HS2

Local Environmental Management Plan – Birmingham City Council

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1. Introduction

1.1 Purpose

1.1.1 This Local Environmental Management plan (LEMP) sets out site specific control measures to be adopted by HS2 Contractors working within the Metropolitan Borough of the City of Birmingham (or the area administered by Birmingham City Council (BCC) excluding the area associated with the construction of Curzon Street Station where a separate LEMP has been produced. This LEMP builds upon but does not repeat the HS2 general environmental requirements set out in the Code of Construction Practice (CoCP) (available online at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/5935_92/Code_of_Construction_Practice.pdf).

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

1.1.3 For ease of reference the LEMP mirrors the topic headings in the CoCP

1.1.4 Information of relevance to the formation and development of this LEMP (as shown in figure 1) 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 LEMP.

1.1.5 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[1], which have informed its development. This LEMP may be subject to further refinement, amendment, and expansion as necessary as the project design progresses.

1.1.6 The Contractors will implement the requirements of the LEMPs and the CoCP through their own Environmental Management System (EMS), which is certified to BS EN ISO 14001.

1.1.7 The Nominated Undertaker (HS2 Ltd)[2] 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] 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.
[2] HS2 Ltd is the Nominated Undertaker. The two terms are used interchangeably throughout the LEMP.

1.1.8 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.

1.1.9 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 Forum members) is generated in any of the environmental topics as mentioned above. There are currently no such sites identified in BCC.

1.1.10 HS2 documents referenced within this LEMP can be found on the www.gov.uk website.

1.2 Area and Scope

1.1.11 Plans showing an overview of the local authority area covered by this LEMP is shown within the Environmental Statement (ES) maps – CT-05-135b to 142. This LEMP covers the area of the scheme from the eastern edge of Birmingham at the boundary with North Warwickshire, approximately where the B4118 Birmingham Road crosses the M6, and then along the River Tame valley to Birmingham city centre and finishes at St James' Place, to the east of the A4540 Lawley Middleway. The LEMP includes the area of the Washwood Heath depot, which lies approximately in the middle of the Birmingham section of the route, between the A4040 Bromford Lane and Stechford and Aston rail line (which is parallel to Aston Church Road at this point). This LEMP excludes the area covered by the Curzon Street LEMP which includes all works for the scheme west of St James' Place, in Birmingham city centre. The Curzon Street LEMP extends from the start of the 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 works on the A4540 Lawley Middleway Curzon Circle and Garrison Circus and the utility diversions around the proposed station site.

1.1.12 Construction worksites and areas required for construction works are shown within Volume 2 of the Main ES. The HS2 route in the BCC area is shown in the map in figure 2.

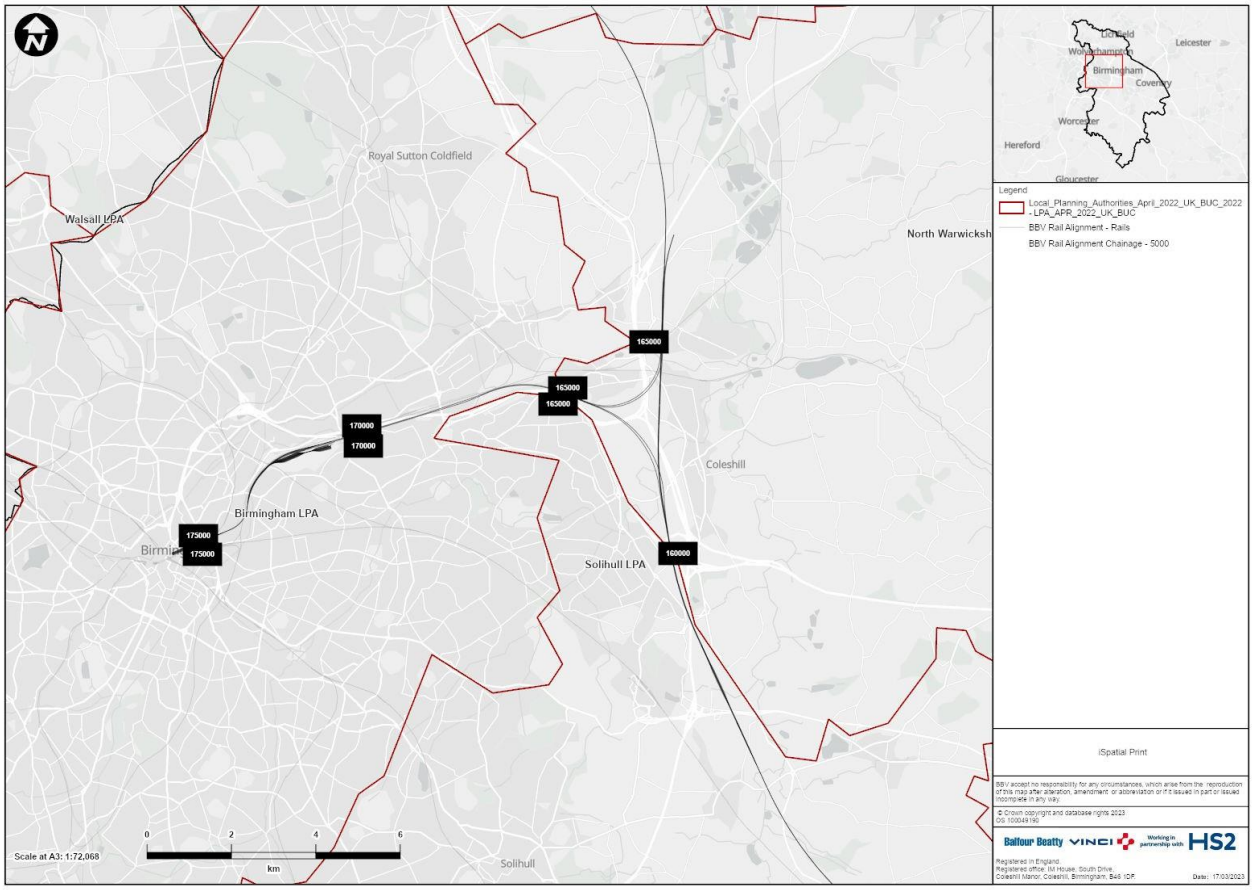

Figure 2: HS2 route in the Birmingham City Council area

1.1.13 It is anticipated that the following work activities will take place during core and non-core working hours (see section 5.2 or a description of non-core working hours activities) during the construction period 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.

1.1.14 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.

1.1.15 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 Projects, VINCI Construction UK Ltd, and VINCI Construction GeoInfrastructure. Notice to proceed with the construction of HS2 was given on the 15th of April 2020.

Early and advanced work included:

- Site inspections & preparations.
- Establishment of compounds (fencing, concrete slabs, office/welfare units, access points).
- Topsoil & subsoil stripping and stockpiling.
- Material stockpiling.
- Haul road construction.
- UXO surveys.
- Site drainage.
- Test piling.
- Traffic management; and
- Utility diversions.

From Q3 in 2021 work began on permanent works associated with the scheme.

1.1.16 Construction scope in these areas includes (activities and full explanations in appendix c):

- **Washwood Heath Section**

Already Completed Activities:

- Existing slab removal and crushing.
- Installation of concrete batching plant.
- Demolition of the A47 Common Lane Bridge.
- Removal of Invasive Species (Himalayan Balsam).
- Phase 1 Washwood Heath Brook Diversion.

Current and Upcoming Activities:

- Remediation Works.
- Earthworks and piling platform preparation.
- Bromford Tunnel Portal and Retained Cut.
- Phase 2 Washwood Heath Brooke Diversion.
- Dewatering.
- Finishing Works and Landscaping.

- **Saltley Section:**

Already Completed Activities:

- Existing slab removal & crushing.
- New Weir Construction (installation) along the Grand Union Canal and will involve sheet piling.

Current and Upcoming Activities:

- Non-intrusive Ground Investigation.
- Utilities Diversion, protection, and removal.
- Remediation Works.
- Piling platform preparation.
- Piling.
- Demolition – a new Aston Church Road overbridge and Saltley Viaduct will be constructed.
- Saltley Viaduct Pedestrian Temporary Ramp.
- River Rea Overflow Channel Permanent Diversion.

- **Curzon Section:**

Duddeston

Already Completed Activities:

- Removal of Japanese Knotweed.
- Substation Demolition to allow construction of Duddeston Junction Viaduct.

Current and Upcoming Activities:

- Non-intrusive Ground Investigation.
- Utilities Diversion, protection, and removal.
- Remediation Works.
- Piling Platform preparation.
- Piling.
- Sheet Piling.
- Pier Construction.
- Duddeston Junction Viaduct Construction.
- Duddeston Mill Road Underbridge Construction.
- Dewatering.
- Finishing Works and Landscaping.

Curzon No1 & No2:

Already Completed Activities:

- Piling Platform Preparation.
- Piling.
- Removal of Japanese Knotweed.
- West Midlands Fire Station works (building of carpark).

Current and Upcoming Activities:

- Non-intrusive Ground Investigation.
- Utilities diversion, protection & removal.
- Sheet Piling.
- Pier Construction.
- Dewatering.
- Curzon Street No 1 and 2 Viaduct Construction.

- Finishing Works and Landscaping.

Curzon 3

Already Completed Activities:

- Piling Platform Preparation.
- Piling.
- Sheet Piling.
- Pier Construction.
- Dewatering.

Current and Upcoming Activities:

- Non-intrusive Ground Investigation.
- Utilities Diversion, protection, and removal.
- Curzon Street no 3 Viaduct Construction.
- Installation of steel tripods.
- Lawley Middleway Viaduct Construction.
- Finishing works and Landscaping.

- **Bromford Tunnel Section:**

Bromford Tunnel is a twin-bored tunnel that will run underground from Water Orton to Washwood Heath a total length of 5.8 km. Two Tunnel Boring Machines (TBM) will be used to bore the tunnel. The tunnel is comprised of three construction sites: Bromford Tunnel East Portal, from where the TBMs will enter the ground; Bromford Tunnel Intermediate Shaft, a ventilation shaft that will allow air into the tunnel and an escape route in the event of emergencies; and Bromford Tunnel West Portal, where the TBMs will come out of the ground.

Activities already complete

Bromford Tunnel East Portal:

- Construction of the East Portal.
- Assembly, commissioning, and operation of the Tunnel Boring Machine No.1, which will be used to bore the first tunnel.
- Set up, installation and operation and maintenance of the Slurry Treatment Plant (STP) No.1, which is used to treat the slurry material that comes out of the TBM after digging and converts it into good quality soil for reuse within the project.

- Commissioning and operation of the generator farm, a series of very-low-emissions generators that will power the site and the critical functions of the TBMs and the STPs.

Bromford Intermediate Shaft:

- Construction of the Diaphragm Wall (D-Wall), the external walls of the shaft that will hold the soil around them to allow excavation to the required depth.
- Shaft excavation and concrete reinforcement of internal walls.
- Sealing of the shaft base, completing the whole depth of the shaft (permanent works).
- Commissioning and operation of a Water Treatment Plant to treat abstracted groundwater prior to discharge into sewer.

Current and upcoming activities

Bromford Tunnel East Portal:

- Construction of permanent structures such as aerodynamic structures.
- Assembly, commissioning, and operation of the Tunnel Boring Machine No. 2, which will be used to bore the second tunnel.
- Set up, commissioning and operation of the Slurry Treatment Plant (STP) No.2.

Bromford Intermediate Shaft:

- Construction of the headhouse that will sit on top of the ventilation shaft.
- Excavation of the caverns and addits that will connect the shaft with the two tunnels.
- Completion of the civil works within the shaft to comply with design and specifications.

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 within the BCC area. The measures described will be applied by the Nominated Undertaker and its Contractor 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 have developed 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.

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 and the Local Area Engagement Plan.

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 Effective preventative pest and vermin control and prompt treatment of any pest and vermin infestation, including arrangements for disposing of food waste or other attractive material. If infestation occurs, the Contractor will take action to eliminate the infestation and prevent further occurrence.

5.1.4 General control measures are detailed in sections 5.1.3 to 5.17 below.

5.1.5 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.

5.1.6 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.

5.1.7 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.

5.1.8 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.

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

5.2 Advanced Notice of Works

5.2.1 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.

5.3 Working Hours

5.3.1 The framework for seeking consents from BCC for working hours under Section 61 of the Control of Pollution Act 1974 is set out in the CoCP.

Core Working Hours

5.3.2 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.

5.3.3 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 consenting process with BCC. Please note that emergencies (not repairs and maintenance) may be undertaken outside core hours.

5.3.4 Certain work activities at specific locations within the local 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.
- Works on the classic railway track, signalling and other railway systems - installation and removal of temporary railway protection barriers in various locations where works are in close proximity to existing rail lines and various track removal and track replacement works on the existing Birmingham and Derby rail line.
- Subsurface tunnelling, excavations and civil engineering works associated with the incline to the tunnel and portals, where construction works and tunnel boring will likely take place 24hrs/day, 7 days a week.
- Elements of the construction of road and other bridges over the classic railway - installation of the viaduct deck at the sections of Duddeston Junction viaduct and Curzon Street no. 1 and no. 2 viaducts which cross the existing Duddeston Mill Road bridge, Birmingham and Derby rail line, River Rea, Viaduct Street, and the Birmingham and Bushbury rail line. In addition, some night-time working during short term rail or road possession periods may be required to demolish a number of existing bridges.
- Deliveries of large components, such as bridge beams, heavy plant, and equipment; and
- Setting up temporary vehicle and pedestrian diversions.

5.3.5 It is currently envisaged that a number of railway possessions (to be carried out during non-core hours) will be required for the following:

- Aston Church Road (o/b deck lift) – Winter 2024
- Duddeston Mill Road (u/b new layout commissioning) – Summer 2024
- Curzon 2 (Launching) – Summer 2025
- Duddeston Junction (Viaduct deck launchings) – From Summer 2025 to Summer 2026
- Saltley Viaduct (drive 1st span into position) – Summer 2025
- Saltley Viaduct (drive 2nd span into position) – Winter 2025
- Saltley Viaduct demolition – Winter 2025
- Aston Church Road (demolition of old bridge) – Winter 2026

5.3.6 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.

5.3.7 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.

5.3.8 Road Rail Vehicles (RRV's[3]) 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.

5.4 Construction Site Layout and Good Housekeeping

5.4.1 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.

5.5 Site Lighting

5.5.1 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 in Schedule 17 Part 1 of the Act.

5.5.2 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, were reasonably practicable.

5.6 Worksite Security

5.6.1 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.

5.6.2 A security plan will be required for each site and where appropriate, security fencing 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.

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

5.6.3 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. Plant 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. 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.

5.6.4 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.

5.7 Hoardings, Fencing and Screening

5.7.1 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.

5.7.2 The hording at WWH along Drews Lane is 3.6m. This is the height hording along SL4. We have implemented hording along all our site boundaries where it is possible. On average standard hording is 2.4m across SL4.

5.7.3 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.

5.7.4 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.

5.8 Unexploded Ordnance

5.8.1 There are a number of moderate risks in terms of unexploded ordnance identified. The main risk areas are associated with the following design elements.

- Bromford Tunnel.

- Washwood Heath Retaining Cut; and
- Saltley Embankment and Viaduct.

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

5.9 Electromagnetic Interference

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

5.10 Temporary Living Accommodation

5.10.1 Not applicable to the area covered by this LEMP.

5.11 Occupational Healthcare

5.11.1 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.

5.12 Clearance and Re-instatement of Sites on Completion

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

5.13 Pollution Incident Control and Emergency Preparedness

5.13.1 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.

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

5.14 Local Control Measures

5.14.1 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 to reduce the risk of pollution.

- Spill kits will be provided where appropriate 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 will be used adjacent to watercourses.
- Implementing a surface water or groundwater monitoring plan, particularly in relation to works which may affect aquifers, for example, excavations and piling; and
- Work that might have an impact on groundwater quality will need formal approval by the EA via Schedule 33 Part 5 in the Act.

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

5.15 Fire Prevention and Control

5.15.1 The Contractors will ensure all construction sites and associated accommodation and welfare facilities will have in place appropriate plans and management controls to prevent fires. See also section 5.13 of the CoCP.

5.16 Extreme Weather Events

5.16.1 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.

5.17 Carbon Management Plans

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

5.18 Interface Management Between Adjacent Construction Areas

5.18.1 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 General

6.1.1 General control measures relating to agriculture, forestry and soils are provided in Section 6 of the CoCP.

6.2 Sensitive Receptors

6.2.1 Approximately 11ha of agricultural land will lie within the construction boundary in the BCC area, adjacent to the B4118 Birmingham Road which is in equestrian usage; 100% of this land is of grade 3a best and most versatile quality agriculture land. A further 38 ha of land within the construction boundary is located within the Park Hall nature reserve and as such is classified as non-agricultural, although supporting some agricultural management practices.

6.2.2 Approximately 10ha of the agricultural land will be required permanently for the scheme, with the remaining 1ha restored to agriculture.

6.2.3 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.

6.2.4 Some land uses situated adjacent to the construction boundary may be considered sensitive receptors. In this particular case only one agricultural land user, namely an equestrian interest, may persist, and be considered sensitive. This includes interruptions to access to land and buildings and the maintenance of appropriate stock-proof fencing. This applies to approximately 4ha of land adjacent to the construction boundary in the BCC area, and to approximately 1 ha that is to be restored to an agricultural condition.

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 proposed use of conserved soils for land restoration. There is a commitment in the main ES for the reuse of soils on the scheme.

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 biosecurity and minimise the risk that invasive non-native species and diseases are spread as a consequence of the scheme. Further details are provided in the CoCP.

6.3.5 Measures for the protection of farm infrastructure and crops will be subject to liaison with landowners, occupiers, and land agents.

6.3.6 Following consultation with individual farmers, arrangements are being made with the farmer and documented in Farmers and Growers' packs. Details on the scope of these packs is included in the HS2 Guide for Farmers and Growers.

7. Air Quality

7.1 General

7.1.1 General control measures relating to air quality are provided in Section 7 of the CoCP.

The BCC area is largely in an Air Quality Management Area (AQMA).

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.

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 have been 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) methodology, 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 BCC area, these can include properties at the B4118 Birmingham Road, Blenheim Way, Spitfire Way, Javelin Avenue, Farnborough Road, Cadbury Drive, Drews Lane, Common Lane, Coronation Road, Warren Road, Leigh Road, and Washwood Heath Road.

7.2.4 Receptors potentially affected by emissions from anticipated construction traffic are mainly along Bromford Lane and Aston Church Road. The locations to be considered

[4] Guidance on the assessment of dust from construction and demolition, Institute of Air Quality Management, February 2014. Air Quality Monitoring in the Vicinity of Demolition and Construction Sites IAQM, November 2012. The Control of Dust and Emissions during Demolition and Construction GLA Supplementary Planning Guidance Document, July 2014.

in the Contractor's working methods were assessed to have a low to high risk of dust impacts without mitigation measures.

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 2020[5]. 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 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[6] from 2017 and from EU stage IV from 2020[7]. The HS2 Information Paper E31: Air Quality gives further information on the HS2 emission standards.

[5] 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.
[6] 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.

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 Dust monitoring is undertaken for medium to high-risk sites. Monthly reports of monitoring data from HS2 air quality surveys are made publicly 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 General

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. It is anticipated that during the MWCC construction activities only additional land acquired will require further archaeological surveys, as all required archaeological surveys within the LLAU have been completed by the EWC contractor. 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 to the Act concern how legislation in respect of listed buildings and scheduled monuments respectively apply to the Phase One works. 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:

- The Museums Trust Collection – this asset has an assurance to mitigate potential damage to the Museum's storage facility from potential noise and vibration from the works.

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 regarding settlement and listed buildings are outlined in the Settlement Policy / HS2 Information Paper: C3 Ground Settlement.

8.3.2 The listed building to be demolished, was named in Table 1 of Schedule 18 of the Act[8] and was the subject of Heritage Agreements with BCC and Historic England. These agreements require details of works concerning the listed building was 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[9]. 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.

8.4 Monitoring

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

[8] https://www.legislation.gov.uk/ukpga/2017/7/schedule/18
[9] https://www.legislation.gov.uk/ukpga/2017/7/schedule/18

9. Ecology

9.1 General

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

9.2 Sensitive Receptors

9.2.1 The Contractor will be made aware of the following locations designated for nature conservation, which are located within or adjacent to the scheme in the BCC area (some of which are shown within the Volume 5 map books of the ES and relevant SES and AP amendments):

- Water Orton Sidings Site of Local Importance for Nature Conservation (SLINC) - located to the north of the M6 and immediately east of the railway triangle north of Park Hall SINC. The SLINC is designated for its calcareous grassland and the diverse assemblage of plants and terrestrial invertebrates and is located partially within the land required for the construction of the scheme.
- Park Hall Site of Importance for Nature Conservations (SINC) - located immediately to the north of the M6 and west of Water Orton. The SINC is designated for a wide range of habitats and species, including its broadleaved semi-natural woodland (including one area listed on the ancient woodland inventory) and is located partially within the land required for the construction of the scheme.
- River Tame SLINC - flows through the area to the east of Birmingham city centre, between the M6 and the Birmingham and Derby rail line. The SLINC is designated for its watercourse habitats and sections are located within the land required for the construction of the scheme, including where it flows through Park Hall SINC.
- Land at Warren Road SLINC – the SLINC is of value for the acid grassland that it supports. A small part of land is located partially within land adjacent to the southwest of the land required for the scheme.
- 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 within the land required for the construction of the Curzon Street No.1 and No.2 viaducts.
- Grand Union Canal SLINC – the SLINC is designated for its function in facilitating species dispersal between isolated, semi-natural habitats and because of the wetland plants and birds it supports. The route will cross the Grand Union Canal at the Saltley Canal underbridge; and

- New Saltley Pool SLINC – the SLINC contains two pools, neutral grassland and wet grassland and is located adjacent to land required for the construction of the Washwood Heath rail overbridge.

9.2.2 Sensitive habitat receptors outside of designated sites are displayed within following series of Volume 5 maps of the main ES and relevant SES and AP amendments (EC-01-66b to EC-01-70). These include:

- Two tributaries of the River Tame: Plants Brook and Dunlop Channel.
- Swamp vegetation within the railway triangle to the north of Park Hall SINC; and
- Hedgerows, grassland, scrub, and tall ruderal vegetation in various locations.

9.2.3 Key protected or important species, species groups or assemblages known to occur in the vicinity of the land required are:

- Birds.
- Vascular plants (including dittander).
- Diving beetles (including *Hydroglyphus geminus, Hygrotus confluens, Hygrotus impressopunctatus, Hygrotus nigrolineatus, Ilybius guttiger, Ilybius quadriguttatus and Rhantus suturalis*).
- Water vole.
- Terrestrial invertebrates.
- Otter.
- Bats.
- Great crested newt.
- Common amphibians (common toad and smooth newt).
- Grass snake.
- Badger; and
- Fish assemblages.

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.
- Himalayan balsam; and
- Water fern.

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 minimise the loss of sensitive habitat receptors wherever possible. Translocation of soils from ancient woodland sites will be undertaken following the design specifications set out in the relevant Ecology Site Management Plans.

9.2.7 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.

9.2.8 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

Receptor	Issue	Standard control measure
Designated Nature Conservation Sites	There are two SSSIs and seven LWSs which are located either wholly or partly within, or otherwise adjacent to the scheme.	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. Potentially hazardous materials should also be located away from designated sites and stored correctly. 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.
Ancient Woodland	The scheme will result in the loss of ancient woodland	Measures to reduce habitat loss should be included in planning of construction works. Translocation of ancient woodland soils and vegetation will be undertaken where appropriate, following the design specification set out in the relevant Ecology Site Management Plans.
Bats	All UK bat species and their roosts (even if bats are not present) are fully protected under both UK and European legislation.	Adhere to requirements of licenses and, where relevant, Ecology Site Management Plans.

	The scheme will result in the loss of confirmed bat roosts in trees and buildings.	
Breeding Birds	The nests and eggs of all bird species are legally protected against being damaged or taken. Some species are specially protected against disturbance whilst nesting. The scheme will result in the loss of nesting bird habitat, including vegetation, buildings, and structures	Habitat clearance should be conducted outside of the bird nesting season (March to August inclusive) where practicable. 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.
Great Crested Newt	Great crested newts and their habitats are fully protected under both UK and European legislation. The scheme will result in the loss of water bodies and terrestrial habitat used by great crested newts.	Adhere to requirements of HS2 great crested newt organisational licence, method statements, and Ecology Site Management Plans.
Common Amphibians	The scheme will result in the loss of water bodies supporting common amphibians. Clearance during peak periods of occupation could result in the loss of these populations. Pond, swamp, and marshy grassland habitats will be lost at Park Hall SINC and Watson Road, which support common amphibians.	Drain down of ponds should be conducted outside of the main breeding period for amphibians (March to August) where practicable. If drain down of ponds is carried out during the main breeding period, then an appropriate Working Method Statement shall be completed in advance of drain down works commencing.
Badger	Badgers and their sets are protected under the Protection of Badger Act 1992. Badgers are widespread, and the scheme will result in the loss of badger habitat, including setts.	Adhere to the requirements of the HS2 badger organisational licence, method statements, and Ecology Site Management Plans. Avoid badger setts to reduce disturbance where they do not need to be closed. Badgers are a mobile species and can create new setts in a short period of time. Contractors to be aware of the potential for badger setts to be present within or adjacent to work sites – works are to be stopped if potential sets are identified and an ecologist contacted for advice.

Otter	Otters are fully protected under both UK and European legislation. All major watercourses crossed by the scheme have otters present or are potentially suitable to support them. It is not expected that there will be any fragmentation of otter movement routes, however, there is the potential for disturbance of otter territory during construction along some parts of the scheme.	Adhere to requirements of licenses and, where relevant, Ecology Site Management Plans. Ensure that routes of safe passage for otters are maintained throughout construction at crossing points. Use fencing as required to prevent otters being forced over existing road crossings. Reduce light spill onto watercourses.
Water vole	Water voles are fully protected under UK legislation. The scheme will result in the loss of confirmed and potential water vole habitat.	An appropriate Working Method Statement should be produced in advance of works commencing, where relevant. Adhere to the requirements of translocation license, where relevant. Contractors are to be aware of the potential for water voles to be present within or adjacent to work sites – works to be stopped if water vole evidence is identified and an ecologist contacted for advice.
Invasive plants	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. INNS have been recorded along some parts of the scheme through previous survey work	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. A Biosecurity Management Plan shall be produced in advance of works commencing, where required.
Vascular Plants	Notable plant species occur within the land required, in particular dittander (which is nationally scarce).	Adhere to the requirements of method statements for the translocation of dittander to safe adjacent receptor sites at Park Hall SINC.
Aquatic wildlife such as fish, eels, and aquatic invertebrates	There are watercourses within the vicinity of the works, some of which have been identified as supporting aquatic wildlife which could be at risk of direct impacts during	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 as sensitive receptors. These monitoring plans will be agreed by the Environment Agency. Local control

	channel works or indirectly from contamination. Works associated with the scheme will result in the loss of 17 ponds and approximately 265m of ditch habitat within Park Hall SINC which support seven county rare species (*Hydroglyphus geminus, Hygrotus confluens, Hygrotus impressopunctatus, Hygrotus nigrolineatus, Ilybius guttiger, Ilybius quadriguttatus and Rhantus suturalis)*	measures will include protection of aquatic species, where necessary. Moving fish will be undertaken in accordance with the necessary Environment Agency authorisation.
General	Unexpected discovery of legally protected species during works	There will be a procedure to follow in the unexpected event that protected species identified during construction. This will include seeking appropriate licenses and consulting with Natural England. Unexpected finds of great crested newts or badgers are covered by the organisational licenses and works must be in accordance with those licenses.

9.3.1 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.

Publicly available data on this section can also be found online at: https://www.data.gov.uk/dataset/1800a83a-1fc4-49e1-bac3-d970caf4451b/phase-one-ecological-survey-data

10. Ground Settlement

10.1 General

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 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 General

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 that could be disturbed or encountered during construction of the scheme. Contaminated sites beyond the scheme will be considered only in terms of its potential impact on the scheme. Pre-construction surveys have commenced and have been substantially completed with no new land quality constraints identified in any case. In the event that new constraints are identified by the final pre-construction surveys then the LEMP will be updated accordingly. 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 list shows land with potentially contaminative (existing or historical) uses that has been identified as a possible contaminative risk to HS2 works within the BCC area:

- Former landfill, currently a civic amenity and waste treatment site, Hayward Industrial Estate – manufacturing and automotive works, FloGas - Former landfill, Tuffuels Parcels Express depot – former landfill, MV Sport and Leisure – former landfill, British Car Auctions – former landfill.
- Space4 – former landfill, Small light industrial/commercial units – former landfill, Guhring Precision Tools – former abattoir, Dura Automotive Body and Glass Systems Ltd – former railway station and abattoir.
- UK Mail depot – former filling station/refuse heaps/gravel pits/historical landfill (land rear of Freight Rover Works), Derelict land, former LDV site – former refuse heaps/gravel pits/historical landfill (land rear of Freight Rover Works).
- Various class 2 industrial units – former refuse heaps, Unspecified yard vehicle storage – former refuse heap.

- Alston Works/former Midland Railway Carriage and Wagon Works, including tanks, pits, in filled and made ground, CEMEX – in filled ground including various tanks, Vauxhall Lookers Garage – former gas works, Gas works, Hampton by Hilton Birmingham Star City Hotel – former gas works, Former sewerage farm; Nechells Power Station (including tank); electricity works, Former refuse destructor, Undeveloped land, former railway land use, Undeveloped land – former gas works, Class 1 unit at Saltley Business Park – former pits, Class 2 units at Saltley Business Park – former pit/reservoir, Former Saltley Works (Railway Carriage and Wagon), including tanks, Undeveloped land – former gas works, Network Park Industrial Estate -former gas works, TNT express – former gas works, Former Corporation Yard, J. Goley Salvage (car recycling/scrapyard), Sports ground, former quarry; Railway deposits/sidings/tanks/waste heap/former quarry/pits/refuse heap/slurry heap, Freightliner Ltd container terminal – former oil tanks/petrol depot, Old manufacturing unit (possibly small scale iron works); and
- Various class 2 industrial units/uses.

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

- People, including residents in existing properties, local employees, construction and/or maintenance workers.
- Surface water, including the River Tame, River Rea, overflow channel, Grand Union Canal, a pond, and Digbeth Branch Canal.
- Controlled waters, including groundwaters in the Bromsgrove Sandstone (a Principal aquifer), and superficial sand and gravel deposits (Secondary A aquifer), and Mercia Mudstone (Secondary B aquifer); 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 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 bioremediation 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 Excavation works through Freight Rover Works' historic landfill, the Castle Bromwich Waste Treatment Site landfill and Tameside Drive-Langley Drive landfill in the BCC area will be required. Should the ground investigation discover contaminated materials within the area required to construct the cutting in these locations, it will be excavated, then treated and re-used, or removed, as appropriate. In addition, m 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 There is no record of mining or quarrying activities or identified active mining or mineral sites or Preferred Areas (PA) within the area.

12. Landscape and Visual

12.1 General

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 Contractor will have due regard to limiting impacts of the character on the following landscape character areas (LCAs):

- Cole Valley LCA.
- River Tame Floodplain LCA.
- Farnborough Road Paddock and Open Space LCA.
- Castle Bromwich Business Park LCA.
- Washwood Heath Rail Corridor LCA; and
- Tyseley Industrial and Commercial LCA.

12.2.2 The Contractor will also have due regard to limiting visual intrusion on the following visual receptors:

- Residents in the area, including those along the B4118 Birmingham Road, Javelin Avenue, Farnborough Road, Cadbury Drive, Drews Lane, Winnington Road, Ward End Road, Washwood Heath Road, Coronation Road, Common Lane, Warren Road, Leigh Road Alum Rock Road, Great Francis Street, Hindlow Close, Northumberland Street, Felsted Way, Barrack Street and Vauxhall Road.
- Nechells Industrial and Commercial LCA.
- Recreational users, including users of Farnborough Fields, Farnborough Road Park, Ward End Park, and Mount Street Park; and
- People travelling through the area along roads, including Bromford Lane, Drews Lane, and Washwood Heath Road, and the Birmingham and Derby rail line.

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.
- Trees intended to be retained which may be accidentally felled or die as a consequence of construction works will be replaced.
- Appropriate maintenance of planting and seeding works and implementation of management measures, to continue through the construction period as landscape works are completed.
- Temporary bunds to be positioned to screen views to the route construction.
- Involvement in the specific location of construction compound layouts and site access in relation to existing vegetation to reduce visual impacts where practicable; and
- The specific location of temporary material stockpiles to reduce visual impacts.

12.4 Trees

12.4.1 Where reasonably practicable the contractors will give consideration to where trees and other potential planting could be established early in the construction programme.

12.4.2 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.

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 General

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-003-025 and 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 At the time of the ES, there were numerous residential and non-residential properties located in proximity to the proposed works sites which without appropriate mitigation are likely to experience adverse effects from construction noise and/or vibration.

13.2.4 The 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.

13.3 Local Control Measures

13.3.1 The Code of Construction Practice (CoCP) sets out the general control measures to be implemented and the standards to which the nominated undertaker and its contractors will comply in delivering the scheme. Its aim is to ensure that likely

significant construction effects that are reported in the Environmental Statement will either be avoided or mitigated. BBV and its supply chain will adopt appropriate measures to design and construct the scheme so that noise and vibration from the construction does not give rise to adverse effects, as identified in the HS2 Phase One Environmental Statement (ES). Where reasonably practicable, environmental mitigation will be integrated within the design and implemented during the works.

13.3.2 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 BCC through the Section 61 process, as set out in the HS2 S61 guidance document.

13.3.3 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 Contractor on a site-by-site and activity-by-activity basis and agreed with BCC through the Section 61 process.

13.3.4 As identified in the ES, 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
- 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.

13.3.5 Where, despite the implementation of BPM, the noise exposure exceeds the criteria defined in the CoCP (section 13), the Contractor may offer noise insulation or ultimately temporary re-housing. Eligibility for noise insulation or temporary rehousing is assessed by BBV in advance of the works in accordance with the HS2 information paper E23 control of construction noise and vibration.

13.3.6 Local control measures will be periodically reviewed, including following any material changes in the proposed construction method and appointment of the works Contractor.

13.4 Monitoring

13.4.1 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. HS2 instructed all MWCCs and MWSCs to use their supplied baseline data to inform acoustic design of stationary systems. The supplied baseline data from HS2 is currently being used by Contractors to inform their acoustic assessments for Stationary Systems.

13.4.2 Prior to the construction works commencing, monitoring equipment will be installed to establish the baseline noise and vibration data.

13.4.3 Monitoring will continue throughout the construction period 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 if a written request is made. In addition, monthly noise monitoring reports will be made publicly 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.

13.4.4 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 General

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 scheme.
- 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.
- E14: Highways and traffic during construction – legislative provisions; and
- 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 though 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:

- Pedestrians and cyclists crossing Tameside Drive and Langley Drive.
- The scheme crosses 19 roadside footways, six footpaths and one PRoW in the area. The roadside footways include Aston Church Road, the B4114 Saltley Viaduct, and the B4132 Duddeston Mill Road in the Washwood Heath area. The one PRoW connects Common Lane to Bromford Island, crossing the Washwood Heath depot site, however, is not currently accessible and will be stopped up permanently as part of the scheme.
- In the vicinity of the Washwood Heath depot there is a network of advisory cycle routes, including Drews Lane and Bromford Road, and an off-road cycle route around Bromford Island, which connects to the north; and
- Local roads that are affected by the scheme, as detailed with ES CFA25-26 reports Chapter 14, SES and APs.

Site Access

14.2.4 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.

14.2.5 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.

14.2.6 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 follows:

- 14 months complete closure of Aston Church Road with a signed diversion route to construct a replacement Aston Church Road Overbridge.
- Approximately 6 months complete closure on the B4132 Duddeston Mill Road and A47 Heartlands Parkway with a signed diversion route; and
- 18 months complete closure of the B4114 Saltley Viaduct with a signed diversion route.

14.3.2 In addition to the above, highways will also be permanently realigned as part of the final scheme as they pass under or over the route of HS2.

14.3.3 Alternative routes for the following PRoW will be required, namely:

- Aston Church Road.
- Grand Union Canal.
- Saltley Viaduct.
- Duddeston Mill Road.
- Viaduct Street.
- St James Place.
- Lawley Middleway; and
- Digbeth Branch Canal Towpath.

14.3.4 Minor utilities works in the area may require lane or road closures, but these will only be for a short period.

14.3.5 The roads listed may require road closure. Subcontractors will plan their work to avoid road closures but where this is not practicable, relevant consents will be applied for.

14.3.6 A haul road will be created running east to west from the B4118 Birmingham Road/Water Orton Road through the Park Hall nature reserve to Tameside Drive and the A452 Chester Road.

14.3.7 Construction works will require temporary traffic management measures for the replacement of the B4118 Water Orton Road overbridge.

14.3.8 Civil engineering works will necessitate temporary rail track possessions in this area. Key classic railway systems work in this section of the route will take approximately six months to complete and will include minor modification of the existing equipment to accommodate the construction of Park Hall retained fill, Langley Hill embankment and balancing ponds adjacent to the Birmingham to Derby rail line. Disruption to rail users will be minimised by limiting possessions, were reasonably practicable, to overnight, off-peak or weekend periods. Where necessary, rail replacement services will be provided.

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

14.3.10 EWC temporary and permanent road closures will be consulted with the main works contractor.

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 General

15.1.1 General control measures relating to waste and materials are provided in Section 15 of the CoCP.

15.1.2 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'[10] 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 Practice[11] 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 Disposal[12]; and
- WM3 – Guidance on the classification and assessment of waste (Version 1.2 2021)[13].

[10] 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 WM3) 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.
[11] CL:AIRE Definition of Waste Development Industry Code of Practice, Version 2, March 2011.
[12] Environment Agency (2013), Waste Sampling and Testing for Disposal to Landfill, March 2013.
[13] Environment Agency (2021) Technical Guidance WM3 – Guidance on the classification and assessment of waste (Version 1.2 2021)

15.3 Transport of Waste and Materials

15.3.1 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:

15.3.2 '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.'

15.3.3 Opportunities for the off-site re-use of surplus excavated material will therefore be identified and utilised were 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.

15.3.4 Excavated material from BCC will be transported by rail were reasonably practicable. If rail transport is not reasonably practicable material will be transported by road.

16. Water Resources and Flood Risk

16.1 General

16.1.1 General control measures relating to water resources and flood risk are provided in Section 16 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:
  Alluvium (Secondary A), Head Deposits (Secondary A), River Terrace Deposits (Secondary A), Glacial Sands and Gravels (Secondary A), Glacial Deposits (Secondary undifferentiated), Arden Sandstone (Secondary A), Mercia Mudstone (Secondary B).

- Surface water features:
  River Tame, River Rea, River Rea Overflow channel, Washwood Heath Brook, Dunlop Carrier channel, Plants Brook, Grand Union Canal, and ponds located within and outside of the land required for the construction of the scheme.

- Water dependent habitats:
  Rivers Tame and Rea, River Rea Overflow channel, Plants Brook, Dunlop Carrier channel and Washwood Heath Brook, Park Hall nature reserve (ponds and marshy grassland) and Castle Bromwich Sidings LWS.

- Abstractions:
  One licensed abstraction Aggregate Industries Limited, Bordesley Green Road; and Artificial water bodies: Grand Union canal.

16.2.2 The Contractor's pollution incident control plan 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 proposed risk management or mitigation measures.

16.2.3 The Contractor will have due regard to the following areas within Environment Agency Flood Zones 2 and 3, which are at risk of river flooding:

- The north-east extent of Gravelly Industrial Park.
- The east boundary of Hurricane Park.

- The central section of Bromford Lane/A47 roundabout.
- Sections of the Birmingham to Derby rail line where the railway runs adjacent to the M6.
- East of the River Rea, approximately 200m downstream of Duddeston Mill Road.
- Birmingham and Derby rail line; and
- Grand Union Canal.

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 from sewers to the surrounding receptors.

16.4.2 As outlined in the CoCP, BPM 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 run off from wheel washing facilities or from general construction activities. As noted in Section 5.12 of this document, a pollution incident control 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 BCC for ordinary watercourses that 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 Prevention. 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 affecting the level of 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 main ES and include any proposed 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 33 Part 5 of the Act.

16.4.9 In certain instances, the excavated retained cut is at a level below the natural ground water table. Mitigation, where necessary with continuous piles or grouting, will ensure that any changes to local groundwater levels and flow are minimised through the use of cut-offs and applying relatively short time-scales for dewatering.

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 A: Glossary of terms

Abbreviation	Full phrase
AP	Additional Provision
AQMA	Air Quality Management Area
BCC	Birmingham City Council
CFA	Community Forum Area
CoCP	Control of Pollution Act 1974
Contractor	The Contractor on a construction site responsible for planning, managing, and coordinating 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	Safe Urban Driving Certificate of Professional Competence
EA	Environment Agency
EMR	Environmental Minimum Requirements set out environmental and sustainability commitments to be complied with by HS2 and its contractors. These form part of the High-Speed Rail (London –West Midlands) Act 2017 and are legally binding
EMS	Environmental Management System
ES	Environmental Statement
GWSI: HERDS	Generic Written Scheme of Investigation: Historic Environment Research and Delivery Strategy
HDV	Heavy Duty Vehicle
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 proposed route connecting London - West Midlands.
IAQM	Institute of Air Quality Management
IP	Information Paper
LCAs	Landscape Character Areas
LEMP	Local Environmental Management Plan
LLFA	Lead Local Flood Authority
LSWSI	Location Specific Written Scheme of Investigation
LTMP	Local Traffic Management Plan
MMP	Materials Management Plan

MWCC	Main Works Civils Contractor
MWSC	Main Works Sub-Contractor
NE	Natural England
NBRI	New Build Recovery Index
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
PWMS	Precautionary Working Method Statement
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 Northwest and Scotland and to the Channel Tunnel via HS1. 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 Zone
WFD	Water Framework Directive
WSI	Written Scheme of Investigation
WWH	Washwood Heath

Appendix B: Non-exhaustive list of community groups in BCC

- Birmingham City Council.
- Local Members of Parliament.
- HS2 Community Forums.
- Castle Bromwich & Bromford (CFA 25).
- Washwood Heath & Curzon Street (CFA 26).
- Canal and River Trust.
- Highways England.
- Network Rail.
- Birmingham and Black Country Wildlife Trust.
- Transport for West Midlands.
- Eastside Forum.
- Millennium Point.
- Jaguar Land Rover.
- Landowners/occupiers directly affected by the scheme.
- Local residents.
- Residents and community associations.
- Amenity groups.
- Emergency services.
- Representatives from local faith groups; and
- Local businesses.

NB: This list is not exhaustive and may be subject to change as more information becomes available.

Appendix C: Construction Activities

Construction Activity	Full Explanation
Existing slab removal and crushing	Pre-existing concrete slab present across the site will be broken, crushed, and turned into fresh concrete to be used on site.
Installation of concrete batching plant	A concrete batching plant will be installed on the Washwood Heath site to supply the sublot (Curzon Street – Washwood Heath) with concrete. This will remain operational for the duration of the works.
Removal of invasive specie	Himalayan Balsam (invasive species) is required to be removed along the Washwood Heath Brook prior to this watercourse being diverted to minimise the risk of invasive species spread. Japanese knotweed and Himalayan Balsam will also be removed from the River Tame where the 'new' Washwood Heath Brook will discharge.
Phase 1 Washwood Heath Brook diversion	The Washwood Heath Brook will be realigned in two phases. The pre-existing brook passed through the trace; therefore, this realignment was required to facilitate the construction of HS2. The first phase of this diversion involves a half width channel, culverted section, and new outfall structure into the River Tame. The 'new' Washwood Heath brook will mimic the length and style of the pre-existing brook, however, will be built to hold a larger capacity of water protecting the local community in the event of a 1 in 1000-year flood event. During the construction of the first phase of the brook diversion sheet piles, earthworks and dewatering activities will be undertaken to facilitate the in-situ concrete to be poured and, pre-cast concrete culvert sections to be installed
Remediation works	Areas of ground contamination will be removed, and material 'cleaned' on site via a bespoke remediation strategy before being reinstated. This will minimise the risk of contamination compromising deep foundations that will be installed. Remediation works will involve drilling boreholes to monitor groundwater quality and testing the quality of materials prior to reinstatement
Earthworks and piling platform preparation	Due to a disparity in height of site pre-existing land will be removed, moved by wagons, and reinstated across site to ensure an even surface level. Material of an appropriate specification will then be installed in areas where deep foundation works will be undertaken.
Bromford tunnel portal and retained cut	The end destination for the tunnel boring machines (TBM) that will drill the Bromford tunnels is the Bromford tunnel West Portal, located at Washwood Heath. The portal structure comprises of two diaphragm walls which will support HS2 as it exists the tunnel and moves up to ground level. A retained cut structure will then continue to support the line as it moves towards Saltley. The retained cut structure will comprise of two retaining walls supported by two forms of deep foundations (secant piles and sheet piled walls)
Phase 2 Washwood Heath Brook diversion	The Washwood Heath Brook will be realigned in two phases. The second phase of this diversion involves increasing the width of the open channel section of the watercourse diversion. This will involve deep excavations and in-situ concrete pours to complete the walls of the structure
Dewatering	Groundwater encountered during deep foundation works (for example piling) will be pumped out of the excavation to ensure a dry working area can be maintained

Finishing works and landscaping	After the completion of the civil structures the works area will be landscaped, and key details of the final design will be installed.
Existing slab removal and crushing	Pre-existing concrete slab present across the site will be broken, crushed, and turned into fresh concrete to be used on site.
Non-intrusive ground investigation	Scanning of the ground throughout the works to monitor underground services and utilities
Utilities diversion, protection & removal	Utilities will be diverted protect and removed throughout the works to enable HS2 to be constructed.
Piling platform preparation	Pre-existing land is removed and reinstated with material of an appropriate specification to ensure deep foundation works can be undertaken.
Piling	A method of cylindrical deep foundations used to support the structures we are constructing. Piling will be used as a deep foundation method to support the following structures that will be constructed: Grand Union Canal Underbridge, Saltley Viaduct, Aston Church Road Overbridge, and Saltley retained fill. These structures will be supported by concrete piles which have been drilled metres into the ground
Sheet piling	A method of piling which involves driving flat steel plates into the ground to reduce groundwater ingress into an area when excavating into the water table. Sheet piles will be installed where deep excavations are required and removed once the works are complete
Saltley Viaduct Pedestrian Temporary Ramp	A temporary ramp will be installed within close proximity to allow pedestrians to walk past Saltley viaduct while this is being demolished and reduce the need for an increased walking distances during the works.
River Rea Overflow Channel Permanent Diversion	The River Rea Overflow Channel currently passes though the trace of HS2 and will therefore be diverted. Sheet piling, excavation and in-situ concrete pours will be involved to construct the new channel for the existing watercourse to travel through. Himalayan Balsam (invasive species) will also be removed along the existing channel to minimise the risk of spread when working within close proximity to the watercourse.
Removal of Japanese Knotweed	Japanese Knotweed (invasive species) is required to be removed along the River Rea to allow deep foundations to be installed where this is located.
Substation demolition	A pre-existing substation located on site is required to be demolished to allow the construction of Duddeston Junction Viaduct.
Pier construction	Concrete 'v' shaped piers will hold up the base/deck of the viaduct. These will be cast on site by pouring concrete into 'v' shaped moulds which have been filled with metal reinforcement
Duddeston Junction Viaduct construction	The main sections of the viaduct will be constructed from reinforced concrete. This viaduct will span the existing rail network and the River Rea and will be poured on site. Finishing works including parapets will then be installed
Duddeston Mill Road Underbridge construction	Duddeston Mill Road Underbridge will be installed to enable existing rail network tracks to be relocated. This will then enable HS2 to install deep foundations and piers in between the existing rail network lines to support Duddeston Junction Viaduct as it passes over the pre-existing rail network. This will be constructed off-line and pushed across Duddeston Mill Road during a weekend possession. This will minimise the time required to close the existing rail network and road. Finishing works including handrails will then be installed.

Curzon Street No 1 viaduct construction	The main sections of the viaduct will be constructed from reinforced concrete. These will be poured on site. Finishing works including parapets will then be installed.
Curzon Street No 2 viaduct construction	The viaduct that passes over the existing network rail lines (Lawley Middleway Viaduct) will be constructed on site and launched over the existing railway during a nighttime/weekend possession. Constructing this 150m long steel arch structure off-line and then launching it will minimise the time required for the existing railway to be closed and reduce the impact this has on passengers. This will be known as the 'Bellingham Bridge'.
Installation of steel tripods	steel tripod structures will be assembled on site to enable to viaduct to pass over the Digbeth Branch Canal
Lawley Middleway Viaduct construction	The viaduct that passes over Lawley Middleway will be constructed on site and launched over the road to minimise the length of time road closures are required for