HS2

Air Quality Action Plan

Version 1 - June 2019

gov.uk/hs2

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.gov.uk/hs2

A report prepared by HS2 Ltd.

High Speed Two (HS2) Limited has actively considered the needs of blind and partially sighted people in accessing this document. The text will be made available in full on the HS2 website. The text may be freely downloaded and translated by individuals or organisations for conversion into other accessible formats. If you have other needs in this regard please contact High Speed Two (HS2) Limited.

recycle

Printed in Great Britain on paper containing at least 75% recycled fibre.

List of tables

1 Introduction

1.1.1 High Speed Two (HS2) is the Government's proposal for a new, high speed national railway. HS2 Phase One will connect London with Birmingham and the West Midlands; with Phase 2 planned to extend the route to Manchester, Leeds and beyond.

1.1.2 The high speed railway project is in 3 phases:

- Phase One: London to the West Midlands;
- Phase 2a: West Midlands to Crewe; and
- Phase 2b: West Midlands to Leeds, Crewe to Manchester.

1.1.3 In November 2013, HS2 deposited a Hybrid Bill[1] with Parliament to seek powers for the construction and operation of Phase One of HS2. Royal Assent was granted for Phase One in February 2017. The results of the Environmental Impact Assessment (EIA) were reported in an Environmental Statement (ES), as amended, which was submitted alongside the Bill, which resulted in the Secretary of State publishing the Environmental Minimum Requirements (EMRs) including the Code of Construction Practise (CoCP), which sets out the environmental and sustainability commitments that will be observed during the construction of the Proposed Scheme.

1.1.4 The ES, as amended, prepared as part of the Bill included an assessment of the impacts of the Proposed Scheme on air quality during both construction and operation. The HS2 Air Quality Strategy and HS2 Phase One Information Paper E31: Air Quality summarises the impacts identified in the ES, as amended.

1.1.5 The High Speed Rail (West Midlands - Crewe) Bill ('the Bill') was submitted to Parliament together with an ES ('the main ES') in July 2017. If enacted by Parliament, the Bill will provide the powers to construct, operate and maintain Phase 2a of HS2. Following the deposit of the Bill, the need for a number of amendments to the scheme (i.e. changes that require amendments to the Bill) was identified. These amendments were promoted in Parliament in March 2018 through an Additional Provision (referred to hereafter as 'AP1'), together with an ES ('the AP1 ES'). The AP1 ES was accompanied by a Supplementary ES ('the SES1'), which reported changes to the design which do not require amendments to the Bill, changes to construction assumptions, new environmental baseline information and corrections to the main ES. AP2 was submitted Feb 2019 and at the time of drafting this action plan was currently ongoing parliamentary process with view of gaining royal assent by end 2019.

1.1.6 Phase 2b Hybrid Bill and associated ES are due to be submitted to parliament in mid-2020.

[1] The High Speed Rail (London – West Midlands) Bill, hereafter 'the Bill'.

1.1.7 Potential sources of air quality impacts identified include highway construction traffic, highway interventions, and the use of Non-Road Mobile Machinery (NRMM), which may cause temporary effects for local air quality. These effects are likely to occur in the vicinity of HS2 construction sites, as well as alongside a number of roads used by the construction traffic moving to and from each site. These effects are mostly from changes in nitrogen dioxide (NO_2) concentrations and particulate matter, including PM_{10} and $PM_{2.5}$. Construction dust also has the potential to impact on local air quality.

1.2 Management of air quality

1.2.1 The HS2 Code of Construction Practice (CoCP)[2], Air Quality Strategy[3] and Information Paper E31: Air Quality[4] set out HS2's approach for managing air quality.

1.2.2 In order to manage significant impacts related to highway traffic changes and interventions, HS2 committed to putting in place a process to manage those impacts through measurement and regular assessments of air quality during the construction of the Proposed Scheme. Where significant effects are still predicted, action plans will be put in place with the objective of removing those significant effects.

1.2.3 In order to manage emissions from construction activities (i.e. dust), HS2 have committed to the mitigation measures set out in CoCP. Furthermore, HS2 have committed to monitoring all worksites, and installing continuous monitoring for all Medium and High Dust Risk sites (as determined through the use of the Institute of Air Quality Management Guidance on the assessment of dust from demolition and construction).

1.2.4 This management process is modelled on Defra's Local Air Quality Management (LAQM) (for which the statutory duties of local authorities and London boroughs are set out in Part IV of the Environment Act 1995), and the periodic reviews and action plans are envisaged as being similar to those produced in that process.

1.2.5 The management process comprises of: measure – review – action plan. Air quality monitoring adjacent to highways is being undertaken at locations where potential significant effects have been predicted. Forecast baseline and 'with HS2 construction' traffic numbers used in the air quality modelling for the ES will be reviewed and updated in these locations, if necessary.

[2] Code of Construction Practice: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/593592/Code_of_Construction_Practice.pdf
[3] Air Quality Strategy: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/632198/hs2_air_quality_strategy.pdf
[4] Information Paper E31: Air Quality: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/672406/E31_-_Air_Quality_v1.5.pdf

1.2.6 The baseline measurements will be reviewed in the Air Quality Annual Reports to determine whether significant effects are still predicted. Where significant effects are still predicted, the air quality monitoring will be continued, and an air quality action plan be developed, with the objective of removing the significant effects as soon and as far as practicable.

1.3 Purpose of this report

1.3.1 This Air Quality Action Plan (AQAP) outlines HS2's commitments to measure, avoid and reduce emissions generated by HS2 construction activities. These measures are set out in the CoCP, HS2 Phase One Information Paper E31: Air, and also later in this document. The measures include:

- Construction vehicle (Heavy Duty Vehicles and Light Duty Vehicles) emission standards requirement[5];
- NRMM emission standard requirements;
- Dust mitigation measures as set out in the CoCP; and
- Traffic management measures as set out in the Route-wide Traffic Management Plan.

1.3.2 Compliance against these commitments is reported in the monthly Local Authority monitoring reports and Annual Air Quality reports. Future revisions of this plan will appraise the effectiveness of these commitments in managing the significant effects predicted in the ES, as amended.

[5] As detailed in HS2 Phase One Information Paper E31: Air Quality

2 Actions to improve air quality

2.1 General Provisions

2.1.1 In line with the CoCP, contractors are required to control and limit dust, air pollution, odour and exhaust emissions during construction works as far as reasonably practicable. This includes the following:

- Adherence to the Air Quality Strategy, provision of which are covered within HS2 Information Paper *E31: Air Quality*;
- Reference to the general site management and good housekeeping procedures relevant to limiting dust and air pollution;
- Controls and measures to control or mitigate the effect of potential nuisance caused by the construction works, as determined by an up-to-date and site-specific assessment of the risks;
- Dust and air pollution monitoring measures to be employed during construction of Phase 1 of HS2;
- Adherence to the measures relevant to Air Quality as detailed in the Route-Wide Traffic Management Plan;
- Measures relevant to control risks associated with asbestos dust; and
- Reference to publications on 'best practice' which, as the time of implementation include:
    - *Guidance on the Assessment of the Impacts of Construction on Air Quality and the Determination of their Significance*, Institute of Air Quality Management January 2014 (IAQM 2016);
    - *Air Quality Monitoring in the Vicinity of Demolition and Construction Sites*, Institute of Air Quality management, October 2018 (IAQM 2018); and
    - *The Control of Dust and Emissions during Construction and Demolition: Supplementary Planning Guidance*, Greater London Authority, July 2014.

2.1.2 The specific mitigation measures that HS2 have agreed to, and the targets they have committed to achieving (where relevant) are detailed below.

2.1.3 HS2 has also committed to encouraging innovation on the project, particularly in relation to Air Quality impacts during construction. Although not necessarily tangible, the innovations developed to date (including awards received) are detailed in the Annual Air Quality Report.

2.2 Vehicle Emission Compliance

2.2.1 All vehicles are classified based on the amount of emissions they produce. Currently, HGVs are classified on a Euro I to VI scale, and Light Goods Vehicles (LGVs) are classified on a Euro 1 to 6 scale (with VI and 6 being the categories with least emissions). HS2 has committed to using exclusively Euro VI HGVs, Euro 6 diesel LGVs and Euro 4 petrol LGVs from 2020 onwards across the whole route. In Phase One Area

South, the requirement of HGV Euro VI was required from 14 September 2017. These targets and requirements are presented in Table 1.

2.2.2 Opportunities for exemptions are made available to all contractors on the grounds of specialism, triviality or unforeseen circumstances. HS2 have committed to granting no more than 8% unique vehicle exemptions, across the Phase One route, on an annual basis.

Table 1 – Construction Vehicle Emission Targets

Vehicle Class & Minimum Vehicle Emission Standard	**Area South**	**Rest of Route (Area Central and Area North)**
Heavy Goods Vehicles (HGVs) - EURO VI	Target – 100% from start of works	Target – 100% from start of works
	Requirement – 100% from start of works	Requirement – as far as reasonably practicable, 100% from 2020
Light Duty Vehicles (LDVs) - EURO 6 Diesel - EURO 4 Petrol	Target – 100% from start of works	Target – 80% from start of works
	Requirement – 100% from 2020	Requirement – 100% from 2020
Exemptions	No more than 8% of unique vehicles on an annual basis	

2.3 NRMM Emission Compliance

2.3.1 Similar to HGV and LDVs, NRMM (of a net power between 37kW and 560kW) are categorised based on their emissions, as being Stage I, II, IIIA, IIIB, IV, V (with V currently being the least polluting available on the market). Stage V is new on the market, having become available earlier this year (2019).

2.3.2 HS2 has committed to stricter requirements than the London Supplementary Planning Guidance (SPG) which includes requirements for NRMM used within Greater London and the Central Activity Zone to be of a certain standard, dependant on the year of use. HS2 have taken these SPG requirements and applied them to the rest of the Phase One route as the first major infrastructure project to extend the London requirements outside of London. The NRMM emission targets that HS2 has committed to are presented in Table 2.

Table 2 – NRMM Emission Targets

Area	London SPG Stage Requirements		HS2 Requirements	
	From 2015	From 2020	From 2017	From 2020
Central Activity Zone (includes Euston)	IIIB	IV	IV(1,2)	Best practice (Stage V)
Rest of Greater London	IIIA	IIIB	IIIB(2)	IV(1,2)
Rest of Country	Not Applicable	Not Applicable	IIIB(2)	IV(1,2)

Notes:

The above emission standard requirements should be read in conjunction with High Speed Two Information Paper, E31: Air Quality

(1) IIIB for 37 ⩽ P < 56kW, as there is no corresponding Stage (IV) at EU Level

(2) IIIA for constant speed engines of any power, as there is no corresponding Stage IIIB or IV at EU level.

2.5 Dust Emission Mitigation

2.5.1 The following measures, outlined in the CoCP, have been agreed to and will be implemented across construction sites route-wide where relevant.

Site Management

2.5.2 The site layout will be planned to locate machinery and dust-causing activities away from sensitive receptors, where reasonably practicable. Methods, such as the erection of hoardings or other barriers along the site boundary, will be used, where appropriate, to mitigate the spread of dust.

Construction Plant, Vehicles and Equipment

2.5.3 Measures will be implemented to limit emissions from construction plant and vehicles, which will include the following, as appropriate:

- Operation of construction plant in accordance with the manufacturer's written recommendations;
- Vehicles and plant will be switched off and secured when not in use;
- Construction vehicles to conform to the current EU emissions standards and, where reasonably practicable, their emissions should meet upcoming standards prior to the legal requirement date for the new standard;
- Vehicle and construction plant exhausts to be directed away from the ground and positioned at a height to facilitate appropriate dispersal of exhaust emissions;
- The enclosure, shielding or provision of filters on plant likely to generate excessive quantities of dust beyond the site boundaries;
- Devices such as dust extractors, filters and collectors on drilling rigs and silos will be used;

- Movement of construction traffic around the site will be kept to the minimum reasonable for the effective and efficient operation of the site and construction of the project;
- Use of tower cranes to reduce vehicle movements;
- Construction plant will be located away from site boundaries which are close to sensitive receptors, where reasonable and practicable;
- Site access points will be designed to minimise queuing traffic adjacent to access points;
- The use of diesel or petrol-powered generators will be reduced by using mains electricity or battery-powered equipment where reasonably practicable;
- Non-road mobile machinery will use ultra-low-sulphur diesel;
- Cutting and grinding operations will be conducted using equipment and techniques which reduce emissions and incorporate appropriate dust suppression measures;
- Damping down of dust-generating equipment and vehicles within the site and the provision of dust suppression in all areas of the site that are likely to generate dust;
- Measures to keep roads and accesses clean; and
- Vehicle, plant and equipment maintenance records will be kept on site and reviewed regularly.

Transportation, Storage and Handling of Materials

2.5.4 Dust and air quality management measures will be implemented to limit pollution arising from the transportation and storage of materials, including the following, as appropriate:

- Covering materials, deliveries or loads entering and leaving the construction site for the purposes of preventing materials and dust spillage – this will apply to the transport of materials by road, rail or waterway;
- Vehicles transporting materials within or outside the construction site will not be overloaded;
- Stockpiles and mounds will be kept away from sensitive receptors (including natural and historic features), watercourses and surface drains where reasonably practicable, and sited to take into account the predominant wind direction relative to sensitive receptors;
- Stockpiles and mounds will be maintained to avoid material slippage;
- Materials stockpiles likely to generate dust will be enclosed or securely sheeted, kept watered or stabilised as appropriate;
- Fine dry material will be stored inside buildings or enclosures with measures in place to ensure no escape of material and of overfilling during delivery;
- Mixing of large quantities of concrete or bentonite slurries will be undertaken in enclosed or shielded areas;
- The number of handling operations for materials will be kept to the minimum reasonably practicable;
- Materials handling areas will be maintained to constrain dust emissions through the use of measures such as watering facilities to reduce or prevent escape of dust from the site boundaries; and

- Mixing of grout or cement-based materials will be undertaken using appropriate techniques/mitigation suitable for the prevention of dust emissions.

Haul Routes

2.5.5 Haul routes will be provided through the works for use by construction vehicles access the works. The construction and maintenance of haul routes will include the following measures to prevent the emission of dust and PM_{10}, as appropriate:

- The surfacing and maintenance of haul routes to control dust emissions as far as reasonably practicable, taking into account the contractor's intended level of traffic movements;
- Inspection of haul routes regularly and their prompt repair if required;
- Re-use of haul route surfacing materials where the locations of haul routes change during the course of construction;
- Provision of areas of hard-standing at site access and egress points to be used by any waiting vehicles;
- Methods to clean and suppress dust on haul routes (including watering) and in designated vehicle waiting areas. The frequency of cleaning will be suitable for the purposes of suppressing dust emissions from the site boundaries;
- Enforcement of speed limits on haul roads for safety reasons and for the purposes of suppressing dust emissions; and
- Damping down haul route crossing and worksite access (where required).

Demolition Activities

2.5.6 Dust pollution from demolition activities will be limited through the use of the following measures, as appropriate:

- Stripping of interiors of buildings before demolition;
- Blasting works will be kept to the reasonably practicable minimum in the context of the design and programme requirements of the project;
- Buildings or structures to be demolished will be sprayed with water or screened as necessary, prior to and during demolition;
- Rubble chutes will be shielded or enclosed or use water to suppress dust emissions from such equipment;
- Skips covered and secured;
- Burning of material will not be permitted on site;
- Avoidance of the prolonged storage of waste materials on site and compliance with the CoCP in respect to storage; and
- Removal of waste from the site will comply with the requirements of the CoCP relating to the transportation of materials.

Excavations and Earthworks Activities

2.5.7 Dust pollution from excavations and earthworks activities will be limited through the use of the following measures, as appropriate:

- Topsoil will be stripped as close as reasonably practicable to the period of excavation or other earthworks activities to avoid risks associated with run-off or dust generation;
- Drop heights from excavators to vehicles involved in the transport of excavated material will be kept to the reasonably practicable minimum;
- Materials will be compacted after deposition, with the exception of topsoil and subsoil on land to be restored for agriculture, forestry, landscaping and wildlife habitats; and
- Soil spreading, seeding, planting or sealing of completed earthworks will be undertaken as soon as reasonably practicable following completion of the earthworks.

Grouting Activities

2.5.8 Dust pollution associated with grouting activities will be limited through the use of the following measures, as appropriate:

- Dust extractors, filters and collectors on silos; and
- The mixing of grout or cement-based materials will be undertaken using a process suitable for the prevention, as far as reasonably practicable, of dust emissions.

Conveying, Processing, Crushing, Cutting and Grinding Activities

2.5.9 Dust pollution associated with processing and crushing rock, for use as aggregate or other materials within the works, and for conveying material processing, crushing, cutting and grinding, and liming will be limited through the use of the following measures, as appropriate:

- Dust heights from conveyors, excavators, and crushing plant to stockpiles will be kept to the reasonably practicable minimum;
- The enclosure of conveyer transfer points, and damping of conveyor loads;
- Enclosed conveyers where crossing roads, other public areas and property not owned by the nominated undertaker;
- Suitable temporary enclosures for cutting and grinding activities; and
- The application of water sprays to damp down in dry weather.

Air Quality Effects Adjacent to Highways (Currently only applicable to Area South)

2.5.10 The process to manage predicted significant impacts adjacent to highways is based on Defra's LAQM. As noted above this comprise of a "measure – review – action plan" process. This process will include baseline monitoring and production of an air quality assessment (at an appropriate stage), which will determine if significant effects (as predicted in the ES) are still evident. If significant effects are evident, then an air quality action plan is drawn up, with the objective of removing the significant effects as soon and as far as practicable.

Monitoring of Air Quality

2.5.11 The nominated undertaker will require its contractors to implement inspection and monitoring procedures to assess the effectiveness of measures to prevent dust and air pollutant emissions. Relevant local authorities will be consulted on the monitoring procedures to be implemented, which will include the following measures, as appropriate:

- Site inspections covering the establishment of operation of the construction site;
- Inspection procedures for areas adjacent to the construction site to visually assess any dust and air pollution which may be generated;
- Plans for undertaking continuous automatic monitoring of airborne dust and setting a relevant site action level (defined as a measurement threshold above which investigation will be required);
- Reference to inspection and maintenance schedules for construction vehicles, plant and machinery;
- Inspection procedures relating to the level of traffic movements, use and condition of haul routes; and
- Monitoring of air quality effects shall be undertaken adjacent to highways.

2.5.12 Monthly reports detailing the monthly findings of the monitoring, will be produced and published on a monthly basis per council area.

2.6 Construction Vehicle Emission Mitigation

2.6.1 The Route-wide Traffic Management Plan (TMP) details the requirements of HS2 for managing transport, highways and traffic during the delivery of the works. The aim of the document is to ensure that HS2 and their Principal Contractors follow these requirements as a means to minimise impacts.

2.6.2 The mitigation measures relevant to this AQAP are detailed below. It should be noted that the does include a section regarding vehicle emissions, but only so far as to reference Information Paper E31. As this information is presented above, it has not been described again in the following section.

General Requirements for Vehicle Management

2.6.3 The following are requirements for different sized / purposed vehicles:

- Construction vehicles of 7.5t are required to followed approved lorry routes (where flows are forecast to be higher than 24 per day to or from a site) and actively avoid specific routes;
- Construction vehicles of under 7.5t and HS2 employees in work vehicles being used for work purposes are required to avoid specific routes;
- Vehicles with abnormal loads are required to comply with “Abnormal load route and procedures” (i.e. movement orders); and
- With regards to the temporary closures of approved routes:

- If the closures are planned, temporary routes will need to be discussed and agreed in advance through the relevant local Traffic Liaison Group; and
- If the closures are not planned drivers will follow diversions put in place by the relevant local authority.

Vehicle Environmental Management

2.6.4 With regard to highway vehicle emissions, Principal Contractors will be required to comply with Information Paper E31, as detailed above. This will be achieved through the following measures:

- Logistics Environment, Sustainability and Safety Management Plans (ESSMPs) will be required to be prepared by Principal Contractors, which include measures to minimise vehicle environmental impacts. These will set out the principal contractor's proposals for minimising emissions;
- HS2 may issue Traffic Advice Notes to Principal Contractors regarding the suitability and adoption of new vehicle engine types, fuels and related standards, where there is a business case for their adoption;
- Minimising queuing on the highway – Principal Contractors will be required to use management systems to ensure, as far as reasonably practicable, that the number of vehicles entering sites are no greater than the site capacity;
- Minimising construction vehicle parking – Principal Contractors will be required to ensure that measures are implemented to reduce construction traffic impacts associated with parking in the vicinity of sites; and
- Sheeting and wheel washing – measures include covering materials, deliveries and loads entering and leaving the site, and provision of wheel washing facilities where necessary.

Road Cleanliness

2.6.5 All reasonably practical measures will be put in place to avoid / limit and mitigate the deposition of mud on the highway (which leads to dust and PM_{10} emission once dry). These measures will include:

- Hard standing at the access and egress points will be cleaned at appropriate intervals;
- Vehicle wash down points to clean vehicle wheels at each exit point on the highway;
- Correct loading of vehicles and sheeting of loads where necessary to avoid spillage during their journeys;
- Appropriate wheel cleaning measures will be employed to prevent the transfer and accumulation of mud and other granular deposits on the public highway;
- Use of mechanical road sweepers combined with water sprays for the suppression of dust to clean hard standings, roads and footpaths in the vicinity of the site;
- Flushing of gullies in the vicinity of the site; and
- Clearance of channels where debris often collects.

2.6.6 Following completion of works affecting a highway, all surplus materials arising from the works will be cleared from the highway, leaving it in a clean and tidy condition in accordance with the reasonable requirements of the highway authority.

2.6.7 Measures will also be taken to prevent water run off onto highways.

2.7 Innovation

2.7.1 Innovation relates to doing something differently to deliver a benefit beyond that which could be considered industry best practice. It is not related only to technology. Innovation can be realised by doing something different to improve what is already done (e.g. a faster ticket machine) or by creating new benefits (e.g. a ticketless entry system). Innovation can relate to how we work (e.g. construction methods) as well as what we deliver (e.g. bridge design). Innovation may be enabled by deploying existing known technology or ways of working, or by creating a new means of delivering the benefit.

2.7.2 HS2 believes Innovation shouldn't be left to chance; it requires leadership to ensure tangible results are delivered, and "innovation for the sake of innovation" is avoided. Therefore, HS2 is committed to bringing innovation to life across the programme and driving collaboration throughout the supply chain, as outlined in the HS2 Innovation Strategy.

2.7.3 Annual progress made in terms of innovation relating to Air Quality will be presented in the Air Quality Annual Reports.

3 Monitor – Review – Assess

3.1.1 Compliance against the HS2 air quality commitments will be monitored, reviewed and assessed as described below.

3.2 Monitor

3.2.1 Monitoring of predicted significant effects, as identified in the ES will continue to be undertaken across the Phase One route. Where monitoring is undertaken, monthly monitoring reports are produced and published at https://www.gov.uk/government/collections/monitoring-the-environmental-effects-of-hs2.

3.2.2 Monitoring processes, methods and assumptions are described in the Overview monitoring report published at https://www.gov.uk/government/publications/hs2-air-quality-and-dust-monitoring-overview-report, which should be read in conjunction with the monthly monitoring reports.

3.2.3 Monthly vehicle and NRMM compliance figures are provided to and presented at the Local Authority Environmental Health Subgroup meetings. Minutes of these meetings are published at https://www.gov.uk/government/publications/hs2-phase-one-planning-forum-environmental-health-subgroup-meeting-minutes-2018.

3.3 Review

3.3.1 A review on the commitments will follow the LAQM process.

3.3.2 An Air Quality Annual report, published at https://www.gov.uk/government/collections/monitoring-the-environmental-effects-of-hs2, will review:

- The annual monitoring results from across the route;
- Present comparison of results against the predicted significant effects outlined in the Environmental Statement; and
- Provide commentary on project developments, innovation projects and impacts from industry changes.

3.4 Assess

3.4.1 HS2 will continue to implement the mitigation set out in the CoCP (as summarised in Section 2) and monitor in areas where significant effects were identified in the Environmental Statement.

3.4.2 Monthly and Annual Reports will review monitoring results in relation to the predicted effects in the ES, and will review the level of assessment required going forward.

3.4.3 Future revisions of this plan will appraise the effectiveness of these commitments in managing the significant effects predicted in the ES, as amended.

4 Conclusion

4.1.1 This first version of the HS2 Air Quality Action Plan summarising in one document all the air quality commitments to measure, avoid and reduce emissions.

4.1.2 This plan will be updated periodically, as determined by the outcome of the annual review of monitoring data presented in the Air Quality Annual Report. Future revisions will include an assessment of whether the range of air quality commitments are effective in mitigating against significant effects predicted in the ES, as amended.