permit if it uses, recycles, treats, stores or disposes of waste or mining waste. |
| Environmental Statement | A suite of documents produced as part of an environmental impact assessment. It must include all information that is reasonably required to assess the likely significant environmental effects of a proposed development. |

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| Environmental Stewardship and Countryside Stewardship | A scheme run by the Department for Environment, Food, and Rural Affairs in England that aims to promote responsible use and protection of the natural environment through conservation and sustainable practices. This is a type of agri-environment scheme. |
| equality impact assessment | A predictive assessment of the possible equality effects of the Proposed Scheme during construction and operation on protected characteristic groups. |
| equivalent continuous sound pressure level, $L_{pAeq,T}$ | An index used internationally for the assessment of environmental sound impacts. It is defined as the notional unchanging level that would, over a given period of time (T), deliver the same sound energy as the actual time-varying sound over the same period. Hence fluctuating sound levels can be described in terms of an equivalent single figure value. |
| Erewash Valley Line | A railway which runs from Trent junction near Long Eaton northwards to Clay Cross south of Chesterfield. |
| Euro VI engines | Engines certified to have substantially lower emissions of NOx and particulate matter than older engines. (Euro VI as defined by EU Directive 2007/46/EC, and amended by subsequent regulations). |
| European Union Emissions Trading System | A system designed to reduce greenhouse gas emissions using a cap-and-trade framework. |
| excavated material | Soil, rock and other material that has been removed from the ground during construction. |
| Exceptional Hardship Scheme | A compensation scheme introduced by the Government in order to assist those living on or close to the proposed route who wish to sell their properties before a final decision is made on the project. |
| extreme weather | Unusual, severe or unseasonal weather; or weather at the extremes of the range of weather seen in the past. |
| false cutting | A means of screening a linear feature (e.g. a railway) by forming embankments on both sides of the feature. |
| falsework | Scaffolding or other temporary structures used to support construction components until the construction is sufficiently advanced to allow the structure to support itself. |
| farmstead | The part of a farm containing most of its buildings, including the farmhouse. |
| ferrous anomaly | A response obtained from geophysical survey that indicates the presence of ferrous (iron based) material that may result from items within the topsoil or larger buried objects such as pipes. |
| field capacity days | A meteorological parameter used to quantify the duration of the period when soils are wet. Soils usually return to field capacity during the autumn or early winter. The field capacity period, measured in days, ends in the spring when evapotranspiration exceeds rainfall and a moisture deficit begins to accumulate in |

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| | the soil. Opportunities for mechanised fieldwork are then possible without damaging the soil. |
| fill | Material used to artificially raise existing ground levels. |
| Flood Zones 1, 2 and 3 | <p>A system devised by the Environment Agency to aid decision-making in spatial planning. Flood zones are areas at potential risk of flooding from rivers or the sea, ignoring the presence of flood defences and the potential impacts of climate change. The zones are:</p> <ul style="list-style-type: none"> - Flood Zone 1: land outside the floodplain. There is little or no risk of flooding in this zone; - Flood Zone 2: the area of the floodplain where there is a low to medium flood risk; and - Flood Zone 3: the area of the floodplain where there is a high risk of flooding. |
| floodplain | Land adjacent to a watercourse that is subject to flooding. |
| footfall | The total number of pedestrians walking past a specific point (in either direction) within a period of time. |
| footpath | A public right of way that the public can travel on by foot. These are often unpaved waymarked paths running through the countryside. |
| footway | A path that runs alongside a road that the public can travel on by foot, often paved in more urban areas, but can also include unpaved routes on roadside grass verges. |
| Forestry Commission | The Government department responsible for the protection, expansion and management of forests and woodland in England and Scotland. |
| formation (land quality) | A group of related rock strata with some common properties. |
| formwork | Temporary or permanent moulds into which concrete or similar materials are poured. |
| fragmentation (ecology) | The breaking up of a habitat, ecosystem or land-use type into smaller parcels with the consequent impairment of ecological function. |
| freeboard allowance | <p>The height from the maximum design level of a watercourse to:</p> <ul style="list-style-type: none"> - the adjacent banks of an open channel, to provide a factor of safety against flooding; or - the soffit (underside) of any culvert or bridge above, to minimise the risk of blockage by floating debris, etc. |
| full-time equivalent (employment) | Combines full- and part-time employment to provide a standard measure of employment by working week. Someone who works 2.5 days a week, for instance, would be counted as 0.5 full-time equivalent. |

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| future baseline | The situation that would prevail if the proposed development that is the subject of the environmental impact assessment does not proceed. The predicted impacts of the development are compared against this theoretical scenario. |
| gabion | Large wire basket filled with rock or aggregate, used in multiples to construct retaining walls or for erosion protection. |
| gazetteer | A dictionary that lists geographical features such as road names, hills, rivers and places. |
| geophysical survey | The collection of information associated with subsurface features (e.g. buried archaeology) using various techniques (such as magnetometer-a survey technique used to detect and map changes in the earth's magnetic field caused by concentrations of ferrous-based minerals within soils and subsoil, and buried materials). They enable the identification and survey of subsurface features without having to excavate. |
| glacial deposits | Natural materials laid down during the ice ages (i.e. of the Quaternary period). |
| glacio-lacustrine deposits | Natural materials laid down within lakes during the ice ages (i.e. of the Quaternary period). |
| glaciofluvial deposits | Natural materials relating to, or coming from, streams deriving much or all of their water from the melting of a glacier or ice sheet. |
| gleying | The process in which anaerobic conditions arising from poorly drained soils result in the reduction of iron and other elements in the soil, causing soils to turn a largely grey-brown or grey colour, with ochreous mottles in localised aerated zones. |
| goit | A small artificial channel carrying water. Usually used with respect to channels built to feed mills. |
| Grade 1 (Agricultural Land Classification) | 'Excellent' quality agricultural land with no or very minor limitations to agricultural use. A very wide range of agricultural and horticultural crops can be grown, commonly including top fruit, soft fruit, salad crops and winter-harvested vegetables. Yields are high and less variable than on land of lower quality. |
| Grade 2 (Agricultural Land Classification) | 'Very good' quality agricultural land with minor limitations that affect crop yield, cultivations or harvesting. A wide range of agricultural and horticultural crops can usually be grown. However, on some land in the grade there may be reduced flexibility due to difficulties with the production of more demanding crops, such as winter-harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than Grade 1. |
| Grade 3 (Agricultural Land Classification) | Land with 'moderate' limitations. This affects the choice of crops that can be grown, the timing and type of cultivation, and harvesting or yield levels. The yields of more demanding crops are generally lower or more variable than on land in grades 1 and 2. See Subgrades 3a and 3b. |
| Grade 4 (Agricultural Land Classification) | 'Poor' quality agricultural land with severe limitations that significantly restrict the range of crops and/or level of yields. It is mainly suited to grass with occasional |

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| | arable crops (e.g. cereals and forage crops), the yields of which are variable. In moist climates, yields of grass may be moderate to high, but there may be difficulties in utilisation. The grade also includes very droughty arable land. |
| Grade 5 (Agricultural Land Classification) | 'Very poor' quality agricultural land with very severe limitations that restrict use to permanent pasture or rough grazing. |
| Grade I listed building | A listed building of exceptional interest, sometimes considered to be internationally important. |
| Grade II listed building | Nationally important buildings that are of special interest. |
| Grade II* listed building | A listed building of particular importance, of more than special interest. |
| grade separation | Vertical separation of a transport junction. For example, a bridge to carry vehicles over a railway line. |
| grain (landscape) | The degree to which the pattern arising from the arrangement of components in a landscape (fields, woods, blocks of buildings etc) may be either large and infrequent (coarse grain) or small and frequent (fine grain). |
| green belt | A designation for land around certain cities and large built-up areas, which aims to keep this land permanently open or largely undeveloped. |
| green bridges | Green bridges are typically footbridges, road bridges or agricultural access bridges which have been adapted to allow wildlife to safely cross the route of the Proposed Scheme. |
| green infrastructure | A network of high quality, multifunctional green space, both urban and rural, which is capable of delivering a wide range of environmental and quality of life benefits for local communities. |
| green spaces | Areas of natural or semi-natural land such as parks, gardens and woodlands. |
| green tunnel | A cut-and-cover tunnel with soil spread on top to integrate it into the landscape, thus reducing visual impacts and making the presence of a railway less noticeable. Access tracks and vegetation can be placed on the surface above the tunnel and it can be used for amenity, parkland and agricultural uses etc. |
| green/brown roof | A specific type of roof that may be partially or fully covered in vegetation to benefit ecology. |
| greenhouse gas | A gas such as carbon dioxide, methane, nitrous oxide, tropospheric ozone, chlorofluorocarbons, hydrochlorofluorocarbons or sulphur hexafluoride that contributes to the greenhouse effect by absorbing infrared radiation. |
| gross direct jobs | Jobs created during different phases of a project. In relation to construction of the Proposed Scheme, gross direct jobs cover the construction workforce. During the operational phase, gross direct jobs refer to jobs directly related to the operation of the Proposed Scheme including the staffing of stations, trains and depots. |

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| gross domestic product | Measure of the total economic activity in a country. |
| gross value added | Measure of the contribution to the economy of each individual producer, industry or sector in a country. |
| ground anchor | A device, usually a steel tube or rod, used in both permanent and temporary applications that is driven into the ground to provide additional support to a structure (such as a retaining wall or foundation), from lateral (sideways) or vertical forces. |
| ground gas | Gases such as carbon dioxide and methane that are generated within the ground and/or within landfills (commonly from the breakdown of vegetative matter). |
| ground-borne noise | Vibration generated by moving vehicles (e.g. trains) in tunnels. Passing through the ground, it propagates into buildings where it causes building elements to vibrate, causing noise to be radiated inside a building. |
| ground-borne sound | Sound generated inside a building by ground-borne vibration. |
| ground-borne vibration | Ground or building element vibration caused by vibration propagating through the ground from a source. |
| ground-penetrating radar survey | A non-destructive survey technique used to identify underground features (often utilities services) using radio waves. |
| groundwater | All water that is below the surface of the ground and within the permanently saturated zone. |
| groundwater body | A distinct volume of groundwater within an aquifer. |
| groundwater dependent terrestrial ecosystems | Ecosystems that directly depend upon groundwater to maintain their form and function. |
| groundwater source protection zone | A defined area within which groundwater is extracted for potable water supply. The area is defined by the Environment Agency on the basis of the length of time taken for groundwater to migrate from the potable source. |
| grouting shaft | Constructed to allow the injection of grout from horizontal tubes to control ground settlement. |
| habitat | The place or type of site where an organism or population naturally occurs. Often used in the wider sense referring to major assemblages of plants and animals found together. |
| habitat regulations assessment | An assessment of projects (or plans) potentially affecting European sites in the UK, required under the Habitats Directive and Regulations. |
| Habitat Suitability Index | A numerical index used to evaluate habitat quality and quantity for a particular species. A value of one represents optimum habitat and a value of zero represents a habitat of no value. |

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| ha-ha | A boundary to a garden designed not to interrupt the view from the main property. It is formed of a grassy ditch which has gently sloping land to one side and a vertical retaining wall or barrier to the other, which stops at ground level. |
| hazardous waste | The Waste Framework Directive (2008/98/EC) defines hazardous waste as waste possessing one or more of the 15 hazardous properties set out in Annex III of the directive. These properties include being explosive, oxidizing, highly flammable, an irritant etc. |
| head deposits | A natural material formed by solifluction which comprises poorly sorted angular gravels, often in a silty, sandy-clay matrix. |
| headhouse | The above-ground structure that typically sits at the top of a ventilation shaft or tunnel portal. These structures can be used for housing control equipment or for providing emergency access to tunnels. |
| headshunt | A headshunt is a length of track generally provided to hold locomotives or rolling stock in order to allow trains to be released in the direction from which they originated. |
| headwall | A supporting, protecting or retaining wall built at the front or top of a structure or area. |
| headway | A measure of the minimum technical or planned time between trains travelling in the same direction along the same section of track. |
| health determinants | Factors affecting health, including the social and economic environment, the physical environment, and a person's individual characteristics and behaviours. |
| heavy goods vehicle | A motor vehicle weighing over 3.5 tonnes that is used to transport goods, including construction material. In most cases in the construction of the Proposed Scheme, these are over 8.5 tonnes, which are also described as large goods vehicles. |
| heavy metals | A loosely defined term which refers to a group of metals and metalloids, many of which are toxic to some degree. |
| hedgebank | A rubble or earth bank with bushy shrubs on top to form a hedgerow. |
| heritage asset | A building, monument, site, place, area or landscape identified as having a degree of significance meriting consideration in planning decisions, because of its heritage interest. Heritage asset includes designated heritage assets and assets identified by the local planning authority (including local listings). |
| hibernaculum | The winter den of a hibernating animal or insect. |
| high pressure gas distribution pipeline | A gas pipeline operating above 7 bar(g) (a unit of pressure) that distributes gas within a region. |
| high pressure gas transmission pipeline | A gas pipeline operating at above 7 bar(g) that transmits gas throughout Great Britain. This gas is pumped at high pressure through the use of compressor |

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| | stations. The gas then leaves the transmission system and enters the distribution network. Within the distribution network, the gas is then transported through a number of reducing pressure tiers to the consumer. |
| High Speed One | High speed rail line from St Pancras International Station in London to the Channel Tunnel. Formerly known as the Channel Tunnel Rail Link. |
| High Speed Two | Proposed high speed rail line network connecting London with the West Midlands ('Phase One') in 2026, with Crewe ('Phase 2a') in 2027, and with Manchester and Leeds ('Phase 2b') in 2033. |
| High Speed Two Limited | The company set up by the Government to develop proposals for a new high speed railway line between London and the West Midlands and to consider the case for new high speed rail services linking London, northern England and Scotland. |
| higher level stewardship | A specialist element of the Environmental Stewardship Scheme that is targeted at achieving significant environmental benefits in high priority areas, and involves more complex environmental management. |
| Highways England | The Government company that operates, maintains and improves England's motorways and major A roads. |
| Historic England | The public body that looks after England's historic environment and helps people understand, value and care for historic places. |
| historic environment record | A record of all known archaeological finds and features and historic buildings and historic/landscape features, relating to all periods from the earliest human activity to the present day; maintained by each county and unitary authority in the UK. |
| historic landscape characterisation | Mapping the present day landscape to establish how it has been shaped by the past. Rather than focusing on particular designated sites, this technique focusses on the wider landscape in general to get an understanding of historical value. This method can help to identify areas that should be conserved and protected. |
| hoarding | A temporary screen or barrier erected around a construction site. |
| hop-overs | The use of planting or other artificial measures such as fences to encourage bats to maintain height as they cross roads. |
| hybrid Bill | Hybrid Bills mix the characteristics of public and private bills. The provisions in a hybrid Bill would affect the general public, but would also have particular effects on specific individuals or groups. |
| hydraulic bound layer | Soil type materials (granular or cohesive) improved by the addition of various cementitious/asphaltic materials. It can be produced in-situ or elsewhere, and is used in constructing slab track. |
| hydrogeology | The nature, distribution and movement of groundwater in soils and rocks, including in aquifers. |

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| hydromorphology | The physical characteristics of the shape, boundaries and content of a water body. |
| hyperspectral survey | A survey that utilises sensors that detect wavelengths of the electromagnetic spectrum that are not visible to the human eye. They are used in archaeological surveys to detect features within the historic landscape (e.g. field systems) that cannot be detected in visible wavelengths. |
| jacked box | A concrete structure that can be installed horizontally using hydraulic jacks underneath an existing road or railway to avoid disruption to the road or railway during construction of, for example, an underpass. |
| impact | Used throughout this working draft Environmental Statement to refer to changes to the environment that have the potential to occur as a result of the construction and/or operation of the Proposed Scheme. (See also: 'effect'). |
| Impact Risk Zone | A tool developed by Natural England to make a rapid initial assessment of the potential risks to sites of special scientific interest (SSSI) posed by development proposals. |
| important hedgerow | A hedgerow that is at least 30 years old and meets criteria set out in the Hedgerow Regulations 1997 (includes both ecological and historic environment criteria). |
| in-combination climate change effects | The combined significant effects of the Proposed Scheme and potential climate change impacts on the receiving environment and community. |
| in-combination effects | A combination of environmental effects on community or business establishments (e.g. from sound, noise and vibration; dust and air quality). |
| index of multiple deprivation | The official measure of relative deprivation for small areas (or neighbourhoods) in England. The index of multiple deprivation ranks every small area in England from 1 (most deprived) to 32,844 (least deprived). The level of deprivation is based on 37 separate indicators, organised into seven distinct groups (e.g. employment deprivation, education deprivation, etc.). |
| inert waste | Defined in Article 2(e) of the EU Landfill Directive (1999/31/EC) as waste that does not undergo significant physical, chemical or biological transformations. |
| infrastructure maintenance depot | A facility providing logistical support for the maintenance and repair of the HS2 railway track and associated infrastructure (excluding trains). |
| inorganic (contaminant) | Contaminants comprised primarily of metals, metal compounds, certain minerals, acids and alkalis. |
| preservation in situ (historic environment) | Preserving archaeological remains in their original position. |
| interchange | A point where people travelling either transfer between the same transport mode (for example, rail to rail), or from one transport mode to another (for example, from bus to rail). |

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| Intercity Express Programme | An initiative by the Department for Transport (DfT) to produce new trains to replace the InterCity 125 fleet on the East Coast Main Line and Great Western Main Line. |
| Interdepartmental Analysts Group | A cross-government multi-disciplinary peer review forum for policy appraisals and other analysis. |
| Intergovernmental Panel on Climate Change | A scientific intergovernmental body, tasked with the production of assessments of our overall understanding of the scientific, environmental, technical and socio-economic risks from and likely responses required to climate change. |
| interlocking system | A signalling system to ensure the safe running of trains. |
| interoperability | The ability of trains to operate across the European high speed network. |
| inter-project effects | The cumulative interaction of the Proposed Scheme with other projects (committed developments). |
| intrusive investigation (land quality) | An in-depth investigation involving further sampling and analysis, such as the gathering of samples from the ground, walls or ceilings for the detection of contamination, asbestos and/or archaeological remains. |
| inverted siphon | A form of culvert used on level ground where the water level has to be lowered to pass under the Proposed Scheme, other railways or a road access. |
| Iron Age | The period between 800 BC and 43 AD. |
| isolation (community and socio-economic) | Physical and psychological barriers faced by users in accessing socio-economic and community resources, which may affect their tendency to use them. |
| kiss-and-ride (traffic and transport) | Drop-off/pick-up point for car users at stations, airports and interchanges. |
| land drainage area | A type of shallow balancing pond used for land drainage purposes. The area may be dry for much of the year and will often be suitable for livestock grazing once returned to landowners. |
| landscape | Landscape is an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors. It reflects the interplay of the physical, natural and cultural elements of our surroundings and the way that people perceive these interactions. Different combinations of these elements create the distinctive character of landscapes in different places. |
| landscape character area | Areas of landscape that have a broadly consistent pattern of topography, land use and vegetation cover. |
| laydown area | An area used for the temporary storage of construction equipment and supplies. |
| lead contractor | A construction company that is directly contracted for the works by the nominated undertaker. |

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| LiDAR | Light detection and ranging (LiDAR) is a high resolution remote sensing technology which uses a laser to measure distance between a satellite, aerial, terrestrial or mobile source and the ground, buildings and vegetation to create a three-dimensional model. |
| light goods vehicle | A motor vehicle used to carry goods with a total mass of up to 3.5 tonnes. |
| listed building | A building of special architectural or historic interest, as identified in the Planning (Listed Buildings and Conservation Areas) Act 1990, and the Enterprise and Regulatory Reform Act 2013. Listed buildings are graded I, II* or II, with Grade I being the highest. Listing includes the interior, exterior and the setting of the building. |
| lithostratigraphy | The study, description and classification of stratified rocks based on their physical properties. |
| load balancers | Electrical equipment used to balance the electrical loads so that the unbalance is kept within acceptable limits set by the supply authority. |
| local access forum | Set up under the Countryside and Rights of Way Act 2000 to advise local highway or national park authorities on the improvement of public access for the purpose of outdoor recreation and enjoyment of the area. |
| local development framework | Spatial planning strategy introduced in England and Wales by the Planning and Compulsory Purchase Act 2004. The local development framework contains a number of development plan documents prepared by the local planning authority that set the policies and development allocations for an area. |
| local geological site | Non-statutory geological (including geodiversity and geomorphological) sites which have been identified as being of regional or local importance by, for example, local geo-conservation groups. |
| local planning authority | The local authority or council that is empowered by law to exercise planning functions. |
| local wildlife site | A non-statutory site of nature conservation value that has been designated 'locally'. These sites are referred to differently between counties. Common terms including site of importance for nature conservation, county wildlife site, site of biological importance, site of local importance and sites of metropolitan importance. |
| locally listed building | A building which is not listed under Section 69 of the Planning (Listed Buildings and Conservation Areas) Act 1990 but has been recognised by the local planning authority as making a positive contribution to its local character and sense of place because of its heritage value. |
| loess | A loosely compacted wind blown sediment deposit. |
| lower super output area | An area built up from output areas typically consisting of 400-1,200 households. |

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| $L_{pA10,T}$ | The A-weighted sound pressure level that is exceeded for 10% of a given time interval, T, measured using the fast time-weighting. It is generally used to describe road traffic noise. |
| $L_{pA90,T}$ | A parameter that is widely used to quantify background noise and generally reflects the soundscape in the lulls between individual events. It is the A-weighted sound pressure level that is exceeded for 90% of a given time interval, T, measured using the fast time-weighting (F). Over a one-hour period, the L_{pA90} will be the sound level exceeded for 54 minutes. |
| $L_{pAeq,T}$ | See 'equivalent continuous sound pressure level'. |
| $L_{pASmax,T}, L_{pAFmax,T}$ | The maximum A-weighted sound pressure level attained during a given time interval, T. It is normally measured using slow or fast (F) time-weighting. With F weighting it is generally used when assessing the likelihood of night-time sleep disturbance from airborne noise events. |
| M18/Eastern Route | The route through South Yorkshire as originally proposed by Sir David Higgins in the 'Sheffield and South Yorkshire Report' in July 2016. |
| made ground | Land where natural and undisturbed soils have been replaced or combined with man-made or artificial materials. It may be composed of a variety of materials including imported natural soils and rocks with or without residues of industrial processes (such as ash) or demolition material (such as crushed brick or concrete). |
| main compound | A strategic construction hub for core project management (engineering, planning and construction delivery), commercial and administrative staff associated with the construction of the Proposed Scheme. These compounds will include an area for equipment and materials storage, as well as providing main welfare facilities for construction staff, with some compounds also providing overnight sleeping accommodation for construction staff. |
| main river | A river maintained directly by the Environment Agency. They are generally larger arterial watercourses. |
| maintenance loop | Additional track that will run for a short distance alongside the main HS2 rail line. The loops will be used for the storage of maintenance trains during operation. They will also provide a safe stopping location for any HS2 train that develops a fault. |
| managed motorway | See 'smart motorway'. |
| Manchester Metrolink | A tram system network owned by Transport for Greater Manchester, which connects major railway stations and other destinations within the Greater Manchester area. |
| material recovery facility | A facility that takes mixed and segregated waste and sorts it for onwards reprocessing, recycling or energy recovery. |
| maximum sound level | The maximum level of sound identified during a given time interval, T. |

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| Term | Definition |
|----------------------------|---|
| Medieval period | The period between 1066 AD and 1540 AD. |
| metapopulation | A group of spatially separated populations of the same species which interact at some level. |
| Mesolithic period | The period between 10,000 - 4,000 BC. |
| micron | An alternative term for micrometre (μm). |
| Midland Main Line | The route running from London St Pancras to Sheffield, via Luton, Bedford, Corby, Leicester, East Midlands Parkway, Derby, Nottingham and Chesterfield. |
| Midlands Connect | A pan-Midlands partnership of 23 Local Authorities, nine Local Enterprise Partnerships, the Chamber of Commerce, Highways England, HS2 Ltd, Network Rail and the Department for Transport. The partnership have developed a transport strategy that identifies the major infrastructure projects needed to improve the connectivity of the Midland's key locations. |
| mined tunnel | Tunnelling method where self-supporting subsurface material (e.g. rock/hard clay) is present. It involves the use of drill and blast techniques or excavation/sprayed concrete lining to advance the excavation. |
| mineral plan allocation | Provides guidance about the most appropriate locations for mineral extraction and outlines the long-term direction for the development of minerals and the plan to deliver the strategy. |
| mineral planning authority | A unitary authority that deals with all mineral planning issues within their area. In parts of England with two tiers of local government (counties and districts), mineral planning authorities are the county councils. National Parks are also mineral planning authorities. |
| mineral resource | A concentration of naturally occurring solid, liquid, or gaseous material found in or on the ground in such form and amount that economic extraction of a commodity from the concentration is currently or potentially feasible or have an anticipated future value. |
| mineral safeguarding area | An area designated by a mineral planning authority which covers known deposits of minerals to be kept safeguarded from unnecessary sterilisation by non-mineral development. |
| mitigation | The proposed means to avoid, prevent or reduce the likely adverse effects of development on the environment. |
| modal (mode) shift | A shift from one transport type to another, e.g. from road travel to rail travel. |
| mode share | The proportion of passengers travelling to/from a station by, for example, car, taxi, bus, and cycle. |
| Modern period | The period between 1901 AD and the present. |

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| moisture deficit (potatoes) | The calculated deficit between the water supplied by average summer rainfall at a location and the quantity of water required to grow a crop of potatoes, assumed to root to 70cm depth, at that location (without suffering from a lack of water). The larger the moisture deficit, the greater the likelihood of yields being reduced by droughtiness. In practice the deficit has to be met from soil water reserves, irrigation and/or by the crop wilting; the last reduces yields. |
| moisture deficit (wheat) | As above but for a wheat crop assumed to root to a depth of 120cm. |
| monopile | A single large diameter pile with significant vertical and lateral load carrying capacity. It is used as an alternative to a pile group. |
| multiplier (economic) | An effect in economics in which an increase in direct spending produces an increase in national income and consumption that is greater than the initial amount spent. For example, building a factory will lead to the employment of construction and factory workers. This new employment will stimulate growth and employment in local services in the surrounding areas (e.g. cafes, restaurants and shops), as new demand will be generated. |
| National Adaptation Programme | A programme established by the Government, industry and non-government organisations to help the UK adapt successfully to future weather conditions, by dealing with the risks and making the most of the opportunities. |
| National Farmers Union | Member organisation/industry association for Welsh and English farmers. |
| National Forest Inventory | A record of the size and distribution of forests and woodlands in Great Britain and information on key forest attributes run by the Forestry Commission. |
| national grid | The high-voltage electricity transmission network in the UK. |
| National Grid plc | A plc that owns and manages the national grid (electricity) and the national transmission system (gas) within England and Wales. |
| national nature reserve | Sites of national importance that are designated by Natural England as key places for wildlife and natural features in England. |
| national park | A protected area designated under the National Parks and Access to the Countryside Act 1949 because of its scenic, recreational, scientific or historical importance with development control managed by a national park authority. |
| National Trust | A UK conservation charity protecting historic places and gardens and areas of countryside. |
| National Vegetation Classification | A comprehensive classification and description of the plant communities of Britain, administered by the Joint Nature Conservation Committee. |
| national vocational qualification | A qualification in a vocational subject set at various levels. For example, levels two and three correspond to GCSE and A-level respectively. |
| natural area | Sub-divisions of England, defined by Natural England, each with a characteristic association of wildlife and natural features. They provide a way of interpreting the |

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| | ecological variations of the country in terms of natural features, illustrating the distinctions between one area and another. |
| Natural England | Executive non-departmental public body constituted under the Natural Environment and Rural Communities Act 2006 (Section 2(1)) to ensure that the natural environment is conserved, enhanced and managed for the benefit of present and future generations, thereby contributing to sustainable development. |
| neighbourhood quality | A combination of aspects that have the potential to affect residents' experience of and feelings about their local environment. |
| Neolithic period | The period between 4,000 and 2,200 BC. |
| net | After all deductions have been made. |
| Network Rail | The not-for-dividend owner and operator of Britain's railway infrastructure. Network Rail runs, maintains and develops Britain's rail tracks, signalling, bridges, tunnels, level crossings and many key stations. |
| niche (ecology) | The role that a species plays in an ecosystem. Dimensions of a species' niche include their food and time of feeding and the chemical and physical make-up of their environments (e.g. water salinity, temperature). |
| nitrate vulnerable zone | Areas designated under the EU Nitrates Directive (91/676/EEC) with the aim of reducing the level of nitrates in surface and groundwater. Farmers with land in nitrate vulnerable zones have to follow mandatory rules to manage nitrate loss from agriculture. |
| nitrogen dioxide | A gas produced when fuels are burned and is often present in motor vehicle and boiler exhaust fumes. It is an irritant to the respiratory system. |
| nitrogen oxides | A group of chemical compounds consisting only of nitrogen and oxygen which may be interconverted in the atmosphere. The principal oxides of nitrogen are nitric oxide and nitrogen dioxide. |
| noise barrier | A solid construction that reduces unwanted sound. It may take many forms including: engineering cutting; retaining wall; noise fence barrier; landscape earthworks; barrier on a viaduct; a parapet barrier on a viaduct; or any combination of these measures. |
| nominated undertaker | The body or bodies appointed to implement the powers of the hybrid Bill to construct and maintain the Proposed Scheme. |
| non-government organisation | A legally constituted organisation that is independent of government. It is ordinarily non-profit and may be organised at a local, national or international level. |
| non-hazardous waste | Any waste not defined as 'hazardous' under Directive 91/689/EEC. Examples include soils from ground/site clearance and demolition wastes. |

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| non-motorised user | Pedestrians, cyclists and horse riders (equestrians). These are also referred to as 'vulnerable road users'. |
| non-plastic soil | A soil with coarse textures, i.e. sands and loamy sands, which do not exhibit plasticity (i.e. the ability of a soil to be deformed beyond the point where it cannot recover its original shape) at any moisture content. |
| non-technical summary | A report that briefly describes the main points discussed in an environmental statement without using technical language. |
| Northern Powerhouse | A Government initiative aimed at attracting investment to towns and cities in the north of England. |
| Northern Powerhouse Rail | The Government and Transport for the North's vision for a strategic rail programme that will significantly improve the capacity, frequency and journey time of rail links between the main economic centres in the North of England. |
| offline | Not connected or currently in use. Also used in engineering in relation to railways, roads, pipelines etc. to denote a route (or a structure on a route, such as a bridge) away from the original alignment. |
| off-route effects | Effects of the Proposed Scheme that may occur at locations beyond the HS2 Phase 2b route corridor. |
| Oil and Gas Authority | The Oil and Gas Authority is a Government company established to regulate, influence and promote the UK oil and gas industry in order to achieve the statutory principal objective of maximising the economic recovery of the UK's oil and gas resources. |
| online | Connected or currently in use. Also used in engineering in relation to railway, roads, pipelines etc. to denote a route (or a structure on a route, such as a bridge) on the original alignment. |
| on-network | Refers to the existing rail network. For example, where modifications are required to the West Coast Main Line, these are referred to as 'on-network' modifications. |
| Open Spaces Society | A campaign group which aims to protect common land in the UK, including village greens, rights of way and commons. |
| ordinary watercourse | Any watercourse not classified as a main river. |
| ordnance datum | The height above mean sea-level, taken from a reference point at Newlyn, Cornwall. This is the national height system for Britain. |
| Ordnance Survey | The national mapping agency for Britain. |
| organic (contaminant) | Carbon-based contaminants, for example oils, tars and solvents. |

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| organic entry level stewardship | A specialist element of the environmental stewardship scheme that is open to all organic farmers with land registered as organic or in organic conversion, and with similar management options to entry level stewardship. |
| output areas | Geographically defined areas based on postcode units which have been used since the 2001 Census for statistical purposes in relation to socio-economic information. |
| overbridge | A bridge crossing over a transport corridor such as a railway line. |
| overhead catenary system | General term used to describe all the overhead line equipment in the rail corridor. |
| overhead line equipment | Electric wires suspended over the track, supplying traction power to trains. |
| oversail | During works to overhead power lines, cranes will often be used. If part of the crane extends into the airspace above a surrounding property (e.g. the garden of a nearby residential property), this is referred to as oversailing. Where overhead power lines overlap property or land, this is also referred to as oversailing. During normal operations in high winds, overhead power lines can sometimes be blown, such that they swing out from their normal alignment. When this covers a property, this is referred to as oversailing. |
| package substation | A small remote substation providing electrical power to track-side equipment. |
| pad foundations | A foundation structure that spreads the imposed loads over a sufficient area to reduce stress on foundation material. Often described as shallow foundations. |
| palaeoenvironmental remains | The organic remains of plants, animals and sediments which are studied in order to examine past environments and human interaction with past environments. |
| Palaeolithic period | The period between 1,000,000 and 10,000 BC. |
| pantograph | A device that is attached to the roof of an electric train to collect power through contact with the overhead catenary wire. |
| parapets | A low wall along the edge of a structure (e.g. a bridge), to protect people from falling. |
| park pale | An historic palisade used to enclose deer within a defined area. |
| particulate matter | Discrete particles in ambient air, with diameters ranging between nanometres (billionths of a metre) to micrometres (millionths of a metre). |
| passive provision | The delivery of necessary underlying infrastructure that enables further works to be carried out at a future date. |
| pathways (pollution) | The routes by which pollutants are transmitted through air, water, soils, plants and organisms to their receptors. |

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| peak particle velocity | The maximum velocity that is recorded during a particular vibration event. It is commonly used to assess the potential for damage to structures due to ground-borne vibration. |
| pendolino trains | Trains that tilt to enable them to travel around curves faster than trains without this technology. |
| permissive path | A path that is not a public right of way, but which the landowner permits the public to use. The landowner can close the path for periods of time. |
| person trip | A one-way journey by one person by any mode of transport, including walking, cycling, privately operated motor vehicle or any public transport mode. |
| Phase 1 habitat survey | A habitat classification and field survey technique to record semi-natural vegetation and other wildlife habitats. |
| Phase 2a | The section of the Phase Two route between the West Midlands and Crewe. It will include a connection with Phase One at Fradley, to the north-east of Lichfield, and a connection with the West Coast Main Line south of Crewe. |
| Phase 2b | The section of the Phase Two route from Crewe to Manchester and the West Midlands to Leeds, with intermediate stations at Manchester Airport and the East Midlands, and with connections onto the West Coast Main Line at Golborne and East Coast Main Line at Church Fenton. |
| Phase One | Phase One of the proposed HS2 network, a high speed railway between London and the West Midlands with a connection via the West Coast Main Line at conventional speeds to the North West and Scotland. Phase One includes stations at London Euston, Old Oak Common (West London), Birmingham Interchange (near the National Exhibition Centre and Birmingham Airport) and Curzon Street (Birmingham city centre). |
| Phase Two | Phase Two of the proposed HS2 network would extend the high speed railway beyond the West Midlands to Manchester and Leeds with connections to conventional railway lines via the West Coast Main Line and East Coast Main Line. |
| photomontage | The process and result of inserting an image of the Proposed Scheme onto a photograph to show how existing views could be changed by the Proposed Scheme. |
| pier | A vertical loadbearing structure, which supports adjacent ends of bridge or viaduct spans. |
| piezometric level | The level to which the water level will rise in wells penetrating an aquifer. |
| pile cap | A concrete structure used to link a number of discrete pile elements into a single arrangement to support significant loads that the pile elements are not capable of supporting individually. |

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| piled foundation | Deeper foundations such as piles, and diaphragm walls, where loads are distributed through the ground at depth by drilled or driven structures. Often described as embedded or deep foundations. |
| piled retaining wall | Constructed using long piles to allow a steeper overall slope gradient than would be naturally possible. |
| piling | Driving and embedding piles of wood, concrete or steel deep into the ground, to support buildings/structures at the foundation level. |
| plantation on ancient woodland | Areas of ancient woodland where the former native tree cover has been felled and replaced by planted trees, predominantly of species not native to the area. |
| plastic soil | Soil with a relatively high proportion of silt and clay that, within a certain moisture content range, is capable of being moulded or deformed without rupture. |
| PM ₁₀ | Any particulate matter with an aerodynamic diameter equal to or less than 10 micrometres. |
| PM _{2.5} | Any particulate matter with an aerodynamic diameter equal to or less than 2.5 micrometres. |
| polarity | Term used to describe the measurement of the magnetic response identified during a geophysical survey. An anomaly can have a positive or negative polarity. |
| polytunnel | An elongated polythene covered frame under which plants are grown outdoors. |
| ponding | The collection of standing water at the ground surface due to the presence of an impermeable layer within the soil. |
| porous (tunnel) portal | Perforated structures at tunnel portals (entrances), usually formed of concrete, designed to allow the passage of air from the tunnel. These reduce both air pressure changes and the noise generated when a high speed train enters or leaves a tunnel. |
| portal ramp | A ramp that takes the rail track from ground-level down to the tunnel level. |
| possession | Where construction or maintenance cannot safely be undertaken while trains are running on section of the conventional railway, trains are diverted or stopped and possession of a section of railway is taken for a specified period. Each closure period is known as a 'possession'. |
| Post Medieval period | The period between 1540 AD and 1901 AD. |
| pre-cast pile | A driven pile produced from pre-cast concrete. |
| preferred route | The Phase 2b Route as announced by the Secretary of State for Transport in July 2017. |
| Prehistoric period | The period between 1,000,000 BC and 43 AD. |

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| principal aquifer | A subsurface layer or layers of rock or other geological strata of sufficient porosity and permeability to allow either a significant flow of groundwater or the abstraction of significant quantities of groundwater. These are layers of rock or drift deposits that have high intergranular and/or fracture permeability, meaning they usually provide a high level of water storage and transmission. They may support water supply and/or river base flow on a strategic scale and are considered by the Environment Agency to be critical to existing or future water supplies. In most cases, principal aquifers are aquifers previously designated as major aquifers. |
| promoted public right of way | Local, regional or national trails that have been devised by local authorities and walking organisations to help promote the public right of way network. |
| promoter | The person promoting the hybrid Bill for Phase 2b of HS2, i.e. the Secretary of State for Transport. |
| Proposed Scheme | Proposed high speed rail line and associated infrastructure between Crewe and Manchester and the West Midlands and Leeds (i.e. Phase 2b of HS2). |
| protected characteristics groups | Groups identified in the Equality Act 2010 as sharing a particular characteristic against which it is illegal to discriminate. |
| Public Health England | An executive agency, sponsored by the Department of Health. Its purpose is to protect and improve the nation's health and wellbeing, and reduce health inequalities. |
| Public Health Observatories | Public Health Observatories produce information, data and intelligence on people's health and health care for practitioners, commissioners, policy makers and the wider community. The Network of Public Health Observatories is part of Public Health England. |
| public realm | Outdoor areas, other than highways, accessible to the public in towns and cities. |
| public right of way | A highway where the public has the right to walk; and, depending on its class, use for other modes of travel. It can be a footpath (used for walking only), a bridleway (used for walking, riding a horse and cycling), a restricted byway (as a bridleway, but use by non-motorised vehicles also permitted) or a byway that is open to all traffic (including motor vehicles). |
| pylon | A tall lattice-like structure (usually made of steel) which is used to support overhead power lines. Also known as an electricity transmission tower. |
| Q95 flow | A measure of low flow, defined as the flow in a watercourse equalled or exceeded 95% of the time. |
| quaternary | The most recent period of geological time, approximately equated to the last 2.5 million years. |
| Quiet Area | An external space identified as such by local authorities under the Environmental Noise Regulations 2006. |

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| rail threader | A mechanical tool used to position a new rail or move a used rail during construction or maintenance activities. |
| railhead | A site at strategic locations along the route with connections to the National Rail network. They will be used as the delivery location for bulk rail-borne materials, such as ballast, rails and sleepers. |
| railway corridor | The area in which the railway tracks are located. In the case of HS2, this corridor will in general include two tracks, overhead line equipment, track drainage, electricity cables, lineside paths and ducting for fibre optic communications. |
| raking piles | Piles installed at an angle to the vertical. They are usually installed alongside regular vertical piles where additional support is required when ground conditions are likely to result in lateral (sideways) movement. |
| raking props | Props (posts to give support under a load) installed at an angle to laterally support the side walls of an open excavation or an internal or external wall when other support structures have been removed. |
| Ramblers | A charity which aims to protect the ability of people to enjoy outdoor walking and to protect and expand walking infrastructure and places to walk. |
| Ramsar site | Wetland sites that are of international importance, as designated under Article 2(1) of the Convention on Wetlands of International Importance especially as Waterfowl Habitat. Ramsar (Iran), 2 February 1971. UN Treaty Series No. 14583. |
| realignment | Used throughout this working draft Environmental Statement to refer to a slight change to the route or direction of a road due to the location of the route of the Proposed Scheme. (See also: 'diversion'). |
| receptor | A component of the natural or built environment (such as a human being, water, air, a building, an animal or a plant) affected by an impact of the construction and/or operation of a proposed development. |
| reconductoring | The process of installing or replacing conductors (i.e. wires) on a stretch of overhead power line. This will be done through the use of winches. |
| refurbishment (overhead line) | Replacement of some or all of the components/materials (e.g. steelwork for pylons, wires, fittings) that make up overhead lines. The refurbishment can be full (i.e. replacing all of the components that make up the overhead line), or partial (e.g. replacing some fittings only). |
| Register of Historic Battlefields | Historic England's non-statutory register which identifies important English battlefields. Its purpose is to offer them protection and to encourage a greater understanding of their significance. |
| Register of Historic Parks and Gardens | Historic England's non-statutory register which identifies over 1,600 sites of historic interest in England assessed to be of national importance. Its purpose is to offer them protection and to encourage a greater understanding of their significance. |

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| reinstatement (overhead line) | Returning overhead lines to their former position and alignment following a temporary diversion. |
| remediation | The process of treating or managing contamination in the ground or groundwater to make land suitable for use. |
| replacement flood storage area | An area of low-lying land designed to temporarily fill with flood water to replace an area of existing floodplain lost due to development. |
| residual impacts | Those impacts of the development that cannot be mitigated following implementation of mitigation proposals. |
| resource | Resources are residential dwellings, community facilities and infrastructure such as educational and health facilities, emergency services, places of worship, sports and recreational facilities, open spaces, and public rights of way. |
| restoration (ecology) | The re-establishment of a damaged or degraded system or habitat to a level similar to its original condition. |
| restoration (ground) | The works delivered following completion of excavation, including regrading of excavations, the placement and preparation of soils, and landscape treatment. |
| retained cutting | A cutting constructed with additional structural support that allows a steeper overall slope gradient than would otherwise be possible. This may be a partially retained cutting, which would include an element of naturally supported slope (usually above the retained element) or a fully retained cutting, which usually has vertical sides. |
| retained embankment | An embankment constructed with additional structural support (usually in the form of a retaining wall) that allows a steeper overall slope gradient than would otherwise be possible. This may be a partially retained embankment, which would include an element of naturally supported slope (usually above the retained element) or a fully retained embankment, which usually has vertical sides. |
| riparian area | The interface between land and a river or stream. |
| ripping | Loosening soil or rock by drawing a forked/pronged implement through it. |
| risk assessment | A systematic process of evaluating potential risks that may be involved in construction and operation of the Proposed Scheme. |
| river basin management plan | Plans developed under the EU Water Framework Directive setting out environmental objectives for all groundwater and surface water bodies and protected areas within a river basin district. |
| river corridor survey | The mapping of vegetation and physical features along the watercourse corridor using standard symbols, with cross-sections of river channel form, including land to either side of the river channel. |

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| river habitat survey | A survey method designed to characterise and assess the physical structure of watercourses involving the recognition of vegetation types and an understanding of basic geomorphological principles. |
| road rail vehicle | A vehicle that can operate both on rail tracks and roads. Such vehicles are often used for railway maintenance. |
| rolling stock | Passenger or freight vehicles that operate on a railway. |
| rolling stock depot | An operational and maintenance hub within which train stabling, servicing (including interior and exterior cleaning) and light and heavy maintenance would take place. |
| rolling work site | A work site that moves over time across a geographic area as works are completed in one location to then enable works in an adjacent location. |
| Roman (also referred to as Romano-British) period | The period between 43 AD and 410 AD. |
| route sifting | A sequential appraisal of route options undertaken during the design of a proposed development. At each stage of appraisal, or sift, sustainability/environmental performance is considered alongside cost and constructability, operational and engineering information, and the preferred option for progression to the next level of design are selected. |
| route-wide effects | Effects of the Proposed Scheme that may occur at a geographical scale greater than the community area level. |
| Royal Assent | The final step required for any Parliamentary Bill to become law. |
| Royal Society for the Protection of Birds | A UK charity which works to secure a healthy environment for birds and all wildlife. |
| ruderal vegetation | Vegetation that is able to grow despite poor soil quality or limited soil cover. It is often the first to colonise previously disturbed land. |
| run-off | The flow of water over the surface of the ground. |
| Rural Payments Agency | The Defra agency that administers payments to farmers and traders. |
| salt dissolution | The process whereby natural salt-bearing strata is incorporated into circulating groundwater to form a solution (brine). |
| sand | Soil particles from 0.06mm-2.0mm in equivalent diameter. Fine sand particles are from 0.06mm-0.2mm; medium sand from 0.2mm-0.6mm; and coarse sand from 0.6mm-2.0mm. |
| satellite compound | A compound that is smaller in size than the main compounds. Satellite compounds provide office accommodation for limited numbers of staff involved in |

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| | the construction of the Proposed Scheme. Welfare facilities for staff are also provided. |
| saved policies | Policies within unitary development plans, local plans and structure plans that are saved for a period of time whilst replacement local development documents are produced. |
| scheduled monument | Nationally significant heritage assets protected by the Ancient Monuments and Archaeological Areas Act 1979. |
| scoping | An initial stage in the environmental impact assessment process to determine the nature and potential scale of environmental effects arising as a result of a proposed development, and an assessment of what further studies are required to establish their potential environmental impacts and effects. This will often include the identification of the proposed methodologies for the further studies. |
| screening | The first stage in an environmental impact assessment. It is used to determine if further assessment is necessary. |
| secant pile wall | A method of construction using interlocking piles. After a first set of primary piles are inserted, secondary piles are set using concrete to fill the space between the primary piles. |
| secondary aquifer | There are two types of secondary aquifer designation. 'Secondary A' are permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers. 'Secondary B' are predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers. |
| Section 61 consent | Prior consent issued under Section 61 of the Control of Pollution Act 1974. The application for consent details how noise is to be managed on-site. |
| setting (historic environment) | The surroundings in which a heritage asset is experienced. Its extent is not fixed and may change as the asset and its surroundings evolve. Elements of a setting may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate that significance or may be neutral. |
| severance | A change in ease of access for non-motorised users due to, for example, a change in travel distance or travel time or a change in traffic levels on a route that makes it harder for non-motorised users to cross it (traffic related severance). A reference to severance in this working draft Environmental Statement does not necessarily imply that a route is closed to access. |
| shear wall | A structural wall made up of braced panels to counter the effects of lateral (sideways) load acting on a structure. |
| siding | A section of track forming a branch off the main railway line. A siding can be used to store a train, or to allow trains to reverse and enter the main railway line running in the opposite direction from which they entered the siding. |

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| significant environmental effect | A term used to express the consequence of an impact, which is determined by correlating the magnitude of the impact to the importance, or sensitivity of the receptor or resource in accordance with the defined significance criteria, as described in the HS2 Phase 2b Environmental Impact Assessment Scope and Methodology Report. |
| silt | Soil particles from 0.002mm to less than 0.06mm in equivalent diameter. |
| site haul route | Temporary roads provided within the area of land required for construction to allow for the movement of construction material, construction machinery and/or construction workers between the construction compounds and work sites. |
| site of biological importance | A non-statutory designation used by some local planning authorities to protect locally valued sites of biological diversity described as local wildlife sites by the UK Government. |
| site of importance for nature conservation | A site that supports locally important wildlife, also referred to as a local wildlife site. Many of these sites contain habitats and species that are priorities under the county or UK biodiversity action plans. |
| site of special scientific interest | Area of land notified by Natural England under Section 28 of the Wildlife and Countryside Act 1981 as being of special interest due to its flora, fauna or geological or physiological features. |
| site waste management plan | The Site Waste Management Plans Regulations 2008 were repealed on 1 December 2013. The purpose of a site waste management plan was to identify opportunities to design out waste; as well as identifying the types and quantities of waste likely to be produced during construction of a project; the opportunities for sustainable management of the waste to be identified; and to monitor and report on the actual management of these wastes throughout the construction period. HS2 Ltd will apply these principles to the construction of the Proposed Scheme ensuring an integrated approach to the design of the Proposed Scheme, aiming to maximise the beneficial reuse of excavated material where possible, and minimise the generation of waste. |
| slab track | A type of railway track which uses either pre-cast or cast-in-situ concrete elements to support the track, instead of graded stone. |
| slewing | The horizontal re-aligning of existing track without full reconstruction. |
| slowly permeable layer | A layer at least 15cm in thickness with the upper boundary within 80cm of the ground surface and with soils that impede the downward movement of excess rainfall. |
| smart motorways | A smart motorway uses technology to monitor traffic congestion, increase capacity and smooth traffic flows by activating signs, opening the hard shoulder to traffic and changing speed limits. |
| SMART targets | Targets or objectives set against a five-point criteria: specific, measurable, attainable, realistic and time-bound. |

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| Term | Definition |
|-----------------------|--|
| social capital | The connections between the individuals within communities, and the inclination that arises through these networks for individuals to feel valued, to feel a sense of belonging, to have companionship and to tangibly support each other. |
| soil | The upper layer of the earth's crust, in which plants grow. It consists of weathered rock, organic matter, air spaces and water. Descriptions usually identify the relevant characteristics of its (usually) horizontal layers in terms of their significance for soil characteristics and crop growth, usually to a depth of 1.2m. |
| soil association | A group of related soil types or soil series developed from a similar geological parent material. |
| soil compaction | The removal of pore spaces within soil structures and drainage channels between soil structures. This inhibits root penetration and the movement of air and water in soil. |
| soil erosion | The detachment and movement of soil by the action of water and/or wind. |
| soil moisture deficit | The difference between the maximum amount of water potentially stored in drained soil and the amount remaining after some of the water has been transpired by growing vegetation. |
| soil nailing | Insertion of reinforcement rods into the ground to increase stability. |
| soil profile | A vertical cross-section through a soil, showing the different layers or horizons. In most soils there are three soil horizons, 'A', 'B' and 'C'. Engineers consider the 'A' and 'B' horizons to be 'Topsoil' and the 'C' horizon as 'Subsoil', whereas in agricultural terms the 'B' horizon is normally considered to be the upper subsoil and the 'C' horizon is the lower subsoil. Agricultural practitioners generally consider a soil profile to be about 1.2m in depth, unless an impenetrable layer (e.g. hard rock) occurs at shallower depths. |
| soil resource | The textures, structures and volume of different qualities of topsoil and subsoil that have a potential for beneficial reuse. |
| soil resource plan | Describes how displaced soil resources will be conserved and subsequently used for the reinstatement of agricultural land, landscape planting and ecological habitat creation. They identify the areas and types of topsoil, upper subsoil and lower subsoil, where applicable, to be stripped during engineering works and the construction of site haul routes. These plans set out the soil handling methods to be used, the volumes of each resource, and the locations and management of soil storage areas. |
| soil sealing | Covering the soil surface with an impermeable material. |
| soil structure | The combination or aggregation of soil particles into larger compound units (known as peds) with pore spaces and channels between that allow the flow of air and water and the penetration of roots. The secondary units are characterised and classified on the basis of size, shape and degree of development. |

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|-----------------------------|---|
| soil texture | The relative proportion of the various size fractions of particles in a soil (sand, silt and clay). |
| solifluction | The gradual and slow, downhill movement of soil and rock as a mass (mass wasting) following freeze-thaw weathering. |
| sound exposure level (Lp) | The sound level which, if maintained at a constant level for a period of one second, would have the same amount of energy as a given event (of any duration) at the same receptor. |
| sound power level (Lw) | A parameter that represents the total acoustic power radiated by a sound source. The sound power level is an intrinsic characteristic of a source (analogous to its volume or mass), which is not affected by the environment within which the source is located. |
| sound pressure level n(LpA) | The parameter by which sound levels are measured in air. It is measured in decibels. The threshold of hearing has been set at 0dB, while the threshold of pain is approximately 120dB. Normal speech is approximately 60dB at a distance of 1 metre and a change of 3dB in a time-varying sound signal is commonly regarded as being just detectable. A change of 10dB is subjectively twice, or half, as loud. |
| South Yorkshire loop | The proposed loop which would enable HS2 services to continue north from Sheffield Midland station and re-join the HS2 network, before travelling towards Leeds. |
| South Yorkshire spur | The connection from HS2 to the existing network south of Sheffield, to allow HS2 services to serve Chesterfield and Sheffield Midland stations via the Midland Mainline. |
| span | The horizontal distance between two supports of a structure (e.g. piers of a bridge or viaduct). |
| spur | A short section of railway track connecting to the main line. |
| stabling | The parking of trains whilst out of operational service. |
| statutory consultee | Organisations and bodies that must be consulted on relevant planning matters, as defined by statute. |
| statutory undertaker | A term used to refer to public and private bodies such as railway, electricity, gas, water, sewerage or telecommunications companies that have been given statutory powers to undertake certain works or functions under permitted development rights. |
| steel screw pile | A displacement pile screwed into the ground in order to transfer vertical load into the ground. |
| stockpile | An area where materials excavated during construction of the Proposed Scheme will be stored temporarily before being reused, or where construction plant and machinery associated with the construction is stored. |

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|--|--|
| stopped-up | The permanent closure of a public right of way. |
| strategic alternative | Alternatives to the proposed HS2 network, including 'do nothing' and improvements to aviation and road network. |
| Strategic Road Network | The network of motorways and major trunk roads in England. |
| stressing tendon | A high yield steel bar used to apply a compressive force to concrete such that under service conditions there is no net tension within the element. |
| structure plan | The planning policy document prepared by a county council that sets out the strategic policy framework for the county. |
| Subgrade 3a (Agricultural Land Classification) | 'Good quality' agricultural land that is capable of consistently producing moderate to high yields of a narrow range of arable crops, especially cereals, or moderate yields of a wide range of crops including cereals, grass, oilseed rape, potatoes, sugar beet and the less demanding horticultural crops. |
| Subgrade 3b (Agricultural Land Classification) | 'Moderate quality' agricultural land that is capable of producing moderate yields of a narrow range of crops, principally cereals and grass, or lower yields of a wider range of crops or high yields of grass which can be grazed or harvested over most of the year. |
| subsoil | The weathered layer of soil between the natural topsoil at the ground surface and the unweathered rock below. Subsoil has a lower organic matter and plant nutrient content than topsoil. In some places there is an upper subsoil layer or horizon, which is transitional in texture between the topsoil and a lower subsoil. |
| subsoiler | A tractor-mounted implement used to loosen and break up soil at depths below the level of a traditional plough, disk harrow or rototiller. |
| substructure | The foundations or supporting part of a structure below ground level. |
| superficial deposit | A geological deposit that was laid down during the Quaternary period. Such deposits were largely formed by river and glacial processes but can also include wind-blown deposits known as loess. |
| superstructure | The part of a structure above ground. |
| surface water | Waters including rivers, lakes, loughs, reservoirs, canals, streams, rainfall runoff, ditches, coastal waters and estuaries. |
| surface water flooding | Flooding caused by the volume of rainfall exceeding the capacity of either the drainage network, or rate that water can infiltrate into the ground, resulting in water that lies on or flows over the ground. Surface water flooding is not usually associated with a watercourse. |
| surplus excavated material | Excavated material becomes surplus if: its irrecoverable physical, chemical or biochemical quality prevents it from being used in the Proposed Scheme; there is more material than required for the Proposed Scheme or other permitted scheme; |

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|------------------------------|---|
| | or the requirement for a type of material is too far away from the excavation point to make its use practicable. |
| sustainable drainage systems | Measures designed to control surface run-off close to its source, including management practices and control measures such as storage tanks, basins, swales, ponds and lakes. Sustainable drainage systems allow a gradual release of water and thereby reduce the potential for downstream flooding. |
| sustainable transport | Any type of transport that has lower impacts on the environment and is more fuel efficient than traditional travel by single occupancy private motor vehicle. This includes walking, cycling, public transport and car sharing. |
| Sustrans | A charity that works with communities, policy-makers and organisations to make it easier for people to walk and cycle. |
| switchgear | Electrical equipment used to control and isolate the flow of electricity to a circuit. |
| tamper unit | A machine used to compact graded stone and maintain geometric alignment of railway tracks. |
| tension piles | A tension pile is installed to resist being pulled out of the ground instead of supporting a load. |
| threshold | A level of effect above which an assessment will be taken of whether any changes to procedures need to be made. |
| till | An unsorted glacial sediment deposited directly by a glacier. |
| topography | The natural or artificial features, level and surface form of the ground surface. |
| topsoil | Upper layer of a soil profile, usually darker in colour (because of its higher content of organic matter) and more fertile than subsoil, and which is a product of natural biological and environmental processes. |
| trackout | The movement of dust and dirt from the construction/demolition site onto the public road network, where it may be deposited and then re-suspended by vehicles using the network. |
| track crossover | A pair of switches connecting two parallel rail tracks, allowing a train on one track to cross over to the other. |
| trackside storage area | A location alongside track crossovers for the storage of equipment and parts to be used in future maintenance and replacement of the crossovers. |
| traction power | Power provided primarily for the purpose of moving trains. |
| traffickability | The capability of a soil to bear traffic (vehicles, livestock or people) without causing any physical damage to it or impairing its functions. |

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|-----------------------------|---|
| transfer node | A location where bulk deliveries or excavated materials leave or enter the construction work sites from public roads. |
| translocation | The transporting and release of species or habitats from one location to another. For example, if an area of land is required permanently for a new development, species can be moved from that site to a suitable alternative location. |
| transmission tower | See 'electricity pylon'. |
| Transport for the North | The organisation formed to transform the transport system across the North of England, providing the infrastructure needed to drive economic growth. |
| Travel to Work Area | A statistical tool used by UK Government agencies and local authorities, especially by the Department for Work and Pensions and Job centres, to indicate an area where the population would generally commute to a larger town, city or conurbation for the purposes of employment. |
| tree preservation order | An order made by a local planning authority, under the Town and Country Planning Act 1990, in respect of trees or woodlands. The principal effect of a tree preservation order is to prohibit the cutting down, uprooting, topping, lopping, wilful damage or wilful destruction of trees without the local planning authority's consent. |
| truss | A framework of beams, posts and struts that support a structure (e.g. a roof), or span an opening. |
| tunnel boring machine | A tunnelling machine, which consists of a rotary cutting head that occupies the full face of the tunnel. A system of conveyors or pumps is used to remove the excavated material. |
| tunnel drive | The process of tunnel excavation and lining. |
| tunnel drive launch shaft | Vertical excavation to form the starting point to launch a tunnel boring machine. |
| tunnel portal | Tunnel entrances and exits. |
| turnback | A facility that allows a train to reverse. A turnback can be a crossover on the main railway line, or a reversing siding, which branches off the main railway line. |
| turning head | An area of road or access to allow vehicles to turn back where temporary and permanent road closures as part of the construction and operation of the Proposed Scheme has created dead ends. |
| two-way trips | Two-way trips refer to the total number of vehicle movements in both directions (i.e. with 200 westbound vehicles and 100 eastbound, there would be 300 two-way trips). |
| ultra low emissions vehicle | A vehicle that produces lower emissions than standard vehicles. They produce 75g or less of carbon dioxide per kilometre and are capable of a minimum 10 miles of zero-emission driving. This includes electric vehicles. |

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|--|---|
| underbridge | A bridge crossing under a transport corridor such as a railway line. |
| unemployment rate | The proportion of residents unemployed and actively seeking employment as a percentage of the economically active population. |
| unexploded ordnance | Explosives that did not explode when deployed and thus still pose a risk of detonation. |
| unitary development plan | A statutory document that sets out a council's planning policies for development, conservation, regeneration and environmental improvement activity. |
| United Kingdom Climate Impacts Programme | Established in 1997 by the United Kingdom Government to coordinate and influence research into adapting to climate change, and to disseminate knowledge and tools for users to consider their climate risks and plan to adapt. |
| United Kingdom Climate Projections | The United Kingdom Climate Projections provide future projections of climate change for different time periods and different possible scenarios of greenhouse gas emissions. These illustrate a range of possible future changes to the United Kingdom's climate. The United Kingdom Climate Projections 2009 (UKCP09) are the most current climate projections for the UK. They are being updated and will be replaced by a new suite of projections, UKCP18, in 2018. |
| unproductive strata | Layers of rock or superficial deposits with low permeability or porosity that have a negligible significance for water supply. |
| up line | The line of the route heading towards Euston Station, London. |
| upgrade (overhead line) | Increasing the power flow along an overhead power line. |
| utility | A commodity or service, such as electricity, gas or fuel that is provided by a public or private service provider. These are often delivered to customers via pipes, cables etc. under the ground. They can also be delivered above the ground, for example, via overhead power lines. |
| utility diversion | Utilities may be diverted, or have their height or depth altered, where their current alignment, either above or below ground, would prevent the construction of certain components of the Proposed Scheme. |
| vehicle movement | A journey made by a vehicle that can either be a one-way or two-way trip. |
| ventilation (and intervention) shafts | Shafts located at intervals along the length of a tunnel and used for ventilation and emergency access/exit. |
| veteran tree | A tree which shows 'ancient characteristics'. The tree may be of great age; great age relative to others of the same species; existing in an ancient stage of life or due to its biological, aesthetic or cultural interest. Physical characteristics include crown retrenchment and signs of decay in the trunk, branches or roots. |
| viaduct | A type of bridge composed of a series of spans, used to carry roads and railways across valleys or other infrastructure. |

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| Term | Definition |
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| vibration dose value | Defined in BS6472-1(2008) as a relationship that yields a consistent assessment of vibration which correlates well with subjective response. It is used to estimate the probability of adverse comment expected from people experiencing vibration in buildings. Consideration is given to the time of day and use made of occupied space in buildings (e.g. residential, office or workshop). |
| viewpoint | A place from which something can be viewed. |
| visual amenity | The enjoyment or benefit that people derive from a particular view or area in terms of what is seen. When a landscape (or townscape) is changed in some way, the change will be seen by people - often by several different groups of people i.e. visual receptors - and this may affect their views and their visual amenity overall. |
| visual receptor | People who may have a view of the Proposed Scheme during construction or operation. |
| vulnerable road users | Defined in this working draft environmental statement as all pedestrians, cyclists and equestrians. |
| waste | The Waste Framework Directive (Directive 2008/98/EC) defines waste as "...any substance or object which the holder discards or intends or is required to discard..." . |
| waste hierarchy | The revised EU Waste Framework Directive (2008) sets out five steps for dealing with waste, ranked according to their environmental impact. Prevention, which offers the best outcomes for the environment, is at the top of the priority order, followed by preparing for re-use, recycling, other recovery and disposal, in descending order of environmental preference. |
| Water Framework Directive surveys | A survey of surface water and groundwater bodies to establish their current condition or 'status or potential' as per the Water Framework Directive (as defined by EU Directive 2000/60/EC, and amended by subsequent regulations). |
| Web Transport Analysis Guidance | Department for Transport guidance on the role of transport modelling and appraisal. |
| wellbeing | A general term for the condition of an individual or group, for example their social, economic, psychological, spiritual or medical state. High wellbeing means that, in some sense, the individual or group's experience is positive, while low wellbeing is associated with negative conditions. |
| West Coast Main Line | Inter-urban rail line connecting London, Birmingham, Manchester, Liverpool and Glasgow. |
| wetness class | Soil wetness is classified according to the depth and duration of waterlogging in the soil profile. Six wetness classes are identified, ranging from 'very well drained' to 'very poorly drained'. |
| wetness limitation | A soil wetness limitation exists where the soil water regime adversely affects plant growth or imposes restrictions on cultivations or grazing by livestock. |

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| Term | Definition |
|---------------------------------|--|
| wheel lathe | A machine used for re-profiling wheels of heavy rail vehicles without dismantling wheel sets from trains. |
| winches | Mechanical devices that pull in or let out wires (conductors). They also adjust the tension of wires on the overhead power line. |
| wing wall | A smaller wall attached or next to a larger wall or structure. |
| world heritage site | A natural, and/or cultural, area or structure recognised as being of outstanding universal value and therefore as deserving special protection. Sites are nominated to and designated by the World Heritage Convention (an organisation of UNESCO). |
| world heritage site buffer zone | A buffer zone is an area surrounding a world heritage site that gives an added layer of protection to the site. They include the immediate setting of the nominated site, important views and other areas or attributes that are functionally important as a support to the site and its protection. Buffer zones are not formally a part of the inscribed world heritage site, however, they are required to have restrictions placed on development within them. |
| Y network | Completed HS2 network (both Phase One and Two), comprising a high speed rail line between London and the West Midlands, then splitting into two lines, one continuing to Manchester and the other to Leeds via the East Midlands. |
| zone of influence (ecology) | The area over which ecological features may be affected by the biophysical changes caused by the Proposed Scheme and associated activities. |
| zone of theoretical visibility | The likely (or theoretical) extent of visibility of a development, usually shown on a map. |

2 List of abbreviations

2.1 Symbols and units of measurement

| Abbreviation | Meaning |
|--------------------|------------------------------------|
| < | is less than |
| ≤ | is less than or equal to |
| > | is more than |
| ≥ | is more than or equal to |
| © | copyright |
| % | per cent |
| £ | pound sterling |
| ASPT | average score per taxon |
| A/m | amperes per metre |
| Bqm ⁻³ | becquerels per cubic metre |
| CaCO ₃ | calcium carbonate |
| CH ₄ | methane |
| cm | centimetre |
| CO | carbon monoxide |
| CO ₂ | carbon dioxide |
| CO ₂ e | carbon dioxide equivalent |
| DALY | disability-adjusted life year |
| dB | decibel |
| dB(A) | decibel A-weighted |
| µg/m ³ | micrograms per cubic metre |
| gCO ₂ e | grams of carbon dioxide equivalent |

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| Abbreviation | Meaning |
|-------------------|--|
| GHz | gigahertz |
| g/yr | grams per year |
| hr | hour |
| ha | hectare |
| hectad | an area of 10km ² |
| Hz | hertz |
| kg | kilogram |
| km | kilometre |
| km ² | square kilometre |
| kph | kilometres per hour |
| kV | kilovolt |
| kV/h | kilovolts per hour |
| kWh | kilowatt hour |
| μm | micrometre |
| m | metre |
| m ² | square metre |
| m ³ | cubic metre |
| m ³ /d | cubic metres per day |
| m ³ /s | cubic metres per second (also known as cumecs) |
| m/s | metres per second |
| mm/s | millimetres per second |
| N | nitrogen |
| NO | nitrogen oxide |

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| Abbreviation | Meaning |
|---------------------|---|
| NO ₂ | nitrogen dioxide |
| NO _x | nitrogen oxides |
| min | minute |
| mm | millimetre |
| mph | miles per hour |
| MtCO ₂ e | mega tonne of carbon dioxide equivalent |
| MW | megawatt |
| pa | per annum |
| p/hr | per hour |
| pkm | passenger kilometre |
| PPMS | passengers per metre square |
| PPV | peak particle velocity |
| µT | microtesla |
| RFC | ratio of flow to capacity (traffic and transport) |
| t | tonne |
| tCO ₂ e | metric tonne of carbon dioxide equivalent |
| tph | trains per hour |
| V | volt |
| v/c | volume to capacity ratio (traffic and transport) |
| vpd | vehicles per day |
| vph | vehicles per hour |

2.2 Acronyms and initialisms

| Abbreviation | Meaning |
|--------------|--|
| AA | Appropriate Assessment |
| AADT | annual average daily traffic |
| AAR | annual average rainfall |
| AAWT | annual average weekday traffic |
| ACA | Archaeological Character Area |
| A-C-AHG | Aston-cum-Aughton History Group |
| ACM | asbestos containing material |
| AD | Anno Domini |
| ADMS | atmospheric dispersion modelling system |
| ADS | Archaeology Data Service |
| AEP | annual exceedance probability |
| ALARP | as low as reasonably practicable |
| ALC | Agricultural Land Classification |
| AOD | above Ordnance Datum |
| AONB | area of outstanding natural beauty |
| AoS | appraisal of sustainability |
| AP | Additional Provision |
| APHA | Animal and Plant Health Agency |
| APHO | Association of Public Health Observatories |
| APW | available profile water |
| AQAP | air quality action plan |
| AQMA | air quality management area |

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| Abbreviation | Meaning |
|--------------|--|
| ARP | adaptation reporting power |
| ASC | adaptation sub-committee |
| AshCA | Ashby Canal Association |
| ASL | advanced stop line |
| ASLV | area of special landscape value |
| AStSWF | area susceptible to surface water flooding |
| ASZ | archaeological sub-zone |
| ATC | automatic traffic count |
| ATO | accumulated temperature above 0°C |
| AURN | Automatic Urban and Rural Network |
| AWC | available water capacity |
| AWI | Ancient Woodland Inventory |
| AWIS | ancient woodland inventory site |
| BAME | black, asian and minority ethnic people |
| BAP | biodiversity action plan |
| BAS | biodiversity alert site |
| BAT | best available technique |
| BBCCG | Broxtowe Borough Council Conservation Group |
| BBSBD | British Bryological Society Bryophyte Database |
| BBT | Barnsley Biodiversity Trust |
| BC | Before Christ |
| BCCL | The Bridgewater Canal Co Ltd |
| BCO | British Council for Offices |

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| Abbreviation | Meaning |
|--------------|--|
| BCR | benefit-cost ratio |
| BEIS | (Department for) Business, Energy and Industrial Strategy |
| BFI | Base Flow Index |
| BFIHOST | Base Flow Index derived using the HOST soil classification |
| BGL | below ground level |
| BGS | British Geological Survey |
| BID | Background Information and Data |
| BLS | British Lichen Society |
| BMV | best and most versatile (agricultural land) |
| BMW | Biological Monitoring Working Party |
| BNS | biological notification site |
| BOAT | byway open to all traffic |
| BoCC | birds of conservation concern |
| BPA | British Pipeline Agency |
| BPM | best practicable means |
| BS | British Standard |
| BSI | British Standards Institute |
| BT | British Telecommunications plc |
| BTO | British Trust for Ornithology |
| BWML | British Waterways Marinas Limited |
| C&I | commercial and industrial |
| c. | circa |
| CA | community area |

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| Abbreviation | Meaning |
|--------------|--|
| CAAV | Central Association of Agricultural Valuers |
| CAS | Cheshire Agricultural Society |
| CAZ | clean air zone |
| CBC | Church Buildings Council |
| CBM | coal bed methane |
| CBOA | Commercial Boat Operators Association |
| CC | climate change |
| CCA+R | climate change adaptation and resilience |
| CCC | Committee on Climate Change |
| CCG | Clinical Commissioning Group |
| CCHRBA | Culcheth and Croft Horse Riders and Bridleways Association |
| CCI | Community Conservation Index |
| CCP | Chesterfield Canal Partnership |
| CCR | climate change resilience |
| CCRA | climate change risk assessment |
| CCT | Cheshire Canal Trust |
| CCTV | closed-circuit television |
| CDA | critical drainage area |
| CDEW | construction, demolition and excavation waste |
| CDM | Construction (Design and Management) 2015 Regulations |
| CEMF AW | Control of Electromagnetic Fields at Work |
| CET | controlled emission toilet |
| CfBT | Campaign for Better Transport |

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| Abbreviation | Meaning |
|--------------|---|
| CFMP | catchment flood management plan |
| CGT | Cheshire Gardens Trust |
| CHP | combined heat and power |
| CI | cast iron |
| CIEEM | Chartered Institute of Ecology and Environmental Management |
| CIfA | Chartered Institute for Archaeologists |
| CIRIA | Construction Industry Research and Information Association |
| CL:AIRE | Contaminated Land: Applications in Real Environments |
| CLA | Country Land and Business Association |
| CLEA | contaminated land exposure assessment |
| CoA | Coal Authority |
| CoCP | Code of Construction Practice |
| CoE | Church of England |
| COMAH | Control of Major Accident Hazards |
| COMEAP | Committee on the Medical Effects of Air Pollutants |
| COP21 | 21 st Conference of the Parties of the United Nations Framework Convention on Climate Change |
| CoPA | Control of Pollution Act 1974 |
| CPRE | Campaign to Protect Rural England |
| CPZ | controlled parking zone |
| CRE | contract requirements environment |
| CRN | calculation of railway noise |
| C&RT | Canal & River Trust |
| CRTN | calculation of road traffic noise |

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| Abbreviation | Meaning |
|--------------|---|
| CSM | conceptual site model |
| CSM-RA | EU Regulation 402/2013 on the Common Safety Method on Risk Evaluation and Assessment (as amended by Regulation EU 2015/1136); |
| CSS | Countryside Stewardship Scheme |
| CVCA | Carr Vale Community Association |
| DAS | deliverable approach statement |
| DCLG | Department for Communities and Local Government |
| DDRF | Derby and Derbyshire Rail Forum |
| DECC | Department of Energy and Climate Change |
| Defra | Department for Environment, Food and Rural Affairs |
| DfT | Department for Transport |
| DIO | Defence Infrastructure Organisation |
| DMRB | Design Manual for Roads and Bridges |
| DMV | deserted medieval village |
| DoS | degree of saturation (traffic and transport) |
| DPD | development plan document |
| DPLBAR | index describing catchment size and drainage path configuration (km) |
| DPSBAR | index of catchment steepness (m/km) |
| DRN | detailed river network |
| DSA | delivery and site allocation |
| DSM | digital surface model |
| DTM | digital terrain model |
| EC | European Commission |
| EIA | ecological impact assessment |

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| Abbreviation | Meaning |
|--------------|--|
| ECLHG | Ecclesfield Conservation and Local History Group |
| ECML | East Coast Main Line |
| EDI | equality, diversity and inclusion |
| eDNA | environmental DNA |
| EFA | Education Funding Agency |
| EfW | energy from waste |
| EH | English Heritage |
| EHP | environmental health practitioner |
| EHRC | Equality and Human Rights Commission |
| EHS | Exceptional Hardship Scheme |
| EIA | environmental impact assessment |
| ELC | European Landscape Convention |
| ELS | entry level stewardship |
| EM | electromagnetic |
| EMC | electromagnetic compatibility |
| EMF | electromagnetic field |
| EMH | East Midlands hub |
| EMI | electromagnetic interference |
| EMR | environmental minimum requirements |
| EMS | environmental management system |
| EN | European Standard (Euro norm) |
| EPA | Environmental Protection Act 1990 |
| EPD | environmental product declaration |

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| Abbreviation | Meaning |
|--------------|---|
| EPO | Environmental Protection Officer |
| EPS | European Protected Species |
| EPUK | Environmental Protection UK |
| EQIA | equality impact assessment |
| ERTMS | European Rail Traffic Management System |
| ES | Environmental Statement |
| ETCS | European Train Control System |
| ETS | emissions trading scheme |
| EU | European Union |
| EUS | extensive urban survey |
| EU ETS | European Union Emissions Trading Scheme |
| EWRL | East West Rail Line |
| FARL | FEH index of flood attenuation due to reservoirs and lake |
| FC | TUFLOW Flow constriction layer |
| FCD | field capacity days |
| FCMRINR | Friends of Carlton Marsh and Rabbit Ings Nature Reserve |
| FEH | Flood Estimation Handbook |
| FERA | Food and Environment Research Agency |
| FMD | foot and mouth disease |
| FMfSW | Flood Map for Surface Water |
| FoE | Friends of the Earth |
| FoHPWW | Friends of Haw Park Wood and Wintersett |
| FoMLG | Friends of Marie Louise Gardens |

High Speed Rail (Crewe to Manchester and West Midlands to Leeds)
Working Draft Environmental Statement: Glossary of terms and list of abbreviations

| Abbreviation | Meaning |
|--------------|--|
| FPEXT | floodplain extent, the fraction of the catchment inundated by a 1 in 100 (1%) annual probability event |
| FRA | flood risk assessment |
| FRR | The Flood Risk Regulations 2009 |
| FSMS | Field Survey Methods and Standards |
| FTA | Federal Transit Administration |
| FTE | full-time equivalent |
| FZM | Flood Zone Map (Environment Agency) |
| GCN | great crested newt |
| GDP | gross domestic product |
| GHG | greenhouse gas(es) |
| GI | ground investigation or galvanised iron |
| GIS | geographical information system |
| GP | general practitioner |
| GRIP | Governance for Railway Investment Projects |
| GSM-R | Global System for Mobile Communications - Railway |
| GSP | grid supply point |
| GVA | gross value added |
| GWDTE | groundwater dependent terrestrial ecosystem |
| GWML | Great Western Main Line |
| GWSI:HERDS | Generic written scheme of investigation: historic environment research and delivery strategy |
| HAWRAT | Highways Agency Water Risk Assessment Tool |
| HCA | Homes and Communities Agency |

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| Abbreviation | Meaning |
|--------------|---|
| HDV | heavy duty vehicle |
| HER | historic environment record |
| HFC | hydrofluorocarbons |
| HGV | heavy goods vehicle |
| HHA | Historic Housing Association |
| HIA | health impact assessment |
| HLC | historic landscape character |
| HLCA | historic landscape character area |
| HLS | Higher Level Stewardship |
| HoPI | habitat of principal importance |
| HOST | Hydrology of soil types |
| HRA | habitat regulations assessment |
| HS1 | High Speed One |
| HS2 | High Speed Two |
| HS2 Ltd | High Speed Two Limited |
| HSE | Health and Safety Executive |
| HSI | Habitat Suitability Index |
| HSR | High Speed Rail |
| HSWA | Health and Safety at Work etc. Act 1974 |
| HUDU | Healthy Urban Development Unit |
| HVAC | heating, ventilation and air-conditioning |
| IAG | Interdepartmental Analysts Group |
| IAQM | Institute of Air Quality Management |

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| Abbreviation | Meaning |
|--------------|---|
| ICE | Institution of Civil Engineers |
| ICNIRP | International Commission on Non-Ionizing Radiation Protection |
| ICOMOS | International Council on Monuments and Sites |
| ICS | International Classification for Standards |
| ID | identification |
| IEEM | Institute of Ecology and Environmental Management |
| IEMA | Institute of Environmental Management and Assessment |
| IEP | Intercity Express Programme |
| IHBC | Institute of Historic Building Conservation |
| IMD | infrastructure maintenance depot |
| IoMD | Index of Multiple Deprivation |
| IPC | integrated pollution control |
| IPCC | Intergovernmental Panel on Climate Change |
| IPCC AR5 | IPCC's 5 th Assessment Reports |
| IPEG | increased potential for elevated groundwater |
| IPPC | integrated pollution prevention control |
| ISIS | one-dimensional hydraulic modelling software developed by Halcrow |
| ISO | International Organisation for Standardisation |
| ITA | Integrated Transport Authority |
| IWA | Inlands Waterways Association |
| JNCC | Joint Nature Conservation Committee |
| LAF | Local Access Forum |
| LAPPC | local authority pollution prevention and control |

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| Abbreviation | Meaning |
|--------------|--|
| LAQM | local air quality management |
| LBAP | local biodiversity action plan |
| LCA | landscape character area |
| LCLIP | Local Climate Impacts Profile |
| LCT | Leeds Civic Trust |
| LDA | Landscape Design Approach |
| LDI | local development document |
| LDF | local development framework |
| LDV | light duty vehicle |
| LEAP | locally equipped area of play |
| LEMP | local environmental management plan |
| LENS | Long Eaton Natural History Society |
| LEP | local enterprise partnership |
| LEZ | low emission zone |
| LFRMS | local flood risk management strategy |
| LGBCE | Local Government Boundary Commission for England |
| LGS | local geological site (formerly regionally important geological sites) |
| LGV | light goods vehicle |
| LiDAR | light detection and ranging |
| LIFE | Lotic-invertebrate Index for Flow Evaluation |
| LIGS | locally important geological site |
| LIP | local implementation plan |
| LLAU | Limits of land to be acquired or used |

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| Abbreviation | Meaning |
|--------------|---|
| LLFA | lead local flood authority |
| LNA | Leeds nature area |
| LNR | local nature reserve |
| LOS | Leigh Ornithological Society |
| LPA | local planning authority(/ies) |
| LpAeq | equivalent continuous A-weighted sound pressure level |
| LpAeq, day | equivalent continuous sound pressure level [day - 07:00-23:00] |
| LpAeq, night | equivalent continuous sound pressure level [night - 23:00-07:00] |
| LpAeq,T | equivalent continuous A-weighted sound pressure level for the time period T |
| LpAFmax | maximum A-weighted sound pressure level measured with a fast time constant |
| LpASmax | maximum A-weighted sound pressure level measured with a slow time constant |
| Lpeq | equivalent continuous sound pressure level |
| LSOA | lower super output area |
| LTP | local transport plan |
| LULUCF | Land use, land use change and forestry |
| LWS | local wildlife site |
| M and E | mechanical and electrical |
| MAFF | Ministry of Agriculture, Fisheries and Food |
| mAOD | metres above Ordnance Datum |
| MAP | maintenance access point |
| MATTE | Major Accident to the Environment |
| mbgl | metres below ground level |
| MCA | mineral consultation area |

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| Abbreviation | Meaning |
|--------------|---|
| MCC | manual classified count (traffic and transport) |
| MDU | maintenance delivery unit |
| MEP | mechanical and electrical plant |
| MLP | minerals local plan |
| MMG | Mercia Mudstone Group |
| MML | Midland Main Line |
| MMP | materials management plan |
| MNA | monitored natural attenuation |
| MoD | Ministry of Defence |
| MOL | metropolitan open land |
| MPA | mineral preferred area |
| MRF | material recycling facility |
| MSA | mineral safeguarding area |
| MTBE | methyl tertiary-butyl ether |
| MUGA | multi-use games area |
| MWIA | Mental wellbeing impact assessment |
| N/A | not applicable |
| NABO | National Association of Boat Owners |
| NAEI | National Atmospheric Emissions Inventory |
| NAP | National Adaptation Programme |
| NBR | National Buildings Record |
| NCA | National Character Area |
| NCN | National Cycle Network |

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| Abbreviation | Meaning |
|--------------|---|
| NCR | National Cycle Route |
| NE | Natural England |
| NFC | National Forest Company |
| NFPD | national fish population database |
| NFU | National Farmers Union |
| NGCLC | National Groundwater & Contaminated Land Centre |
| NGO | non-governmental organisation |
| NHLE | National Heritage List for England |
| NHS | National Health Service |
| NI/TR Policy | noise insulation and temporary re-housing policy |
| NMR | National Monuments Record |
| NMU | non-motorised users |
| NNR | national nature reserve |
| NOMIS | Service provided by the Office for National Statistics to provide UK labour market statistics |
| NPE | National Parks England |
| NPPF | National Planning Policy Framework |
| NPPG | National Planning Practice Guidance |
| NPR | Northern Powerhouse Rail |
| NPSE | Noise Policy Statement for England |
| NPV | Net Present Value |
| NR | Network Rail |
| NSBA | North Staffordshire Bridleways Association |
| NT | National Trust |

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| Abbreviation | Meaning |
|--------------|--|
| NTEM | National Trip End Model |
| NTM | National Transport Model |
| NTS | non-technical summary |
| NVC | National Vegetation Classification |
| NVQ | National Vocational Qualification |
| NVZ | nitrate vulnerable zone |
| OA | optimised alternative |
| OAPF | opportunity area planning framework |
| OBR | Office for Budget Responsibility |
| OCS | overhead catenary system |
| OD | Ordnance Datum |
| OEELS | Organic Entry Level Stewardship |
| Ofsted | Office for Standards in Education |
| OfWAT | The Water Services Regulation Authority |
| OGA | Oil & Gas Authority |
| OLE | overhead line equipment |
| ONS | Office for National Statistics |
| ORR | Office of Rail Regulation |
| OS | Ordnance Survey |
| OSS | Open Spaces Society |
| OWNF | Oulton and Woodlesford Neighbourhood Forum |
| P/A | presence/absence |
| PAH | polycyclic aromatic hydrocarbons |

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| Abbreviation | Meaning |
|----------------------------------|---|
| PAS | Publicly Available Specification |
| PAWS | plantation on ancient woodland site |
| PCB | polychlorinated biphenyls |
| PCU | passenger car unit |
| PDFH | Passenger Demand Forecasting Handbook |
| PDM | Post Development Model |
| PDNPA | Peak District National Park Authority |
| PEDL | Petroleum Exploration and Development Licence |
| PFM (also referred to as PLANET) | Planet Framework Model (also referred to as PLANET - Planning network transport forecast model) |
| PFRA | preliminary flood risk assessment |
| PHE | Public Health England |
| PLM | persons with limited mobility |
| PM _{2.5} | particulate matter (with aerodynamic diameter of less than 2.5 micrometres) |
| PM ₁₀ | particulate matter (with aerodynamic diameter of less than 10 micrometres) |
| PMA | private means of access |
| POS | public open space |
| POT | peak over a threshold |
| PPE | personal protective equipment |
| PPG | pollution prevention guidelines (Environment Agency) |
| PPGN | Planning Guidance on Noise |
| PPS | Planning Policy Statement |
| PROPWET | Index of proportion of time that soils are wet |
| PRoW | public right of way |

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| Abbreviation | Meaning |
|--------------|---|
| PRU | Pupil Referral Unit |
| PSC | population size class |
| PSED | Public Sector Equality Duty |
| PSI | proportion of sediment-sensitive invertebrates |
| PSYM | Predictive System for Multimetrics |
| PV | present value |
| PVB | present value of benefits |
| PVC | present value of costs |
| PWS | public water supply |
| QMED | Median annual flood {with 1 in 2 (50%) annual probability event} |
| QRA | quantitative risk assessment |
| RAF | Royal Air Force |
| RBD | river basin district |
| RBMP | river basin management plan |
| RC | Roman Catholic |
| RCS | river corridor survey |
| RDA | regional development agency(ies) |
| REB | relocatable equipment building |
| ReFH | Revitalised Flood Hydrograph |
| RESTATS | Department of Energy and Climate Change Renewable Energy Statistics |
| RFI | radio frequency interference |
| RFRA | regional flood risk appraisal |
| RHS | river habitat survey |

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| Abbreviation | Meaning |
|--------------|--|
| RICT | River Invertebrate Classification Tool |
| RIGS | regionally important geological and geomorphological site |
| RIM | reservoir inundation mapping |
| RIMAG | Risley Moss Action Group |
| RIR | The Railways (Interoperability) Regulations 2011 (as amended) |
| ROF | Royal Ordnance Factory |
| ROGS | The Railways and Other Guided Transport Systems (Safety) Regulations 2006 (as amended) |
| RP | Rail Package |
| RPG | registered park and garden |
| RPZ | root protection zone |
| RRB | route refinement baseline |
| RSD | rolling stock depot |
| RSPB | Royal Society for the Protection of Birds |
| RSS | regional spatial strategy |
| RSSB | Rail Safety and Standards Board |
| RU | railway undertakings |
| RVBG | Rother Valley Bridleways Group |
| SA | sustainability appraisal |
| SAAR | Standard Average Annual Rainfall |
| SAB | SuDS Approval Body |
| SAC | special area of conservation |
| SAGT | Sheffield Area Geology Trust |

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| Abbreviation | Meaning |
|--------------|--|
| SAM | Scheduled Ancient Monument |
| SAPT | Scottish Association for Public Transport |
| SBI | site of biological importance/site of borough importance |
| SBI. I | site of biological importance - Grade I |
| SBI. II | site of biological importance - Grade II |
| SEE | skills, employment and education |
| SEGI | Site of Ecological or Geological Importance |
| SEN | special educational needs |
| SES | Supplementary Environmental Statement |
| SFRA | strategic flood risk assessment |
| ShPA | Shale Prospective Area |
| SI | Statutory Instrument |
| SIL | strategic industrial land |
| SINC | site of importance for nature conservation |
| SLA | special landscape area |
| SLI | site of local importance |
| SLINC | site of local importance for nature conservation |
| SMI | site of metropolitan importance |
| SMINC | site of metropolitan importance for nature conservation |
| SMP | Smart Motorways Programme |
| SMR | Scope and Methodology Report |
| SMS | safety management system |
| SNCI | site of nature conservation interest |

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| Abbreviation | Meaning |
|--------------|---|
| SO27A | Parliament's Private Business Standing Order 27A |
| SOAEL | significant observed adverse effect level |
| SoS | Secretary of State |
| SPA | special protection area |
| SPD | supplementary planning document |
| SPG | supplementary planning guidance |
| SPL | slowly permeable layer |
| SPP | Statement of Public Participation |
| SPR | Standard percentage runoff |
| SPRHOST | Standard percentage runoff derived using the HOST soil classification |
| SPZ | source protection zone |
| SPZ1 | source protection zone 1 |
| SRN | strategic road network |
| SRP | soil resource plan |
| SSSI | site of special scientific interest |
| STEM | science, technology, engineering and mathematics |
| STM | SATURN transport model |
| STP | station travel plan |
| SUCS | Shropshire Union Canal Society |
| SuDS | sustainable drainage system |
| SVOC | semi-volatile organic compounds |
| SWC | surface water crossing |
| SWMP | site waste management plan |

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| Abbreviation | Meaning |
|--------------|--|
| SXZ | Point layer providing 1D-2D link within TUFLOW |
| SYIHS | South Yorkshire Industrial History Society |
| TA | transport assessment |
| TBM | tunnel boring machine |
| TDM | Technical Design Manual |
| TEMPRO | Trip End Model Presentation Program |
| TfL | Transport for London |
| TfN | Transport for the North |
| TGV | Train à Grande Vitesse (English: 'high-speed train'), France's high-speed rail service |
| TIN | technical information note |
| TMP | traffic management plan |
| Tp(o) | Time to peak of the instantaneous unit hydrograph |
| TPC | travel plan coordinator |
| TPO | tree preservation order |
| TRaCCA | Tomorrow's Railway and Climate Change Adaptation |
| TRANSEC | Transport Security and Contingencies Directorate (regulator) |
| TRL | Transport Research Laboratory |
| TSI | Technical Specification for Interoperability |
| TTWA | travel to work area |
| TUFLOW | Two-dimensional hydraulic modelling software built by BMT WBM |
| UAD | Urban Archaeological Database |
| UCZ | utilities construction zone |
| UDP | unitary development plan |

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| Abbreviation | Meaning |
|--------------|---|
| uFMfSW | Updated Flood Map for Surface Water |
| UK | United Kingdom |
| UKAPIS | UK Air Pollution Information System |
| UKCRA | UK Climate Change Risk Assessment |
| UKCIP | United Kingdom Climate Impacts Programme |
| UKCP09 | United Kingdom Climate Projections 2009 |
| UKFS | UK Forestry Standard |
| ULEV | Ultra Low Emission Vehicle |
| UNESCO | United Nations Educational, Scientific and Cultural Organization |
| UNFCCC | United Nations Framework Convention on Climate Change |
| URBAN | Flood Studies Report index of fractional urban extent |
| URBEXT1990 | FEH index of fractional urban extent |
| URBEXT2000 | Revised index of urban extent, measured differently from URBEXT1990 |
| UST | underground storage tank |
| UXO | unexploded ordnance |
| VCP | vitrified clay pipe |
| VDV | vibration dose value |
| VOA | Valuation Office Agency |
| VOC | volatile organic compound |
| WC | wetness class |
| WCA | Wildlife and Countryside Act |
| WCC | White-clawed crayfish |
| WCML | West Coast Main Line |

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| Abbreviation | Meaning |
|---------------------|---------------------------------------|
| WCRM | West Coast Route Modernisation |
| WCS | water cycle strategy(ies) |
| WDES | working draft Environmental Statement |
| WebTAG | Web Transport Analysis Guidance |
| WFD | Water Framework Directive |
| WG | Weather Generator |
| WHO | World Health Organisation |
| WPD | Western Power Distribution |
| WPZ | water protection zone |
| WRAP | Waste and Resources Action Programme |
| WSI | written scheme of investigation |
| ZTV | zone of theoretical visibility |

HS2

www.hs2.org.uk

High Speed Two (HS2) Limited

Two Snowhill,

Snow Hill Queensway,

Birmingham B4 6GA

Freephone: 08081 434 434

Minicom: 08081 456 472

Email: HS2enquiries@hs2.org.uk