
High Speed Rail
(London-West Midlands)
Local Environmental Management Plan
Birmingham City Council
Curzon Street Station

December 2017



Department for Transport

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

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1 Introduction

1.1.1 This Local Environmental Management Plan (LEMP) outlines site specific control measures for the construction of Curzon Street station within the metropolitan borough of the City of Birmingham (or the area administered by Birmingham City Council (BCC)) that will be developed further following consultation with relevant stakeholders. This LEMP builds upon but does not repeat the HS2 general environmental requirements set out in the Control of Construction Practice (CoCP) (available [online](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/593592/Code_of_Construction_Practice.pdf) at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/593592/Code_of_Construction_Practice.pdf).

1.1.2

1.1.3 This LEMP contains control measures and standards to be implemented within BCC. The sections within this LEMP should not be read in isolation from other sections due to the interconnected nature of the measures between disciplines.

1.1.4 For ease of reference, the LEMP mirrors the topic headings in the CoCP.

1.1.5 Information of relevance to the formation and maintenance of this LEMP is contained within this document, or links are provided to where it can be accessed. This includes:

- Information from traffic, environmental surveys and ground investigation works. This could either be seasonal ecological surveys, tree surveys, noise monitoring, ground settlement or the results of ground investigations detailing levels of contamination (where present) and the nature of the ground;
- Feedback on pertinent information from on-going engagement; and
- Results of petitions of the Parliamentary process which have resulted in amendments to the mitigation measures contained within the CoCP.



Figure 1 Key workstreams that will provide additional information for the LEMPs.

- 1.1.6 This LEMP has been prepared taking into account findings of the Environmental Statement (ES) hereafter referred to as the Main ES, Additional Provision (AP) ES, Supplementary Environment Statement (SES) and AP₂ ES, SES₃ and AP₄ ES and SES₄ and AP₅ ES documents where relevant. It has evolved during the Parliamentary process and engagement with the Local Authority and other stakeholders, such as members of the National Environment Forum, which have informed its development. This LEMP may be subject to further refinement, amendment and expansion as necessary as the project design progresses. The Contractors will implement the requirements of the LEMPs and the CoCP through their own Environmental Management System (EMS), which will be certified to BS EN ISO 14001.
- 1.1.7 The Nominated Undertaker (HS2 Ltd)¹ and/or its Contractors will continue to engage with the local stakeholders. This will take the form of engagement events which will be carried out to introduce and brief the communities on local environmental information, management and mitigation as detailed within this document.
- 1.1.8 The HS2 Environmental Memorandum identifies key worksites along the route of HS2 Phase One that are environmentally sensitive in terms of nature conservation, terrestrial and aquatic ecology, water resources, geomorphology, recreation and amenity, landscape, public open space and agricultural land. The criteria for inclusion are 'worksites where a key significant impact (that has been agreed with the HS2 National Environment Forum² members) is generated in any of the environmental topics' as mentioned above. There are currently no such sites identified in BCC.
- 1.1.9 The controls within this LEMP, as with those in the CoCP, are in line with HS2's Safe at Heart health and safety brand. Safe at Heart seeks to ensure that health and safety are at the heart of everything that we do including in the design, construction and operation of the scheme. This aim stretches beyond the scheme itself, through instruments such as this LEMP, and into the communities along the scheme to ensure that we protect their health, safety and wellbeing.
- 1.1.10 HS2 documents referenced within this LEMP can be found on the www.gov.uk website.

1.2 Area and scope

- 1.2.1 Plans showing an overview of the local authority area covered by this LEMP is shown within the Environmental Statement (ES) map – CT-05-142. This LEMP includes all works for the Scheme west of St James' Place, in Birmingham city centre. It extends from the start of the Proposed Scheme's Curzon Street No.3 viaduct and the transition of the trackwork from twin track mainline to diverging into the station throat to enter the platforms and then onto B4100 Moor Street Queensway. It includes the highway

¹HS2 Ltd is the Nominated Undertaker. The two terms are used interchangeably throughout this LEMP.

²The National Environment Forum comprises Government departments and statutory bodies and was established to advise on environmental policy for HS2, including project-wide strategies for reducing the environmental impact of the line and principles for a Code of Construction Practice

works on the A4540 Lawley Middleway Curzon Circle and Garrison Circus and the utility diversions around the proposed station site.

1.2.2 Construction worksites and areas required for construction works are shown within the maps listed in Appendix 2.

1.2.3 It is anticipated that the following general descriptions of work activities are to take place during core and non-core working hours (see section 5.3 for a description of non-core working hour activities) during the construction period within this local authority boundary:

- advance works, including: site investigations, ground investigations and associated environmental surveys and surveys further to those already undertaken;
- enabling works, including: utilities works in the wider area; highway and public right of way (PRoW) diversions; building demolitions; site clearance, habitat removal, creation and environmental mitigation measures;
- civil engineering works including those associated with stations: establishment of construction compounds; site preparation; main earthworks and structure works, building works and fit out, retaining structures and erection of bridges/viaducts, subsurface tunnelling and excavations, site restoration and removal of construction compounds;
- works to conventional railway track, signalling and other railway systems;
- high speed railway installation works and systems fit - out including: establishment of construction compounds; infrastructure installation, traction power supplies, overhead line equipment and communications features; connections to utilities; removal of construction compounds; and
- system testing and commissioning.
- station works including site preparation and enabling works, main earthworks, structural works, building works and fit out;

2 Purpose of the Local Environmental Management Plan

2.1.1 This LEMP focuses on the area specific control measures by topic as relevant to construction works for Curzon Street and surrounding area described previously, within the BCC area. The measures described will be applied by the Nominated Undertaker and its contractors throughout the construction period to reduce the potential environmental and community impacts within the BCC area during construction.

2.1.2 The Nominated Undertaker's contractors will develop detailed environmental site management mitigation through their EMS, taking into account this LEMP and the Environmental Minimum Requirements.

3 Policy and environmental management principles

- 3.1.1 Information relating to the HS2 Ltd sustainability policy and environmental management principles is provided in Section 3 of the CoCP.

4 Implementation

- 4.1.1 Details relating to implementation, such as enforcement and site management measures, are provided in Section 4 of the CoCP.
- 4.1.2 On 16 November 2016 contracts were awarded for three Enabling Works Contractors (EWC) working on behalf of HS2 Ltd across Phase 1 of the project. The EWC covering the BCC area is the LM Joint Venture, a joint venture between Laing O'Rourke and J. Murphy & Sons
- 4.1.3 On 17 July 2017 contracts were awarded for HS2's Main Works Civils Contractors (MWCC). The MWCC for the BCC area is Balfour Beatty Vinci (BBV). BBV is a joint venture made of Balfour Beatty Group Ltd, VINCI Construction Grands Projets, VINCI Construction UK Ltd, VINCI Construction Terrassement.

5 General requirements

5.1 Community relations

- 5.1.1 General control measures relating to community relations, hours of work, pollution incident control and security etc. are identified in Section 5 of the CoCP.
- 5.1.2 To reduce the likelihood of an environmental incident or nuisance occurring, measures from Section 5 of the CoCP will be implemented, as detailed below.
- 5.1.3 As detailed within Section 5 of the CoCP, the Nominated Undertaker and its Contractors will implement the Community Engagement Framework. The framework will focus on engagement during construction with the local communities and on the specific needs of protected groups (as defined in the Equalities Act 2010) especially those who may be affected by construction impacts in the immediate vicinity of the works. A range of tools will be used to achieve this that will tailor engagement to local needs.
- 5.1.4 Successful management of the project will involve understanding communities and their needs, actively engaging, listening and responding. The arrangements for this are set out in the HS2 Community Engagement Framework. Liaison with the local community will take place to consistently provide timely, clear tailored information on the construction programme, updates on forthcoming works. It will also provide the

opportunity for members of the public to respond, discuss issues and provide feedback that can be acted upon. This information will be included in the local area plan for community engagement.

5.1.5 The local area plan will take account both of distinct geographic distribution of the communities within BCC and will involve the Contractors and any relevant third parties and stakeholders, for which there will be co-ordination arrangements.

5.1.6 For the purposes of this LEMP, a third party is an organisation with whom HS2 Ltd has entered into a legal agreement to undertake works on its behalf, to be delivered under the powers of the High Speed Rail (London – West Midlands) Act (the Act), or the third party's own powers (e.g. permitted development). Such agreements require the third parties to comply with the requirements of the Act and the EMRs, including the CoCP. Third parties relevant to this LEMP include Network Rail, Highways England, and utility companies such as Severn Trent Water, National Grid, Cadent and Western Power Distribution.

5.1.7 Ongoing engagement with local interests and community groups will occur during construction, as listed in Appendix 3 of this LEMP. (NB: This list is indicative and will be subject to change as more information becomes available.)

Advanced notice of works

5.1.8 The Nominated Undertaker and its Contractors are committed to informing communities on matters of interest and relevance. Therefore they will ensure that stakeholders affected by the proposed construction works, as outlined in the ES, will be informed in advance of works by methods outlined in the community engagement framework and as per Section 5.1.4 of the CoCP.

5.2 Working hours

Consents

5.2.1 The framework for seeking consent for working hours under Section 61 of the Control of Pollution Act 1974 is set out in the CoCP.

Core working hours

5.2.2 Core working hours will be from 08:00 – 18:00 on weekdays (excluding bank holidays) and 08:00 – 13:00 on Saturdays. See also HS2 Information Paper D4: Working Hours. A period of up to one hour before and up to one hour after core working hours will be required for start-up and close down activities as detailed within the CoCP. To maximise productivity within the core working hours, the 1hr start up and close down periods will include activities such as deliveries, workforce arrival/departure, unloading, maintenance and general preparation works etc. During this period, plant and machinery that is likely to cause disturbance to local residents will not be allowed to operate. This period will not be an extension of the core working hours. Working outside of these hours would need to be agreed through the Section 61 consulting process with BCC. Please note that emergencies (not repairs and maintenance) may be undertaken outside core hours.

5.2.3 Certain work activities at specific locations within the local authority area will need to take place outside of the core working hours for safety and engineering purposes.

These work activities (which may include construction associated with station, infrastructure and rail works, including possessions) will be covered by the Section 61 process and are likely to include:

- Ground investigation works
- Tree removal at Park Street to facilitate archaeological investigations
- Installation of monitoring equipment on Network Rail assets adjacent to Park Street site
- elements of the construction of bridges and structures over roads and a canal - A4540 Lawley Middleway, Digbeth Branch Canal and New Canal Street; and
- deliveries of large components, such as bridge beams, heavy plant and equipment.

5.2.4 To limit the number of possessions that will be undertaken, a protective barrier is likely to be installed between the existing railway and HS2 worksites to allow the works to be carried out during core working hours where stipulated clearances can be met, in accordance with S61 processes.

5.2.5 In circumstances where this is not practicable, the work will typically be carried out during possessions either during midweek nights or extended weekend nights. Every effort will be made to reduce work outside of core hours so as to avoid excessive community disturbance.

5.2.6 Road Rail Vehicles (RRV's³) will generally be delivered and operated outside of normal working hours for works associated with the existing railway. Material delivery and removal for these works interfacing with conventional rail will be carried out during the same periods.

5.3 Construction site layout and good housekeeping

5.3.1 The measures set out in Section 5.3 of the CoCP will be used to reduce the likelihood of an environmental incident or nuisance occurring.

5.4 Site lighting

5.4.1 All construction sites will be lit in accordance with the requirements of the CoCP (as detailed within Section 5.4 of that document) and approval of site lighting will be in accordance with Schedule 17 Part 1 of the Act.

5.4.2 Site lighting will be designed to avoid light pollution to surrounding buildings, ecological receptors, local residents, railway operations, passing motorists and other sensitive land uses where reasonably practicable.

³ RRV's – A vehicle which can operate both on rail tracks and road, often used for railway maintenance.

5.5 Worksite security

- 5.5.1 The intention is to achieve safe and secure worksites, with balanced and appropriate security measures that are commensurate with the risk, as detailed within Section 5.5 of the CoCP.
- 5.5.2 A security plan will be required for each site and where appropriate, security fencing/hoardings and gates provided to perimeters of construction locations and site compounds. Fence type and construction will be appropriate to the level of security required and depend upon the likelihood of intruders, level of danger and visual impact to the environment.
- 5.5.3 Contractors will be responsible for ensuring that the site/working areas and plant and materials are secure from use by unauthorised persons at all times and plant and machinery will be securely locked away and immobilised each night. Securing sites will involve the use of physical, electronic and human resources in a proportionate and cost effective manner.
- 5.5.4 In some situations, particularly in an urban setting, consideration will be given to extra visibility for the public and workforce at night, e.g. use of half-timber/half-infill (i.e. perspex) at hoarding corners together with convex mirror to prevent blind spots. All sites will have security lighting to ensure the safety of passing pedestrians and other traffic. Detail can be found in HS2 Information Paper D10: Worksite Security.
- 5.5.5 Security provisions will be deployed at all HS2 sites and working areas on a 24/7 basis this may include CCTV cameras, alarms and security personnel. This approach will help protect assets with measures that deter, delay and detect intrusion.

5.6 Hoardings, fencing and screening

- 5.6.1 The site perimeter will generally be fenced with 2.4m high solid hoardings that will be appropriately decorated, in line with measures described within Section 5.6.1 of the CoCP, if appropriate.
- 5.6.2 Hoardings up to 3.6m high will, on occasions, be used to control construction noise. At locations where existing fencing may need to be removed, suitable alternatives will be used. Park Street site hoarding is 2.4m high and will be appropriately decorated in line with the CoCP. Further specific hoarding heights in BCC will be included in this LEMP as and when the hoarding designs are finalised.
- 5.6.3 Noise mitigation hoardings will be erected at various locations around the worksites.
- 5.6.4 Opportunities to include temporary landscaping measures including but not limited to green hoardings, ivy screens, artificial ivy and instant hedging will be considered and where reasonably practicable implemented where there are clear benefits to local air quality, biodiversity and visual appearance of the area, taking into account costs, longevity and ease of maintenance.
- 5.6.5 Where there are earthworks along the line of route, such as cuttings and embankments, temporary fencing will be erected along the site boundaries. The type of fence will be dependent upon the nature of use of the adjacent land, as well as environmental, design

and safety considerations. Details can be found in Information Paper D10: Worksite Security.

5.7 Unexploded ordnance

5.7.1 There are a number of moderate risks highlighted in the Curzon Street station site in terms of unexploded ordnance. The main risk areas are associated with the following design elements areas:

- Curzon Street No. 3 Viaduct; and
- Curzon Street Station.

5.7.2 For further information on risk assessments for unexploded ordnance being found within construction areas, see Section 5.7 of the CoCP.

5.8 Electromagnetic interference

5.8.1 The impacts of electromagnetic interference during design and construction will be undertaken, as detailed within Section 5.8 of the CoCP.

5.9 Temporary living accommodation

5.9.1 Not applicable to the area covered by this LEMP.

5.10 Occupational healthcare

5.10.1 The Nominated Undertaker will ensure that there is provision for access to either on-site or near-site occupational healthcare for site workers as detailed within Section 5.10 of the CoCP.

5.11 Clearance and re-instatement of sites on completion

5.11.1 This will be carried out as detailed within Section 5.11 of the CoCP.

5.12 Pollution incident control and emergency preparedness

5.12.1 The Contractor's pollution incident control and emergency preparedness plan(s) will need to have due regard to local receptors as detailed in Sections 6 to 16 of this LEMP.

5.12.2 The Contractors plan will also consider measures and processes to be implemented in the event of environmental non-conformances.

Local control measures

5.12.3 The Contractor's pollution incident control and emergency preparedness plan(s) will include the following pollution prevention and control mechanisms:

- Static plant will be used with secondary containment measures, such as plant nappies, to retain any leakage of fuel or oil and reduce the risk of surface of pollution.
- Spill kits will be provided where appropriate, such as at the Curzon Street station main compound, the Curzon Street No. 3 Viaduct satellite compound and the Curzon Street auto-transformer station, to reduce the risk of pollution.

- The use of oil interceptors at site offices and work compounds;
- appropriate measures such as use of bunds of non-erodible material or silt or sediment fences adjacent to watercourses, such as the River Rea and the Digbeth Branch Canal;
- Implementing a surface water or groundwater monitoring plan, particularly in relation to works which may affect aquifers, for example, excavations and piling; and
- Any work that might have an impact on groundwater quality will need formal approval by the Environment Agency via the Schedule 33 Part 5 in the HS2 Act.

5.12.4 The Contractor's pollution incident control and emergency preparedness plan(s) will need to have due regard to local context.

5.13 Fire prevention and control

5.13.1 The Contractor's pollution incident control and emergency preparedness plan(s) will need to have due regard to the local flood risk sources (outlined in Section 16 of this LEMP) and key receptors and take into account any risk management or mitigation measures. See also Section 5.14 of the CoCP.

5.14 Extreme weather events

5.14.1 The Contractors' pollution incident control and emergency preparedness systems will need to have due regard to the potential of extreme weather events and key receptors and take into account any proposed risk management or mitigation measures. See also Section 5.14 of the CoCP. Where necessary, the statutory bodies will be consulted with regards to emergency planning.

5.15 Carbon management plans

5.15.1 The Contractor will produce carbon management plans, in accordance with the HS2 Carbon Minimisation Policy as detailed within Section 5.15 of the CoCP.

5.16 Interface management between adjacent construction areas

The Nominated Undertaker will oversee the interface between the Contractors as detailed within Section 5.16 of the CoCP, which may be within the same or adjacent local authority boundaries.

6 Agriculture, forestry and soils

6.1.1 Agriculture and forestry are not applicable to the Curzon Street station works; although management of soils is considered (see also Land quality).

6.1.2 General control measures relating to soils are provided in Section 6 of the CoCP.

6.2 Sensitive receptors

- 6.2.1 The generally high quality soils that will be permanently displaced and reused in the design of the Scheme for agriculture and other uses, represent a sensitive receptor.

6.3 Local control measures

- 6.3.1 Where topsoil and subsoil will be stripped across the site, a Soil Resources Plan (SRP) will be prepared. The SRP will establish the type and volume of the topsoil and subsoil to be stripped, the designated location of the stockpiles and the use of conserved soils for land restoration. There is a commitment in the main ES for the reuse of soils on the Scheme. In the provision of early ecological mitigation areas the top soil and sub-soil will be entirely reused within the boundaries of each site and therefore an SRP will not be produced for these sites.
- 6.3.2 In areas where compounds are to be created, it is envisaged that each area will be stripped of topsoil in accordance with the SRP. Temporary material stockpiles will be clearly recorded and the topsoil will be reinstated.
- 6.3.3 In respect of storage areas for soil and excavated materials, and within the wider construction site, the presence and spread of invasive, non-native species (plants and animals) and noxious weeds will be controlled through the adoption of appropriate management regimes. These will identify and effectively treat areas that could also threaten adjoining agricultural areas.
- 6.3.4 Appropriate construction, handling, treatment and disposal procedures will be implemented in relation to invasive species and noxious weeds. Route-wide measures will also be implemented to promote bio-security and reduce the risk that invasive non-native species and diseases are spread as a consequence of the Scheme. Further details are provided in the CoCP.

7 Air quality

- 7.1.1 General control measures relating to management of air quality during construction are provided in Section 7 of the CoCP.
- 7.1.2 Contractors will be required to manage dust, air pollution, odour and exhaust emissions during the construction works in accordance with Best Practicable Means (BPM) and refer to current publications on 'best practice'⁴.

7.2 Sensitive receptors

- 7.2.1 The Contractor's working methods will have due regard to local sensitive receptors where there may be impacts due to dust emissions from construction works and exhaust emissions of air pollutants from construction traffic vehicles travelling to and from construction areas.

⁴ Guidance on the assessment of dust from construction and demolition: Institute of Air Quality Management, February 2014

- 7.2.2 For air quality, relevant sensitive receptors include locations where there are residential properties, other types of property where there is human exposure over extended periods, for example hospitals and schools, and locations where there are designated ecological sites with sensitive vegetation. The potential impacts are considered in terms of dust soiling on people and property; human health effects of dust and air pollutant emissions; and effects of dust deposition on vegetation.
- 7.2.3 The locations of these receptors have been classified as 'low', 'medium' and 'high' risk using the Institute of Air Quality Management (IAQM) methodology⁵, in relation to emissions of dust from construction and demolition activities. Sensitive receptors are located within 20m of the site boundary and of dust generating activities along certain sections of the route. In the Curzon Street station area, these are mainly at New Technology Institute (NTI) Birmingham, Birmingham School of Acting, and residential properties around Masshouse Lane and Bordesley Street.
- 7.2.4 Receptors potentially affected by emissions from anticipated construction traffic are mainly along Vauxhall Road, Curzon Street, Masshouse Lane, Bordesley Street and New Bartholomew Street and potentially the proposed Eastside Locks development.

7.3 Local control measures

- 7.3.1 All the relevant methods outlined within the CoCP will be applied to control and manage potential air quality effects. These methods are considered to be sufficiently effective within areas in and around those listed in Section 7.2. Measures can include; planning the site layout; provision of dust suppression measures in all areas of the construction sites that are likely to generate dust; measures to keep roads, accesses and vehicles clean; and the enclosure, shielding or provision of filters on plant likely to generate excessive quantities of dust beyond the site boundaries. Specific measures for each site should be developed with regard to the particular activity being undertaken in proximity to sensitive receptors.
- 7.3.2 Dust suppression measures and works screening will be subject to approval in accordance with Schedule 17 of the Act. Further measures are detailed within Section 7 of the CoCP.
- 7.3.3 HS2 has set emission requirements and targets for the engines of Contractor cars, vans, and heavy road vehicles. These have been developed for the whole route and are categorised as follows: London Low Emission Zone, Clean Air Zone and Rest of Route. For BCC the relevant category of vehicle emission standard is the Rest of Route. There are requirements for heavy road vehicles to be powered by EURO VI (or lower) engines and for cars and vans to be Euro 6 diesel and Euro 4 petrol from 2020⁶. There are also targets for the use of Ultra Low Emission Vehicles.
- 7.3.4 HS2 has also set requirements for Non-Road Mobile Machinery (NRMM) (i.e. stationary plant and off road vehicles). These have been developed for the whole route and are

⁵ Guidance on the assessment of dust from construction and demolition: Institute of Air Quality Management, February 2014

⁶ Euro standards for heavy vehicles are given in terms of roman numerals. Euro standards for light vehicles are given in terms of numerical values and different Euro standards apply for petrol and diesel vehicles.

categorised as follows: Central Activity Zone, Rest of Greater London and Rest of Country. For BCC the relevant category of NRMM emission standard is the Rest of Country within which the requirement is for NRMM to be powered by Euro stage IIIB^[1] from 2017 and from EU stage IV from 2020⁷. Further details on emission standards are given in HS2 Information Paper E31: Air Quality.

7.4 Monitoring procedures

- 7.4.1 An inspection and monitoring programme will be implemented by the Contractor to assess the effectiveness of the control measures as outlined in section 7.3 of the CoCP. In BCC, the monitoring procedures may include continuous automatic monitoring of airborne dust, including the setting a relevant site action level for dust (defined as a dust measurement threshold above which investigation will be required). The monitoring being undertaken by HS2 supplements existing air quality monitoring which is part of national and local authority surveys.
- 7.4.2 The monitoring programme, including locations for dust monitoring is in the process of being agreed. Monthly reports of monitoring data from HS2 air quality surveys will be made publically available throughout construction. These can be found on the HS2 website at this address: <https://www.gov.uk/government/collections/monitoring-the-environmental-effects-of-hs2>.
- 7.4.3 The HS2 Air Quality Strategy gives further information on monitoring, including the process to determine where monitoring would be required and the monitoring methods to be used. This document is available at the same website address as referenced in paragraph above.

8 Cultural heritage

- 8.1.1 General control measures relating to cultural heritage are provided in Section 8 of the CoCP. Further control measures for cultural heritage are provided in the HS2 Phase One Heritage Memorandum within the Environmental Minimum Requirements and the specific documents identified therein.
- 8.1.2 A route-wide Generic Written Scheme of Investigation: Historic Environment Research and Delivery Strategy (GWSI:HERDS) has been prepared which sets out the general principles for design, evaluation, mitigation, analysis, reporting and archive deposition to be adopted for the design development and construction of the Scheme.
- 8.1.3 Works associated with the scheme will impact both designated and non-designated assets in BCC. Full details of the works to be undertaken (i.e. archaeological investigations and built heritage recording) will be determined during the detailed design and will be set out in Project Plans and Location-Specific Written Scheme of Investigations (LS-WSI).
- 8.1.4 Schedule 18 and Schedule 19 of the Act concern how legislation in respect of listed buildings and scheduled monuments respectively apply to the Phase One works.

^[1] IIIA for constant speed engines of any power, as there is no corresponding Stage IIIB or IV at EU level

⁷ Roman numerals are also used within the NRMM EU regulations but are not directly comparable to the road vehicle Euro standards

Schedule 20 to the Act provides a regime for the removal of human remains and related funerary monuments.

8.2 Sensitive receptors

8.2.1 Details of all designated and non-designated heritage assets within 500m of the land required, temporarily or permanently, for the construction of the scheme are listed in Volume 5 of the ES and relevant SES and AP amendments (Appendices Map Series CH-02).

8.2.2 Contractors will have due regard for the following designated heritage assets:

- Grade I listed British Rail Goods Office – the former Curzon Street station building, including the balustrade stone wall;
- Grade II listed Fox and Grapes Public House;
- Grade II listed Woodman Public House;
- Grade II listed Moor Street station;
- Grade II Listed 1838 railway bridge into Curzon Street over the Digbeth Branch Canal;
- Park Street Gardens burial site; and
- Grade II Listed Lawley Street railway viaduct

8.3 Local control measures

8.3.1 Where practicable, construction methodologies will be required to reduce the impacts on heritage assets. The CoCP sets out the provisions that will be adopted to control those effects, including the use of appropriate equipment and methods to limit ground disturbance and settlement followed by monitoring, protection and remediation. A programme of settlement monitoring and the implementation of avoidance measures where appropriate will be undertaken by the Contractor. Detailed provisions with regard to settlement and listed buildings are outlined in the Settlement Policy / HS2 Information Paper: C3 Ground Settlement.

8.3.2 Those listed buildings to be demolished, altered or relocated are named in table 1 of Schedule 18 of the Act and are the subject of Heritage Agreements with BCC and Historic England. These agreements require details of works concerning each of the listed buildings to be submitted to BCC for approval, and Historic England for consultation where applicable.

8.3.3 In addition, those listed buildings which may require works to maintain or restore their character, or for the affixing of monitoring apparatus are named in Table 2 of Schedule 18 of the Act. Listed buildings named in Table 2 are also covered by a Heritage Agreement with BCC, which sets out arrangements for obtaining approvals for protective or monitoring works to these buildings.

8.3.4 Where practicable, below ground assets will be preserved in situ beneath mitigation earthworks through the adoption of appropriate design measures.

- 8.3.5 Where practicable, construction methodologies will reduce the impacts on buried and upstanding remains.
- 8.3.6 The programme of archaeological and built heritage works will be undertaken by a specialist Contractor appointed by the Nominated Undertaker prior to and during, the construction period in accordance with the provisions of the LS-WSI for archaeology and built heritage.
- 8.3.7 Construction of Phase One of HS2 will require a range of activities which will involve ground excavation. Such works will have a direct physical impact on the disused burial ground at Park Street Gardens, requiring the removal of human remains and associated burial monuments. All human remains affected by HS2 works will be treated with due dignity, respect and care. Any impact caused by Phase One works on human remains and associated monuments is an emotive and complex matter and HS2 Ltd recognise their duty to address the concerns of individuals and communities.
- 8.3.8 Schedule 20 'Burial Grounds' to the Act provides a regime for the removal of human remains and related funerary monuments. The Schedule disapplies existing legislation in relation to burial grounds, human remains and monuments to deceased persons to enable works authorised by the Act to be carried out. The disapplication is conditional on those remains being removed and dealt with in accordance with the requirements of Schedule 20.

8.4 Monitoring

- 8.4.1 Appropriate monitoring of heritage will be undertaken as necessary, as detailed within Section 8.4 of the CoCP.

9 Ecology

- 9.1.1 General control measures relating to ecology are provided in Section 9 of the CoCP.

- 9.1.2 The Nominated Undertaker and its Contractors will develop the detailed Environmental Management Plans, taking into account this LEMP and the Environmental Minimum Requirements. The detailed Environmental Management Plans will remain confidential due to contractual agreements. However, certain plans, such as the SSMPs, will be discussed with the relevant environmental bodies and NE.

9.2 Sensitive receptors

- 9.2.1 The Contractor will be made aware of the following locations designated for nature conservation that require specific protection consideration, which are located within or adjacent to the scheme as per this LEMP boundary (some of which are shown within the Volume 5 map books of the ES and relevant SES and AP amendments).

- Digbeth Branch Canal Site of Local Importance for Nature Conservation (SLINC), which is within the land required for the scheme and is to be bridged over by Curzon Street No.3 Viaduct; and
- River Rea and adjoining land SLINC – the SLINC is of importance as a corridor that facilitates species dispersal between isolated areas of semi natural habitat. A small part of this SLINC is located adjacent to the land required along the

A4540 Lawley Middleway.

9.2.2 Sensitive habitat receptors outside of designated sites are displayed within the following series of Volume 5 maps of the main ES and relevant SES and AP amendments (EC-01-68b to EC-01-70). These include:

- scattered broad-leaved trees and small areas of secondary woodland that have established near the Digbeth Branch Canal; and
- a large number of buildings (some derelict) and built structures and wasteland habitats (some of which have recently been regenerated), which are an important urban biodiversity resource and may attract rare species such as black redstart.

9.2.3 Key protected or important species known to occur in the vicinity of the works are:

- birds;
- aquatic macro-invertebrates (including a caddisfly *Cyrnus flavidus*).

9.2.4 The Contractor should be aware of the potential presence of legally notifiable non-native invasive species within or in the vicinity of land required for the Scheme, including:

- Japanese Knotweed

9.2.5 Further information on designated sites and legally protected species occurring in this area can be found within Volumes 2 and 5 of the main ES and relevant SES and AP amendments.

9.2.6 Contractors will check whether any protected species licences are required prior to work commencing or where such licences have been obtained, to ensure compliance with the requirements of the licence.

9.2.7 All actions required to comply with licences will be undertaken by suitably qualified specialist ecologists licensed to undertake the work.

9.3 Local control measures

9.3.1 The standard ecological issues and associated control measures outlined in **Table 1** are of particular relevance to this area.

Table 1: Standard ecological issues and control measures relevant to this area

Species/ species group	Issue	Standard control measure
Designated nature conservation sites	There are two SLINCs which are located either wholly or partly within or otherwise adjacent to the land required.	Measures to reduce habitat loss should be included in planning of construction works, such as avoiding siting temporary material stockpiles, construction materials and vehicle parking within designated sites.

Species/ species group	Issue	Standard control measure
		<p>Potentially hazardous materials should also be located away from designated sites and stored correctly.</p> <p>Specific measures for control of surface water and for air and water-borne pollution should also take account of the proximity of these designated sites.</p>
Breeding birds	<p>The nests, eggs and dependent young of all bird species are legally protected against being damaged, disturbed or taken.</p> <p>Suitable habitats for nesting birds is present throughout the area covered by this LEMP, in particular trees and buildings within the vicinity of Curzon Street station.</p>	<p>Habitat clearance should be conducted outside of the bird nesting season (March to August inclusive) where practicable.</p> <p>If habitat clearance is carried out during the bird nesting season then an appropriate Working Method Statement shall be completed in advance of clearance works commencing.</p>
Bats	<p>No bat roost has yet been confirmed within land required, although there is potential for them to occur in buildings and trees in the vicinity of Curzon Street station as well as in other locations within the land required.</p> <p>All UK bat species and their roosts (even if bats are not present) are fully protected under both UK and European legislation.</p>	<p>Adhere to requirements of licences and, where relevant, Ecology Site Management Plans.</p> <p>Adopt precautionary approach. Follow appropriate Working Method Statement for demolition of buildings and felling of trees.</p>
	<p>Caution is required to ensure that these roosts are not disturbed during works, including trees and buildings within the vicinity of Curzon Street station that have potential to support roosting bats.</p>	<p>Where practicable, undertake activities causing disturbance during seasonal periods when bats are likely to be absent.</p> <p>Ensure lighting is directed away from known roosts.</p> <p>Reduce night time working in close proximity to retained roosts.</p> <p>Where practicable, temporary structures will be erected to screen the entrances/exits of retained roosts from construction areas.</p>
Aquatic macro-invertebrates	<p>Works associated with the Scheme are in close proximity to the Digbeth Branch Canal which supports a diverse aquatic macro-invertebrate assemblage, which includes a county notable caddisfly <i>Cyrnus flavidus</i>.</p>	<p>Part of the monitoring strategy for watercourses, informed by work carried out for the Environmental Statements and for Water Framework Directive assessments, is to include a plan for monitoring pre, during and post construction where aquatic species are identified</p>

Species/ species group	Issue	Standard control measure
		<p>as sensitive receptors. These monitoring plans will be agreed by the Environment Agency. Local control measures will include protection of aquatic species, where necessary.</p> <p>Moving fish will be undertaken in accordance with the HS2 organisational fish permit.</p>
Invasive plants	<p>There is a risk of work sites and adjacent land supporting invasive non-native species (INNS), as defined in Schedule 9 of the Wildlife and Countryside Act 1981 (as amended), in particular Japanese knotweed.</p> <p>INNS have been already recorded along some parts of the Scheme through previous survey work</p>	<p>All land required for the works and immediately adjacent land (where practicable) shall be surveyed for the presence of INNS, with a focus on high-risk species.</p> <p>A Biosecurity Management Plan shall be produced in advance of works commencing, where required.</p>
General	Unexpected discovery of legally protected species during works.	<p>There will be a procedure to follow in the unexpected event that protected species are identified during construction. This will include seeking appropriate licences and consulting with Natural England.</p> <p>Unexpected finds of great crested newts or badgers are covered by the organisational licences and works must be in accordance with those licences.</p>

9.3.2 Further information on the control of ecological impacts is provided in HS2 Information Paper E2: Ecological Impact, Section 9 of the CoCP, and in Technical Note: Ecological principles of mitigation within Volume 5 of the main ES (identified within the SMR Addendum (Volume 5: Appendix CT-001-000/2)).

9.4 Monitoring

9.4.1 Contractors will be required to undertake appropriate monitoring of the consequences of construction works on ecological resources and of the effectiveness of the management measures designed to control ecological effects, as detailed within Section 9.3 of the CoCP.

10 Ground settlement

10.1.1 General control measures relating to ground settlement are provided in Section 10 of the CoCP. Specific measures to reduce and repair settlement and requirements with

regard to assessment, surveys and monitoring are contained in the Settlement Policy / HS2 Information Paper C3: Ground Settlement.

- 10.1.2 Requirements for monitoring will be confirmed by the settlement report prepared during the detailed design stage. Where determined as necessary, monitoring will be undertaken on selected adjacent buildings, structures and the conventional railway tracks. Baseline readings will be taken prior to the commencement of excavation.
- 10.1.3 The monitoring strategy, methodology and programme, including the choice and location of monitoring equipment, will be discussed and agreed with the local authorities and land/building owners prior to commencement of construction.
- 10.1.4 Where significant building movement is predicted to be caused by excavation induced ground movements, ground treatment/improvement techniques might be required to ensure that if ground movement occurs, it stays within agreed and acceptable limits thereby limiting the impacts on buildings.
- 10.1.5 Monitoring may be required where existing sensitive buildings/structures/utilities are in close proximity to the planned excavation works. An assessment of the sensitivity of each building/structure/utility in close proximity to the excavation works will be carried out at the detailed design stage. This will then inform the design/specification of the monitoring system for that building/structure/utility and will also inform the design of any movement mitigation works if these are deemed necessary by the designer.
- 10.1.6 Prior to the commencement of construction, structural surveys and condition/defect surveys will be commissioned where structures are at likely risk of potentially damaging settlements.

11 Land quality

- 11.1.1 Further land quality study work including intrusive ground investigation (where needed) and analysis will be conducted prior to construction in order to confirm areas of suspected land contamination within the Scheme for the area. Contaminated sites beyond the Scheme will be considered only in terms of its potential impact on the Scheme. For the purposes of this LEMP it is assumed that no new land quality constraints will be identified during these pre-construction surveys. If new constraints are identified then the LEMP would be updated accordingly. No contaminated sites (in accordance with the meaning defined in Part 2a of the Environmental Protection Act, 1990) have been formally identified by the Regulator (in accordance with and the Contaminated Land (England) Regulations 2000) within the Scheme.
- 11.1.2 General control measures relating to land quality are provided in Section 11 of the CoCP.

11.2 Potential contamination sources and sensitive receptors

- 11.2.1 The following land on the route of the Scheme with potentially contaminative existing or historical uses has been identified as a possible contaminative risk to the Scheme works:
 - Former Curzon Street goods station/tanks and associated made ground (LQ-01-

070, F6 and G6);

- Former printing works – Phoenix Foundry (iron) (LQ-01-070, E6);
- Disused tank (slurry filled) at Proof House Business Park (LQ-01-070, F6);
- Former railway landuse (LQ-01-070, G6);
- Former oil depot including tanks (LQ-01-070, F6); and
- Park Street Gardens as a disused 19th century cemetery (LQ-01-070, E6).

11.2.2 With regard to the above identified contaminative risks, the lead Contractor will have due regard to the following sensitive receptors:

- people, including residents in existing properties, schools, users of public open space (e.g. Eastside City park), local employees, construction and/or maintenance workers;
- controlled waters, including groundwaters in the Bromsgrove Sandstone (a Principal aquifer), and superficial sand and gravel deposits (Secondary A aquifer) (deep piled foundations as required for Curzon Street station and Curzon Street No. 3 viaduct could create a potential pathway for contaminants to enter the groundwater environment);
- surface water, including the Digbeth Branch Canal; and
- the built environment, including buildings, property and underground structures and services including Severn Trent utilities combined sewer network.

11.3 Local control measures

11.3.1 Site investigations, including intrusive ground investigations are to be undertaken to confirm areas of potential contamination within the Scheme. Following which conceptual ground models, risk assessments and a remedial strategies will be prepared, as needed. Consultation with BCC and the Environment Agency will take place during the formulation of the remediation strategies, which will include measures to be taken if unexpected contamination is encountered as outlined in Section 11 of the CoCP.

11.3.2 Contaminated soils excavated or contaminated groundwater encountered from the sites are to be separated from other materials and, wherever reasonably practicable, will be treated as necessary to remove, neutralise or otherwise, reduce the contaminative risk. Where practical, material will be reused within the Scheme where it is needed and suitable for use. Treatment techniques are likely to include stabilisation methods, soil washing and appropriately permitted bio-remediation to remove oil contaminants. Contaminated soil disposed off-site will be taken to a soil treatment facility, another construction site (for licensed treatment, as necessary, and reuse) or an appropriately permitted landfill site.

11.3.3 There are no known/identified landfill sites in the area west of Curzon Street No. 3 Viaduct, although contamination from sources other than landfill may be present due

to the industrial history of the area. Should the ground investigation discover contaminated materials within the area required for constructions in these locations, it will be excavated, then treated and re-used, or removed, as appropriate. In addition ground (landfill) gas and/or leachate control systems will be constructed where necessary to manage ingress to the Scheme or control migration pathways external to the works where pathways have been created or adversely affected by the construction.

11.3.4 Similar measures will be undertaken at other sites where contaminated soils or groundwater are identified during the investigation and / or construction processes.

11.4 Minerals

11.4.1 Not applicable in Curzon Street

12 Landscape and visual

12.1.1 General control measures relating to landscape and visual effects are provided in Section 12 of the CoCP.

12.2 Sensitive (significantly affected) receptors

12.2.1 With reference to the set-up and location of temporary works, the lead Contractor will have due regard to limiting impacts of the character on the following landscape character areas (LCAs):

- Digbeth, Deritend and Bordesley High Streets and Warwick Bar Conservation Areas LCA; and
- Eastside LCA.

12.2.2 The lead Contractor will also have due regard to limiting visual intrusion on the following visual receptors (the word 'area' in this context means the study area of the HS2 main ES):

- residents in the area, including those along Barrack Street, Grosvenor Street, Vauxhall Road, Masshouse Lane, as well as residents of the Rotunda and Hotel La Tour and the proposed Eastside Locks and Typhoo Wharf developments;
- recreational users of Eastside City Park and Grand Union and Digbeth Branch Canals;
- people travelling through the area, including along A4540 Lawley Middleway and B4100 Moor Street Queensway, B4114 Park Street, the elevated pedestrian route adjacent to St Martins Queensway, and other urban roads within Birmingham; and
- employees in commercial units along Vauxhall Road.

12.2.3 The lead Contractor shall also discuss the possibility of advance planting off-site with landowners in the BCC area to further screen the locations listed above.

12.3 Local control measures

12.3.1 Measures that have been incorporated into the CoCP to avoid or reduce landscape and visual effects during construction include the following (see main ES Volume 5):

- maximise retention and protection of existing trees and vegetation where possible;
- use well-maintained hoardings and fencing;
- design lighting to avoid unnecessary intrusion onto adjacent buildings and other land uses;
- replacement of any trees felled as a consequence of construction works.
- undertake appropriate maintenance of planting and seeding works and implement of management measures throughout the construction period as landscape works are completed;
- position temporary bunds to be positioned to screen views to the route construction;
- identify specific locations for construction compound layouts and site access in relation to existing vegetation to reduce visual impacts where practicable; and
- identify specific locations of temporary material stockpiles to reduce visual impacts.

12.4 Trees

12.4.1 The Contractors will give consideration to where trees and other planting can be established early in the construction programme. For example, where trees require removal due to utility works early in the programme, replacement trees will be provided at the earliest possible opportunity, where reasonably practicable. The Nominated Undertaker will ensure any early planting during construction is maintained to promote healthy growth.

12.4.2 Where practicable, the Contractor will carry out surveys and agree the details of tree retention and protection measures, in accordance with BS 5837:2012 Trees in relation to design, demolition and construction recommendations, with BCC, in advance of any works in the vicinity of trees.

12.5 Site buildings for office and welfare

12.5.1 Buildings will generally be of a temporary modular type; they will typically be multi-storey to maximise construction space and limit land take.

13 Noise and vibration

13.1.1 General control measures relating to noise and vibration are provided in Section 13 of the CoCP and additional information is provided in Information Paper E23: Control of

construction noise and vibration. The objective of the Noise and Vibration Local Environmental Management Plan will be to, as far as reasonably practicable, seek to control and limit noise and vibration levels so that affected properties and other sensitive receptors are protected from excessive noise and vibration levels associated with construction activities.

13.2 Sensitive receptors

- 13.2.1 Noise and vibration construction assessment locations, at sensitive residential and non-residential properties, are identified in the map series Sv-03 and within Volume 5: Sound, noise and vibration map book (ES 3.5.1.9.4). For further details of these receptors and the potential adverse construction noise and vibration impacts identified, refer to the ES and where relevant SES and AP amendments Volume 5: Appendix SV-003-026.
- 13.2.2 Noise insulation is being offered for qualifying buildings as defined in the noise insulation and temporary rehousing policy within HS2 Information Paper E23. Noise insulation or temporary rehousing will mitigate residents being significantly affected by levels of construction noise inside their dwellings.
- 13.2.3 Qualification for noise insulation and temporary re-housing will be identified. Qualifying buildings are being identified in the Birmingham area early enough so that noise insulation can be installed, or temporary rehousing provided, before the start of the works predicted to exceed noise insulation or temporary rehousing criteria.
- 13.2.4 The avoidance and mitigation measures in this area will avoid airborne construction noise adverse effects on the majority of residential receptors, communities and non-residential sensitive receptors. Non-residential sensitive receptors for which the ES, or subsequent SES and AP reports, have reported likely direct significant adverse effects from construction noise and/or vibration are located at:
- Professional Music Technology premises, A4540 Lawley Middleway;
 - Millennium Point, the Parkside Building (containing the Institute of Art and Design and the School of Media), proposed new University buildings and the hotel within the Eastside Locks mixed use development, north of Curzon Street;
 - Hotel La Tour, B4100 Moor Street Queensway;
 - Carrs Lane Church and St Michael's Church, Carrs Lane;
 - Taboo Cinema, Park Street; and
 - the Polish Centre, Bordesley Street.
- 13.2.5 Residential communities for which the ES, or subsequent SES and AP reports, have reported likely direct significant adverse effects from construction noise and/or vibration are located at:
- approximately 50 dwellings off Lawley Middleway, Vauxhall;
 - approximately 2 existing dwellings off Penn Street, Jennens Court student flats on Etna Street and the proposed Eastside Locks mixed use development off

Curzon Street; and

- approximately 15 dwellings on Bordesley Street and New Bartholomew Street, Digbeth.

13.3 Local control measures

13.3.1 Consents under section 61 of the Control of Pollution Act 1974 will be obtained for the construction works and applications will normally be made at least 28 days before the relevant work is due to start. The works will be carried out in accordance with the conditions of the consent. Furthermore, site specific measures will be identified by the works Contractor on a site-by-site and activity-by-activity basis and agreed with Birmingham City Council through the Section 61 process, as set out in the HS2 S61 guidance document.

13.3.2 Site specific best practicable means measures to control noise and vibration have been identified through the Parliamentary process and discussions with BCC, and are reflected in this document. Furthermore, site specific measures will be identified by the works Contractor on a site-by-site and activity-by-activity basis and agreed with BCC through the Section 61 process, As identified in the CoCP, examples of best practicable means measures that may be employed by the lead Contractor to control noise and vibration include:

- controlling noise and vibration at source - for example the selection of quiet and low vibration equipment, review of construction programme and methodology to consider quieter methods.
- arranging the layout of compounds to reduce noise impacts where construction compounds are in close proximity to noise sensitive receptors. This may include placing any stacked portacabins between noisy works and sensitive receptors; and
- controlling noise and vibration at source - additional height hoardings which may, on occasion, be used to control construction noise. These will be subject to approval in accordance with the requirements of Schedule 17 Part 1 of the Act

13.3.3 The following residential buildings were identified in the ES and/or subsequent SES and AP Reports as potentially experiencing construction noise levels higher than the noise insulation trigger levels as defined in the CoCP (Section 13) and are currently identified as qualifying for a noise insulation package as detailed within the noise insulation and temporary rehousing policy (to be issued):

- approximately 50 properties in the Lawley Middleway area;
- two existing properties off Penn Street in the vicinity of Curzon Street station;
- the Woodman Public House on Curzon Street; and
- the closest residential properties in the proposed Eastside Locks mixed use development. However, only limited details on the layout of the development are currently available, qualification will depend on the exact positioning of the

residential development.

- 13.3.4 Qualifying properties will be periodically reviewed, including following any material changes in the construction method and the local control measures and appointment of the works Contractor.

13.4 Monitoring

- 13.4.1 Monitoring, including real time noise and vibration monitoring, will be undertaken as is necessary to ensure and demonstrate compliance with all noise and vibration commitments and the requirements of the CoCP.

- 13.4.2 The Nominated Undertaker requires its Contractors to undertake and report such monitoring as is necessary to ensure and demonstrate compliance with all noise and vibration commitments and the requirements of the CoCP. As set out in section 4.3.10 of the CoCP, where the Nominated Undertaker's Contractors are monitoring noise, dust and air quality with equipment capable of streaming data in real time, this will be made available to BCC. In addition, monthly noise monitoring reports will be made publically available throughout construction. The monthly reports will include information such as measurement methodology and monitoring locations. These can be found on the HS2 website at this address: <https://www.gov.uk/government/collections/monitoring-the-environmental-effects-of-hs2>.

- 13.4.3 All sound and vibration monitoring equipment should hold a valid calibration certificate issued by either a United Kingdom Accreditation Service (UKAS) accredited calibration laboratory or equipment manufacturer.

14 Traffic and transport

- 14.1.1 Route-wide, local area and site specific traffic management measures will be implemented during the construction of the project on or adjacent to public roads, bridleways, footpaths and other Public rights of way (PRoW) affected by the Scheme as necessary. These measures are guided by Section 14 of the CoCP.

- 14.1.2 The CoCP sets out a number of measures to ensure the impacts from construction traffic on the local community are reduced by its Contractors where reasonably practicable:

- A Route-wide Traffic Management Plan (RTMP) setting out generic traffic management measures to be implemented during the construction of the project;
- The Local Traffic Management Plans (LTMP) will set out matters such as planned worksites, lorry routes and the programme of major traffic management measures expected to be necessary within particular areas along the route;
- Contractors will prepare site specific traffic management measures, which will be subject to consultation and, as necessary, consent;
- Contractors will prepare construction workforce travel plans with the aim of

encouraging the use of sustainable modes of transport to reduce the impact of workforce travel on local residents and businesses; and

- For road cleanliness Contractors will be required to use all reasonably practicable measures to avoid/limit and mitigate the deposition of mud and other debris on the highway.

14.1.3 HS2 will require its Contractors to undertake such appropriate monitoring as is necessary to ensure compliance with the requirements of the CoCP, and this will include the maintenance of records of traffic management measures installed.

14.1.4 Information relating to construction traffic is also provided in the following Information Papers:

- D11: Maintaining access to residential and commercial property during construction;
- E13: Management of traffic during construction; and
- E14: Highways and traffic during construction – legislative provisions
- E30: Vehicle flow management and safety requirements during construction.

14.2 Local control measures

Sensitive receptors

14.2.1 In relation to traffic and transport, key sensitive receptors will need to be considered when the Contractor develops the overall programme within the LTMP and the site specific traffic management schemes.

14.2.2 These requirements will be addressed appropriately through the development of the LTMPs or site specific measures and discussed at the Local Traffic Liaison Group meeting, established in accordance with the Code of Construction Practice and the Route-wide Traffic Management Plan.

14.2.3 In the BCC area these include local roads that are affected by the Scheme and include the following:

- the routes with the greatest pedestrian and non-motorised users usage, which were Fazeley Street to the west of Bartholomew Street, the B4114 Park Street to the south of Fazeley Street, and the footpath across Park Street Gardens between Fazeley Street and the B4114 Park Street;
- several advisory cycle routes on Curzon Street, Cardigan Street and New Canal Street, as well as a signed route on Fazeley Street, and off-road routes including the Digbeth Branch Canal and links to Birmingham city centre;
- the Digbeth Branch Canal, which forms the primary waterway passing through the study area. This links with the Birmingham and Fazeley Canal at Aston Junction and the Grand Union Canal. The tow path will be temporarily re-aligned parallel to the existing canal to allow construction of the bridge piers. The canal itself will have to be closed for short periods to allow installation of the bridge deck and beams;

- the closure of the B₄₁₁₄ Park Street will result in the re-routing of traffic in the peak hours. The majority of vehicles on the B₄₁₁₄ Park Street will re-route onto the A₄₅₄₀ Lawley Middleway and the B₄₁₀₀ Moor Street Queensway;
- the closure of the B₄₁₁₄ Park Street will result in seven bus routes (17, 58, 59, 60, 97, 900, 957) being diverted permanently via the B₄₁₀₀ Moor Street Queensway, and the relocation of two bus stops;
- access to the Birmingham Gun Barrel Proof House on Banbury Street;
- access to the Curzon Street Station building and the Woodman public house; and
- local roads that are affected by the Scheme.

14.2.4 Key footways and footpaths are in the following locations:

- Viaduct Street;
- footpath (informal trodden path) across the grassed area between Banbury Street and Bartholomew Street;
- Banbury Street;
- Bartholomew Street;
- Fazeley Street;
- B₄₁₁₄ Park Street; and
- the footpath across Park Street Gardens between Fazeley Street and the B₄₁₁₄ Park Street).

Site access

14.2.5 A number of vehicle access points to the construction sites will be required and so the construction vehicle movements will be spread over a number of roads within the area of the works. Highway access notifications and/or approvals will be undertaken in accordance with Schedule 4 of the Act.

14.2.6 Routes for construction traffic will be subject to approval of the relevant planning authority in accordance with the Schedule 17 of the Act when large goods vehicle movements exceed 24 single movements (12 two way movements) per day to and/or from a site.

14.2.7 Any permanent highway works outside the limits of deviation as outlined in the Act will be subject to normal Highways legislation and Highway Authority powers.

14.3 Works to the highway and access measures

14.3.1 Temporary and permanent road closures, overnight and at weekends, and diversions will be required. The scope is assumed as followings:

- the Digbeth Branch Canal, which forms the primary waterway passing through the study area. This links with the Birmingham and Fazeley Canal at Aston

Junction and the Grand Union Canal. The tow path will be temporarily re-aligned parallel to the existing canal to allow construction of the bridge piers. The canal itself will have to be closed for short periods to allow installation of the bridge deck and beams;

- the closure of the B₄₁₁₄ Park Street will result in the re-routeing of traffic in the peak hours. The majority of vehicles on the B₄₁₁₄ Park Street will re-route onto the A₄₅₄₀ Lawley Middleway and the B₄₁₀₀ Moor Street Queensway;
- the closure of the B₄₁₁₄ Park Street will result in seven bus routes (17, 58, 59, 60, 97, 900, 957) being diverted permanently via the B₄₁₀₀ Moor Street Queensway, and the relocation of two bus stops;
- access to the Birmingham Gun Barrel Proof House on Banbury Street; and
- access to the Curzon Street Station building and the Woodman public house.

14.3.2 Alternative routes for the following P_{RoW} will be required, namely:

- Banbury Street;
- Bartholomew Street;
- Fazeley Street;
- Park Street;
- Link between Fazeley Street and Park Street; and
- Link between Banbury Street and Bartholomew Street.

14.3.3 The following measures will reduce the impact of works to the highway:

- the A₄₅₄₀ Lawley Middleway will be kept open, although there will be temporary lane restrictions and short term night-time/weekend closures; and
- any diversions that are necessary will be kept to a minimum distance and duration

14.3.4 All temporary closures and diversions will be subject to submissions and notifications to the relevant highway authority.

14.4 Monitoring procedures

14.4.1 Each Contractor will be responsible for monitoring to ensure compliance with the relevant requirements of the RTMP, LTMP, the requirements of the provisions of the Act, assurances and undertakings, site specific drawings and site specific traffic requirements and conditions.

15 Waste and materials

15.1.1 All waste will be managed in accordance with the waste hierarchy which aims to reduce waste at source and to reduce the quantity that requires final disposal to landfill. This applies to excavated material arising on-site, which will be reused within the Scheme as far as reasonably practicable, as well as material from demolition and construction

activities. This approach is described in greater detail in HS2 Phase One Information Paper E3: Excavated Material and Waste Management and in Section 15 of the CoCP.

15.2 Local control measures

Testing and classification of materials

- 15.2.1 The 'basic characterisation'⁸ of excavated material will be determined by the Contractors to ascertain the potential for reuse, recycling, recovery or disposal to inert, non-hazardous or hazardous landfill.
- 15.2.2 A Materials Management Plan will be developed in accordance with the Definition of Waste: Development Industry Code of Practice⁹ to set out the processes to be adopted in respect of the reuse of excavated materials either on the Scheme or transferred to another development site.
- 15.2.3 In the event that excavated material is to be sent for disposal, which shall be the option of last resort, testing and classification will be undertaken by the Contractors in line with the Environment Agency's guidance. This includes:
- Waste Sampling and Testing for Disposal¹⁰; and
 - WM3 – Guidance on the classification and assessment of waste (1st edition 2015)¹¹.

Transport of waste and materials

- 15.2.4 Excavated material produced in BCC is likely to be surplus to the requirements of the Scheme. Surplus excavated material will be managed in accordance with the waste hierarchy as described above and the HS2 Excavated Materials Policy, which states:
- 15.2.5 *'Where it is not feasible or reasonably practicable to use excavated materials in the construction the Nominated Undertaker will minimise the quantity of excavated materials that are disposed of to landfill. This may include providing surplus materials for use in other local construction projects...'*
- 15.2.6 Opportunities for the off-site re-use of surplus excavated material will therefore be identified and utilised where reasonably practicable. Surplus excavated material will only be sent to landfill as an option of last resort. Further detail on the approach to the management of all excavated material may be found in the HS2 Phase One Information Paper E3: Excavated Material and Waste Management.
- 15.2.7 Excavated material from BCC will be transported by rail where reasonably practicable to do so. If rail transport is not reasonably practicable material will be transported by road.

⁸ Basic characterisation' refers to the characterisation of excavated material to help define the type of re-use for which it is suitable (e.g. DMRB soil classes). Characterisation of waste would include the allocation of an EWC code (in accordance with The List of Wastes (England) Regulations 2005 SI No. 895) and a detailed evaluation of the waste properties. The latter is based on a combination of the detailed knowledge of the source process and chemical testing.

⁹ CL:AIRE Definition of Waste: Development Industry Code of Practice, version 2, March 2011

¹⁰ Environment Agency (2013), *Waste Sampling and Testing for Disposal to Landfill, March 2013*.

¹¹ Environment Agency (2015), Technical Guidance WM3 – Guidance on the classification and assessment of waste (1st edition 2015) (1st Edition 2015).

16 Water resources and flood risk

16.1.1 General control measures relating to water resources and flood risk are provided in Section of the CoCP.

16.2 Sensitive receptors

16.2.1 The Contractor will have due regard to the following sensitive local water resource receptors:

- Local aquifers: including, Bromsgrove Sandstone (a Principal aquifer), and the Permeable Superficial and Arden Sandstones (Secondary A aquifers), along with the Mercia Mudstone Secondary B aquifer (Secondary A aquifer);
- Source protection zones (SPZs): There are 3 groundwater SPZs approximately 500m to 700m from the centreline of the route;
- Surface water features: Digbeth Branch Canal and The River Rea;
- Abstractions: Six licensed groundwater abstractions from the Bromsgrove Sandstone in the immediate vicinity; and
- Artificial water bodies: including, Digbeth Branch Canal.

16.2.2 The Contractor's pollution incident control management system will have due regard to the local flood risk sources (i.e. surface, artificial, groundwater and sewers) and key receptors and take into account any risk management or mitigation measures and the CoCP.

16.2.3 The Contractor will have due regard to the following local flood water receptors and their respective flood histories, as identified in

- surface water – the BCC Level 1 Strategic Flood Risk Assessment⁷ (SFRA) and its predecessors reports that the A4540, Lawley Middleway where the road passes under the existing railway bridge is susceptible to flooding; and
- sewers - the BCC Level 1 SFRA reports that sewer and surface water flooding locations correspond with the areas at risk of surface water flooding.

16.3 Potential sources of contamination

16.3.1 Potential sources of contamination are detailed within Section 11 of this LEMP.

16.4 Local control measures

16.4.1 Measures identified in Section 16 of the CoCP, including detailed method statements, will aim to reduce potential adverse effects on surface water or groundwater quality or flows associated with construction; this will include release to groundwater, watercourses or surface water sewers draining to the surrounding receptors.

16.4.2 As outlined in the CoCP, best practice measures will be used (e.g. through the use of silt traps and appropriate attenuation, if required) prior to the discharge of water to

watercourses, groundwater or surface water sewers, subject to obtaining the required permits or consents. This could apply to runoff from wheel washing facilities or from general construction activities. As noted in Section 11 of this document, a pollution incident management system will incorporate procedures for alerting relevant water supply companies and reducing impacts to public supply SPZs and local private abstractions in this area.

- 16.4.3 Where there is the possibility that work may affect aquifers, a groundwater monitoring plan will be implemented, as outlined in Section 16 of the CoCP.
- 16.4.4 A programme of groundwater and surface water monitoring will be undertaken prior to, during and following completion of the construction works. The monitoring programme scope and duration will be developed and agreed with the Environment Agency in consultation with relevant stakeholders as necessary (Lead Local Flood Authority (LLFAs) and Internal Drainage Board (IDBs)). A management strategy will also be agreed with the Environment Agency in consultation with relevant stakeholders that will cover any physical mitigation required for the protection of public water supply.
- 16.4.5 If dewatering from excavations is required, it will be carried out in consultation with the Environment Agency and will take into consideration risks posed to water quality or quantity.
- 16.4.6 If required, appropriate guidance will be adhered to, including the Piling and Preventative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution Prevention⁷. Groundwater and surface water monitoring plans will be prepared, where piling could result in below ground contamination.
- 16.4.7 Temporary excavated material stockpiles, construction compounds and site offices will be located outside of areas at risk of flooding where reasonably practicable, to avoid having an impact on the risk of flooding. Where construction compounds cannot be located outside of flood risk areas, there will be a site specific flood risk management plan prepared prior to construction to manage the potential risks. These plans will take account of the flood risk assessments produced for the ES and include any risk management or mitigation measures, if required.
- 16.4.8 Drainage from the works will be attenuated and discharged to watercourses or sewers, under agreement, at a controlled rate and, where required, with approval of the Environment Agency and, where appropriate, the drainage authority in accordance with Schedule 31 Part 5 of the Act.
- 16.4.9 Cuttings (both retained and open) in the area may need to be excavated below the natural water table, although this is uncertain in the absence of detailed ground investigation. The impact of both temporary and permanent dewatering will be re-assessed as more information becomes available and mitigation measures identified. Mitigation measures may include re-infiltration of abstracted groundwater, pumping to support sensitive features or the use of engineering control, such as grouting or secant piling to reduce the amount of water flowing from the aquifer.

⁷Environment Agency (2001), Piling and Preventative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution

- 16.4.10 Additional information, such as how the Scheme complies with the Water Framework Directive (WFD), as well as further provisions for engagement with stakeholders, monitoring and protection of local water resources are outlined in HS2 Information Paper E1: Control of Environmental Impacts and HS2 Information Paper E4: Water Resources and Flood Risk.

Appendix 1: Glossary of Terms

AP	Additional Provision
BCC	Birmingham City Council
BPM	Best Practicable Means

CFA	Community Forum Area
CoCP	Code of Construction Practice
Contractor	The Contractor on a construction site responsible for planning, managing and co-ordinating themselves and/or the works and all other contractors working on their site, or any other contractor directly employed by the Nominated Undertaker to undertake key construction works on site.
CoPA	Control of Pollution Act 1974
EMS	Environmental Management System
ES	Environmental Statement
HDV	Heavy Duty Vehicles
HGVs	Heavy Goods vehicles
HS2	High Speed 2
HS2 Ltd	High Speed Two Limited - is a company wholly owned by the Department for Transport, established in 2009 to develop plans for a new high speed network and present a route connecting London - West Midlands.
IAQM	Institute of Air Quality Management
IPs	Information Papers
LCAs	Landscape character areas
LEMP	Local Environmental Management Plan
LTMP	Local Traffic Management Plan
MMP	Materials management plan
NE	Natural England
Nominated Undertaker	The body or bodies appointed to implement the powers of the Act to construct and maintain the railway.

PRoW	Public Rights of Way
RRVs	Road Rail Vehicles
RTMP	Route-wide Traffic Management Plan
SBI	Site of Biological Importance
Scheme	The Scheme to which this CoCP relates is the high-speed railway between London - West Midlands. This is a high speed railway between London - West Midlands with a connection via the West Coast Main Line at conventional speeds to the North West and Scotland. It includes four high speed rail stations at London Euston, Old Oak Common (West London), Birmingham Airport (Birmingham Interchange) and Birmingham (Curzon Street).
Section 61	Section 61 of the Control of Pollution Act 1974 (which sets out procedures seeking and obtaining local authority consent to measures for the control of noise and vibration on construction sites).
SES	Supplementary Environmental Statement
SFRA	Strategic Flood Risk Assessment
SINC	Site of Importance for Nature Conservation
SLINC	Site of Local Importance for Nature Conservation
SLI	Site of Local Importance
SMI	Site of Metropolitan Importance
SPZ	Source protection zones

WSI	Written Scheme of Investigation
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Appendix 2: Worksite locations and boundaries

Work site locations and boundaries can be found on the following drawings:

Drawing number	Drawing title	Chainage
C224-ARP-EV-DPL-040-205142	Construction Phase	175+190-175+653

Appendix 3: Non-exhaustive list of Community Groups in Birmingham

(NB: This list is indicative and will subject to change as more information becomes available).

- Birmingham City Council;
- Local Members of Parliament
- Greater West Midlands Combined Authority;
- Greater Birmingham and Solihull LEP;
- Digbeth Residents Association;
- Heritage groups;
- Environmental groups;
- Transport for West Midlands;
- Curzon Forum;
- City Centre Partnership and Business Improvement Districts;
- Educational institutions;
- Landowners;
- Local residents;
- Residents, community associations and amenity groups;
- Emergency services;
- Local businesses;
- Representatives from local faith groups; and
- Public transport providers.

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