

Local Environmental Management Plan – London Borough of Hammersmith and Fulham

P1S-HS2-EV-PLN-S000-000008

Revision	Author	Reviewed by	Approved by	Date approved	Reason for revision
P01		P. Sevilla	J. Bletcher	December 2022	Transfer to new template for publication

Security classification: OFFICIAL

Handling Instructions: enter handling instructions here

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1 Introduction

- 1.1.1 This Local Environmental Management Plan (LEMP) sets out site specific control measures to be adopted by the HS2 Contractors working within the London Borough of Hammersmith and Fulham (LBHF). This LEMP builds upon, but does not repeat, the HS2 general environmental requirements set out in the Control of Construction Practice (CoCP) (available online at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/593592/Code_of_Construction_Practice.pdf).
- 1.1.2 This LEMP contains control measures and standards to be implemented within LBHF. 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, air quality monitoring, noise monitoring, ground settlement or the results of ground investigations detailing levels of contamination (where present) and the nature of the ground;
 - Feedback on pertinent information from on-going engagement; and
 - Results of petitions of the Parliamentary process which have resulted in amendments to the mitigation measures contained within the CoCP.



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

- 1.1.5 This LEMP has been prepared taking into account findings of the Environmental Statement (ES), Supplementary Environment Statement (SES) and Additional Provision 2 ES (AP2 ES), SES2 and AP3 ES, , and SES3 and AP4 ES where relevant. It has evolved during the Parliamentary process and engagement with the Local Authority and other stakeholders, such as members of the National Environment Forum, which have informed its development. This LEMP will be subject to further refinement, amendment and expansion as necessary as the project design progresses.
- 1.1.6 The HS2 Contractors will implement the requirements of the LEMPs and the CoCP through their own Environmental Management System (EMS), which will be certified to BS EN ISO 14001.
- 1.1.7 The nominated undertaker (HS2 Ltd)¹ and its Contractors will continue to engage with the local stakeholders. This will take the form of engagement events which will be carried out to introduce and brief the communities on local environmental information, management and mitigation as detailed within this document.
- 1.1.8 The HS2 Environmental Memorandum identifies key worksites along the route of HS2 Phase One that are environmentally sensitive in terms of nature conservation, terrestrial and aquatic ecology, water resources, geomorphology, recreation and amenity, landscape, public open space and agricultural land. The criteria for inclusion are ‘worksites where a key significant impact (that has been agreed with

¹HS2 Ltd is the nominated undertaker. The two terms are used interchangeably throughout this LEMP.

the HS2 National Environment Forum² members) is generated in any of the environmental topics' as mentioned above. There are currently no such sites identified in Hammersmith and Fulham.

- 1.1.9 The controls within this LEMP, as with those in the CoCP, are in line with HS2's Safe at Heart health and safety brand. Safe at Heart seeks to ensure that health and safety are at the heart of everything that we do including in the design, construction and operation of the scheme. This aim stretches beyond the scheme itself, through instruments such as this LEMP, and into the communities along the scheme to ensure that we protect their health, safety and wellbeing.
- 1.1.10 HS2 documents referenced within this LEMP can be found on the www.gov.uk website.

1.2 Area and scope

- 1.2.1 Plans showing an overview of the local authority area covered by this LEMP are shown within the Environmental Statement (ES) maps (CFA4 Volume 2 Map Books ES Ref 3.2.2.4) – CT-05-008, CT-05-008-L1, CT-05-009a, CT-05-009a-L1 and CT-05-009a-R1.

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

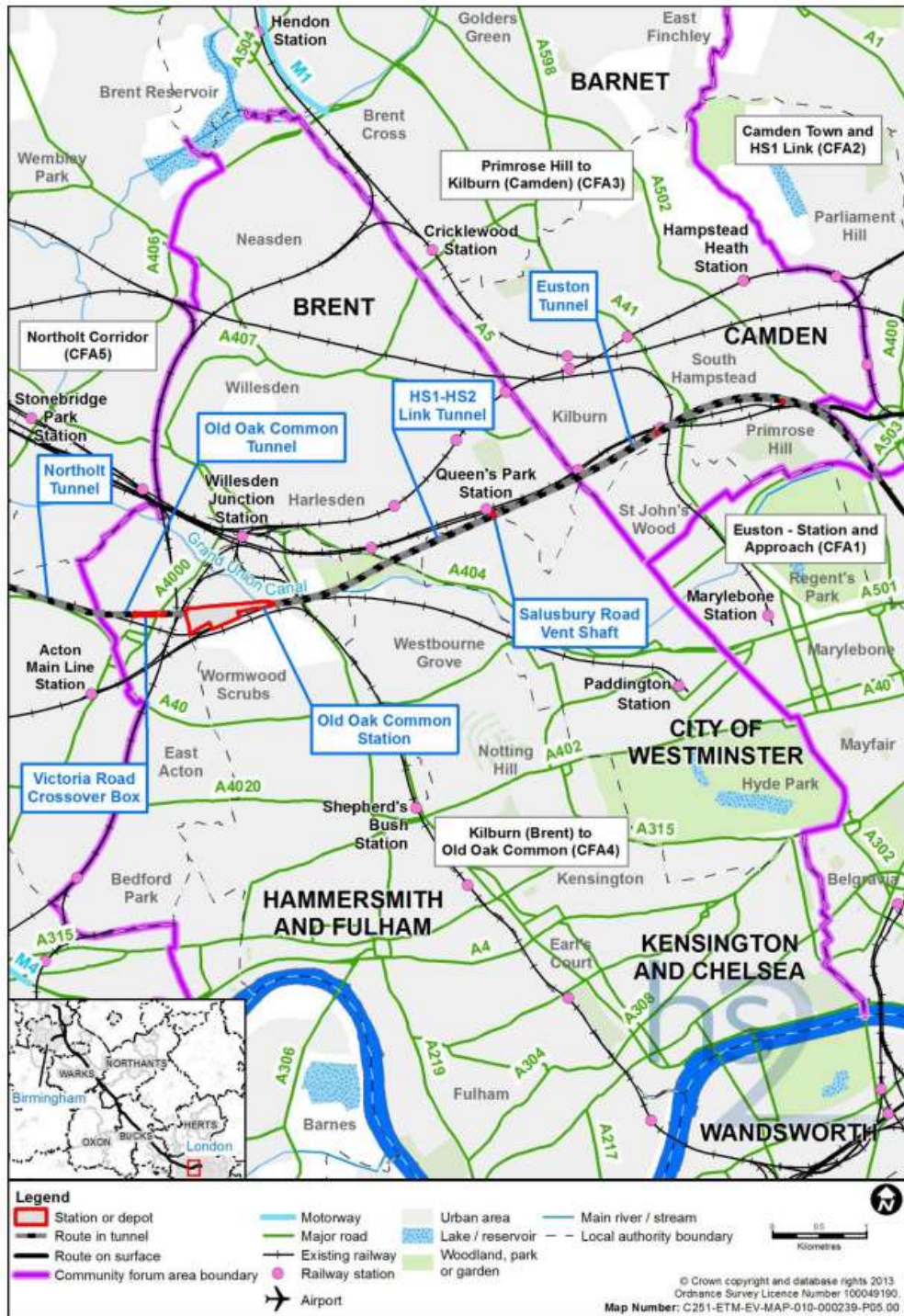


Figure 2 CFA 4 London Borough Hammersmith and Fulham Area Context Map

1.3 HS2 in London Borough of Hammersmith and Fulham

- 1.3.1 HS2 has awarded several Main Works and Station Construction Partner contracts covering the route from London to Birmingham, divided into areas south, central and north. In Area South, there are four contracts spanning from Euston Station to West Ruislip, where Area South then meets Area Central at the Colne Valley.
- 1.3.2 The Main Works contracts that fall within the London Borough of Hammersmith and Fulham is Northolt Tunnels (“Main Works Civils Contract Lot S2”, known as S2).
- 1.3.3 The Station Construction Partner contract: on-site construction activities and off-site lorry movements that fall within the London Borough Hammersmith and Fulham: Old Oak Common Station (known as S4).
- 1.3.4 Main Works utility contractors will be completing works within London Borough of Hammersmith and Fulham.

1.4 Scope of Works – Station Construction Partner (CP)

- 1.4.1 Balfour Beatty VINCI Systra (BBVS) was awarded the CP contract in September 2019, subsequently mobilising site in June 2020. As of September 2020 BBVS, are the leading contractor on the Old Oak Common station worksite.
- 1.4.2 There are two core elements that make up the CP works at Old Oak Common: The High Speed Old Oak Common Station works and the Great Western Main Line (conventional) station works. Both will involve construction, commissioning and handover.
- 1.4.3 Construction worksites and areas required for construction works are shown within the CT-05 maps. The following construction compounds will be located in LBHF:
- Old Oak Common Station main construction compound;
 - Stamford Brook satellite construction compound; and
 - Old Oak Common Lane underbridge satellite compound;
- 1.4.4 The work activities that will take place at these compounds areas generally comprise:
- Old Oak Common station main compound:
 - ground remediation;
 - piling and installation of concrete diaphragm walls to the station box;

- excavation and construction of the eastern and western ends of the station box;
- construction and operation of a conveyor from the main compound over OOC Lane to Flat Iron Site (further details in LBE LEMP)
- the formation of the Old Oak Common tunnel portal at the western end of the station
- box completion of the central section of the station box and the platforms;
- modifications to the existing GWML railway and bridges
- construction of Old Oak Common station built over the station box spanning approximately 290m;
- station building works, mechanical and electrical building services, architectural finishes and fit-out of ventilation equipment;
- finalisation works, including landscaping of urban realm;
- Stamford Brook sewer satellite compound:
 - utilities diversions and installations
 - reinstatement of the site and access route.
- Old Oak Common Lane underbridge satellite compound:
 - works associated with the OOC Lane underbridges. Further details provided in LBE LEMP.
- Further details on other works undertaken within LBE are detailed in the LBE LEMP.

1.5 Scope of Works – Main Works (S2)

1.5.1 HS2's Main Works Civil Contractors Skanska Costain STRABAG (SCS) are HS2's lead contractor on the HS2 work sites in London borough of Ealing. SCS are also responsible for the HS2 tunnelling works to the east of the Old Oak Common site, within LBHF. The primary works associated in LBHF is

- Excavation and construction of sprayed concrete tunnel to enable assembly and launch of two TBMs at the eastern end of the station box to drive the Euston tunnel;

1.6 General Activities – S2 and CP

1.6.1 The following general descriptions of work activities will take place during the construction period within this local authority boundary by both SCS and CP to enable delivery of the assets:

- Surveys, utility diversions; and highway improvements; vegetation maintenance; noise insulation.
- civil engineering works, including establishment of construction compounds; main earthworks; ground remediation; and structure works.

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 LBHF. The measures described will be applied by the nominated undertaker and its Contractors throughout the construction period to reduce the potential environmental and community impacts within LBHF during construction.

2.1.2 The Contractors will develop detailed environmental site management mitigation through their EMS, taking into account this LEMP and the HS2 Environmental Minimum Requirements (EMRs).

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

5.1.1 General control measures relating to community relations, hours of work, pollution incident control and security etc. are identified in Section 5 of the CoCP.

5.1.2 To reduce the likelihood of an environmental incident or nuisance occurring, measures from Section 5 of the CoCP will be implemented, as detailed in sections 5.2 to 5.16 below.

5.2 Community relations

5.2.1 As detailed within Section 5 of the CoCP, HS2 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.

5.2.2 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.

5.2.3 The local area plan will take account both of distinct geographic distribution of the communities in LBHF and will involve the Contractors and any relevant third parties³ and stakeholders, for which there will be co-ordination arrangements.

5.2.4 Ongoing engagement with local interests and community groups will occur during construction, as listed in Appendix 2 of this LEMP. (NB: This list is indicative and will be subject to change as the project progresses).

Advanced notice of works

5.2.5 HS2 and its Contractors are committed to informing communities on matters of interest and relevance. They will ensure that stakeholders affected by the proposed construction works, as outlined in the ES, will be informed in advance of works by

³ 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 Thames Water and National Grid.

methods outlined in the Community Engagement Framework and as per Section 5.1.4 of the CoCP.

5.3 Working hours

Consents

5.3.1 The framework for seeking consents from the LBHF 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 the 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 LBHF. Emergencies (not repairs and maintenance) may be undertaken outside core hours.

5.3.4 Certain other specific construction activities will require extended working hours for reasons of engineering practicability. These activities include, but are not limited to, Sprayed Concrete Lining (SCL) tunnel works, major concrete pours and piling/diaphragm wall works. Surveys (e.g. for wildlife or engineering purposes) may also need to be carried out outside core working hours.

5.3.5 Repairs or maintenance of construction equipment that is required to be carried out outside core working hours will normally be carried out on Saturday afternoons between 13.00 and 18.00.

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

- surveys

- major civil works such as Pipe jacking, piling, diaphragm walls and major concrete pours during extended hours at Old Oak Common Compound and Worm Wood Scrubs Compound;
- works on the central line walls and bridges
- operation of essential pumping equipment and generators at Old Oak Common station main compound if necessary;
- transport of excavated material from the Euston Tunnel through the underground logistics tunnel to the Willesden Euro-terminal site.

5.3.7 It is currently envisaged that a number of railway possessions (to be carried out during non-core hours) will be required for works to progressively add new tracks and realign the four existing Great Western Main Line through tracks at Old Oak Common.

5.3.8 To limit the number of possessions that will be undertaken, a protective barrier has been installed, between the existing railway and HS2 sites to maximise the work to be carried out during core working hours where stipulated clearance can be met. In circumstances where this is not sufficient separation of the HS2 works from the live railway, 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 to obviate excessive community disturbance.

5.3.9 Road Rail Vehicles (RRVs)⁴ 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 and approval of site lighting in Schedule 17 Part 1 of the High Speed Rail (London – West Midlands) Act (the Act).

⁴A vehicle which can operate both on rail tracks and road, often used for railway maintenance.

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, where 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 is 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.

5.6.3 The contractors are responsible for ensuring that the site/working areas and plant and materials are secure from use by unauthorised persons at all times and plant machinery will be securely locked away and immobilised each night. Securing sites involves the use of physical, electronic and human resources in a proportionate and cost effective manner.

5.6.4 In some situations, particularly in an urban setting, consideration will be given to extra visibility for the public and workforce at night, e.g. use of half-timber / half-infill (i.e. Perspex) at hoarding corners together with convex mirror to prevent blind spots. All sites will have security lighting to ensure the safety of passing pedestrians and other traffic.

5.6.5 Security provisions will be deployed at all HS2 sites and working areas on a 24/7 basis this may include CCTV cameras, alarms and security personnel. This approach will help protect assets with measures that deter, delay and detect intrusion.

5.7 Hoardings, fencing and screening

5.7.1 The site perimeters 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 Where there is additional requirements for hoarding, the type of fence will be dependent upon the nature of use of the adjacent land, as well as environmental, design and safety considerations.

5.7.3 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.

5.8 Unexploded ordnance

5.8.1 A risk assessment for the possibility of unexploded ordnance being found within construction areas will be carried out, as detailed within 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 There will be no temporary living accommodation for construction workers in LBHF.

5.11 Occupational healthcare

5.11.1 The contractors will ensure there is provision for either access to 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.

5.12.2 HS2 will collaborate with LBHF to prepare restoration schemes prior to their submission to the planning authority, Old Oak and Park Royal Development Corporation (OPDC). For the works in the Wormwood Scrubs, the restoration schemes will be influenced by, and will not preclude, the LBHF Ecological Enhancement Masterplan.

5.12.3 As a result of programming, the UTX will be restored by BBVS in line with LBHF wormwood scrubs masterplan. As the SBS works will be completed before LBHF have completed their improvement works, restoration will be to reinstate to existing baseline or similar in agreement with LBHF, to allow them to complete LBHF improvement works post construction.

5.13 Pollution incident control and emergency preparedness

5.13.1 The Contractors' pollution incident control and emergency preparedness plans 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.

Local control measures

5.13.3 The Contractors' pollution incident control and emergency preparedness plans 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; and
- the use of oil interceptors at site offices and work compounds.
- Spill training will be carried out with relevant site staff

5.14 Fire prevention and control

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

5.15 Extreme weather events

5.15.1 The Contractors' pollution incident control plan has 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.

5.16 Carbon management plans

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

5.17 Interface management between adjacent construction areas

5.17.1 The contractors manage the environmental aspects of interfaces between adjacent construction areas, as detailed within Section 5.16 of the CoCP, which may be within the same or adjacent local authority boundaries. Key approaches include:

- Works within LBHF and LBE are coordinated by the Traffic Liaison Group (TLG) comprising the contractors, HS2, LBHF and LBE, with the aim of reducing impacts on surrounding road networks. Within the TLG the contractors will also consult with the highways and emergency services on current and future works, including routes to be used to and from sites, in addition to any impacts to bus stops and any proposed mitigations.
- Construction Noise and Vibration impacts are managed through the S61 process and monitoring network, with this contractor information reviewed centrally by HS2 to check for any potential cumulative impact that requires mitigation.
- Construction air quality impact is primarily related to traffic and confirmed by the monitoring network as detailed in Section 7.

6 Agriculture, forestry and soils

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 There is no agricultural land likely to be affected within Hammersmith and Fulham.

6.3 Local control measures

6.3.1 A Soil Resource Plan (SRP) will not be produced for worksites as the land is not agricultural or forestry. Topsoil and subsoils stripped on Wormwood Scrubs as a result of the UTX and SBS utility diversions will be stripped, stored and reinstated in accordance with DEFRA 'Construction Code of Practice for the Sustainable Use of Soils on Construction Sites – September 2009'.

- 6.3.2 In respect of storage areas for soil and excavated materials, and within the wider construction sites, the presence and spread of invasive, non-native species (plants and animals) and noxious weeds will be controlled through the adoption of an appropriate management regime.
- 6.3.3 Appropriate construction, handling, treatment and disposal procedures will be implemented in relation to invasive species and noxious weeds. Route-wide measures will also be implemented to promote bio-security and reduce the risk that invasive non-native species and diseases are spread as a consequence of the project. Further details are provided in the CoCP. See also Section 9.3.3.

7 Air quality

- 7.1.1 General control measures relating to air quality are provided in Section 7 of the CoCP.
- 7.1.2 Contractors are 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’⁵.

7.2 Sensitive receptors

- 7.2.1 The Contractors’ working methods 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.
- 7.2.3 The construction works within LBHF have been assessed to determine the risk of impacts due to construction dust. Based on the construction works, the worksites have been classified as ‘low’, ‘medium’ and ‘high’ risk using the Institute of Air Quality

⁵ Guidance on the assessment of dust from construction and demolition: Institute of Air Quality Management (IAQM), 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

Management (IAQM) methodology⁶, in relation to emissions of dust from construction and demolition activities. In LBHF, the Old Oak Common site is classified as ‘high risk’ as defined by IAQM methodology. The output of this assessment may be shared with the local authority upon a written request. The mitigation measures as set out in the CoCP will be employed, which includes indicative continuous monitoring of dust to allow active management of the construction works.

7.2.4 Construction traffic emissions will have impacts at receptors adjacent to routes used by construction vehicles and where traffic is diverted or rerouted. Sensitive receptors are located along the following vehicle routes used by HGVs originating at HS2 sites within LBHF:

- A40 Westway/Western Avenue
- Braybrook Street
- A400 Old Oak Lane
- Old Oak Common Lane and
- Wulfstan Street.

7.3 Local control measures

7.3.1 In LBHF the key measures will include:

- compliance with required vehicle and Non-Road Mobile Machinery (NRMM) emission requirements;
- damping down of dust-generating equipment and vehicles within the site and the provision of dust suppression measures in all areas of the site that are likely to generate dust;
- measures to keep roads and accesses clean;
- covering materials, deliveries or loads entering and leaving the construction site by road and rail;
- buildings or structures to be demolished will be sprayed with water or screened as necessary, prior to and during demolition;
- review of construction methodology to consider less dust creating methods

⁶ Guidance on the assessment of dust from construction and demolition: Institute of Air Quality Management (IAQM), February 2014

i.e. hydraulic pulverisers for demolition;

- the enclosure, shielding or provision of filters on plant likely to generate dust beyond the site boundaries; and
- the use of diesel or petrol-powered generators will be reduced by using mains electricity or battery-powered equipment where reasonably practicable.

7.3.2 Dust suppression measures and works screening have been confirmed between the local authorities and the Secretary of State in the Class Approvals⁷ (in accordance with Schedule 17 of the Act). 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 the LBHF the relevant category of vehicle emission standard is the London Low Emission Zone. Within the London Low Emission Zone there are requirements for heavy road vehicles to be powered by EURO VI (or cleaner) engines and for cars and vans to be Euro 6 diesel and Euro 4 petrol⁸. There are also targets for the use of Ultra Low Emission Vehicles.

7.3.4 HS2 has also set requirements for 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 the LBHF the relevant category of NRMM emission standard is the rest of Greater London and the requirement is for NRMM to be powered by EU stage IIIB from 2017 (and EU stage IV from 2020)⁹.

7.3.5 The HS2 Information Paper E31: Air Quality gives further information on the HS2 emissions standards.

7.4 Monitoring Procedures

7.4.1 An inspection and monitoring programme has been implemented by the Contractors to assess the effectiveness of the control measures as outlined in section 7.3 of the CoCP. In LBHF, the monitoring procedures include monitoring of

⁷ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/604840/hsr-act-2017-class-approval-matters-ancillary-development-schedule-17.pdf

⁸ 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.

⁹ Roman numerals are also used within the NRMM EU regulations but are not directly comparable to the road vehicle Euro standards. Block Exemptions EDC044 and EDC107 issued by HS2 extend the 2017 requirements to include 2020 and 2021, with the stricter conditions coming into effect from 01 Jan 2022.

nitrogen dioxide around highways and 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. The monitoring programme, including locations, has been discussed and agreed with LBHF prior to construction. The monitoring programme will be reviewed on a regular basis to ensure that it reflects the current works. Any changes will be discussed with LBHF prior to implementation.

7.4.2 The HS2 monitoring of nitrogen dioxide around highways commenced in June 2016 and is being undertaken using diffusion tubes. There are currently seven monitoring locations within LBHF and includes locations where the environmental statement, as amended, identified significant effects, certain locations not expected to be affected by the Scheme for comparison purposes, and locations co-located with automatic monitoring sites which are part of national and local authority surveys for comparison purposes. Monthly reports of monitoring data from HS2 air quality surveys will be made publicly available throughout construction.

7.4.3 Details of locations of monitoring equipment can be found in the monthly air quality monitoring reports uploaded to the HS2 website
<https://www.gov.uk/government/organisations/high-speed-two-limited>.

8 Cultural heritage

8.1.1 General control measures relating to cultural heritage are provided in Section 8 of the CoCP. Further control measures for Cultural Heritage are provided in the Hs2 Phase One Heritage Memorandum within the Environmental Minimum Requirements and the specific documents identified therein.

8.1.2 A route-wide Generic Written Scheme of Investigation: Historic Environment Research and Delivery Strategy (GWSI:HERDS) has been prepared which sets out the general principles for design, evaluation, mitigation, analysis, reporting and archive deposition to be adopted for the design development and construction of the Scheme.

8.1.3 Schedule 18 and Schedule 19 of the Act concern how legislation in respect of listed buildings and scheduled monuments respectively apply to the Phase One works. Schedule 20 to the Act provides a regime for the removal of human remains and related funerary monuments.

8.1.4 Works associated with the Scheme will impact both designated and non-designated archaeological and built heritage assets in LBHF. Works have been previously undertaken by CSJV (i.e. archaeological investigations and built heritage recording) according to the Project Plans and Location-Specific Written Scheme of Investigations (LS-WSI).

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 (Appendix CH-002-004 and Cultural Heritage Map Book – Euston and London Metropolitan, ES 3.5.1.4.1).

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

- Grade I listed registered park and garden Kensal Green (All Souls') Cemetery
- Grand Union Canal conservation area and St Mary's conservation area;
- Three grade II listed buildings/structures:
 - Monument to Maria Tusten, Kensal Green Cemetery
 - Tomb of Marigold Churchill, Kensal Green Cemetery
 - Parish boundary markers, Kensal Green Cemetery
- Other important heritage assets
 - GWR structures

8.3 Local control measures

8.3.1 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 Contractors. Detailed provisions with regard to settlement and listed buildings are outlined in the Settlement Policy / HS2 Information Paper: C3 Ground Settlement.

8.3.2 Those listed buildings which may require works to maintain or restore their character, or for the affixing of monitoring apparatus are named in Table 2 of Schedule 18 of the Act. Listed buildings named in Table 2 are also covered by a

Heritage Agreement with LBHF, which sets out arrangements for obtaining approvals for protective or monitoring works to these buildings.

- 8.3.3 Schedule 20 'Burial Grounds' to the Act provides a regime for the removal of human remains and related funerary monuments. The Schedule disapplies existing legislation in relation to burial grounds, human remains and monuments to deceased persons to enable works authorised by the Act to be carried out. The disapplication is conditional on those remains being removed and dealt with in accordance with the requirements of Schedule 20.
- 8.3.4 The programme of archaeological and built heritage works has been undertaken by the Enabling Works Contractor prior to the construction period in accordance with the provisions of the Location-Specific Written Scheme of Investigation for archaeology and built heritage.
- 8.3.5 HERDS Decision Records Notices have been completed by the Enabling Works Contractors for the relevant worksites. The Contractors will have due regard for the findings of the decision record notices.
- 8.3.6 In the event that an unexpected discovery of heritage assets and archaeological remains of national importance occur, the contractors will stop work and follow the 'Managing Unexpected Discoveries' process set out in section 7 of the Generic Written Scheme of Investigation: Historic Environment Research and Delivery Strategy (GWSI:HERDS) (HS2-HS2-EV-STR-000-000015) and the procedure for Unexpected Remains of National Significance (HS2-HS2-EV-PRO-000-000009).

8.4 Monitoring

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

9 Ecology

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

9.2 Sensitive receptors

- 9.2.1 The following locations which lie within or are adjacent to HS2 worksites in LBHF are designated for nature conservation. These locations are shown within the Volume 5 map books of the ES (3.5.1.5.4):

- Wormwood Scrubs Local Nature Reserve, comprising grassland and a number of species of native trees. The site also supports common lizards and over 100 species of birds have been recorded, along with common mammals and invertebrates;
- London Canals Site of Metropolitan Importance (SMI), which supports a number of scarce wetland plants and uncommon plants on banks, brickwork and towpaths;
- Kensal Green Cemetery SMI, a species rich grassland supporting regionally rare plant species, a variety of breeding birds and a nationally declining butterfly species;
- Wormwood Scrubs Railway Embankment Site of Borough Importance Grade I (SBI.I), comprising woodland;
- Wormwood Scrubs Park SBI.I, including damp and dry acid grassland that support good populations of common reptiles and common butterflies;
- Old Oak Common Sidings Birch Wood SBI.I, a small woodland dominated by silver birch trees fringed with scrub;
- Central Line West of White City SBI.I, comprises undisturbed railside corridor habitat that are well vegetated with scrub and occasional grassy clearings and patches of sycamore woodland; and
- St. Mary's Cemetery Site of Borough Importance Grade II (SBI.II), which has a number of mature tree specimens.

9.2.2 Sensitive habitat receptors outside of designated sites are displayed within the Volume 5 map books of the ES (3.5.1.5.4). These include the Grand Union Canal, a body of slow-moving eutrophic fresh water.

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

- Bats;
- Breeding birds;
- Terrestrial invertebrates; and
- Common reptiles.

9.2.4 Further information on designated sites and legally protected species occurring in this area can be found within Volumes 2 and 5 of the ES.

9.2.5 Contractors will obtain all necessary protected species licences prior to any work activities commencing within LBHF.

9.2.6 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 LBHF.

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

Species/species group	Issue	Standard control measure
Designated Sites	The Scheme affects non-statutory wildlife sites	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.
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 licences and, where relevant, Ecology Site Management Plans.
	The Scheme will result in the loss of confirmed bat roosts in trees and buildings.	
	The Scheme will result in the loss of trees and buildings identified as having moderate or high potential to support roosting bats, but no evidence of their use has been recorded to date through survey work.	Adopt precautionary approach. Follow appropriate Working Method Statement for demolition of buildings and felling of trees.
	Retained bat roosts are present in close proximity to the Scheme. Caution is required to ensure that these roosts are not disturbed during works.	Where practicable, undertake activities causing disturbance during seasonal periods when bats are likely to be absent. Ensure lighting is directed away from known roosts. Minimise night time working in close proximity to retained roosts.

Species/species group	Issue	Standard control measure
		Where practicable, temporary structures will be erected to screen the entrances/exits of retained roosts from construction areas.
	The Scheme will result in the loss of and disruption to bat foraging areas and commuting routes.	<p>Where practicable, undertake activities causing loss or disruption during seasonal periods when bats are likely to be less active.</p> <p>Retain as much of the key habitat for as long as possible and establish new areas as quickly as possible to reduce the effects.</p> <p>Ensure lighting is directed away from foraging areas and commuting routes.</p> <p>Minimise night time working in close proximity to foraging areas and commuting routes.</p>
Breeding birds	<p>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.</p> <p>The Scheme will result in the loss of nesting bird habitat, including vegetation, buildings and structures.</p>	<p>Habitat clearance should be conducted outside of the bird nesting season (March to August inclusive) where practicable.</p> <p>If habitat clearance is carried out during the bird nesting season then an appropriate Working Method Statement shall be completed in advance of clearance works commencing.</p>
Common reptiles	<p>Common species of reptile (grass snake, adder, common lizard and slow worm) are protected from intentional killing or injury.</p> <p>Common reptiles are widespread, and the Scheme will result in the loss of confirmed and potential reptile habitat.</p>	<p>Where works have the potential to kill or injure reptiles, but there is suitable habitat immediately adjacent to the work site that could support a viable population (with enhancements where necessary) the Habitat Manipulation and Displacement approach should be followed. A Working Method Statement should be produced in advance of works commencing.</p> <p>Where there is no suitable habitat immediately adjacent to the work site, the Reptile Translocation approach should be followed. A Working Method Statement should be produced in advance of works commencing. This will include details of the approach, any exclusion fencing required, and details of the receptor site.</p>

Species/species group	Issue	Standard control measure
General	Unexpected discovery of legally protected species during works.	<p>There will be a procedure to follow in the unexpected event that protected species are identified during construction. This will include seeking appropriate licences and consulting with Natural England.</p> <p>Unexpected finds of great crested newts or badgers are covered by the organisational licences and works must be in accordance with those licences.</p>

9.3.2 Further information on the control of ecological impacts is provided in HS2 Information Paper E2: Ecological Impact, Section 9 of the CoCP, in Technical Note: Ecological principles of mitigation within Volume 5 of the ES and SES3 and AP4 ES (Scope and methodology report addendum (CT-001-000/2)).

9.3.3 Internal contractor Invasive Species and Biosecurity Management Plans will be produced to manage invasive species. For the works in Wormwood Scrubs the management plan has been shared with LBHF as it ties in with the invasive species treatment being undertaken by LBHF.

9.4 Monitoring

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

10 Ground settlement

10.1.1 General control measures relating to ground settlement are provided in Section 10 of the CoCP. Specific measures to reduce and repair settlement and requirements with regard to assessment, surveys and monitoring are contained in the Settlement Policy / HS2 Information Paper C3: Ground Settlement.

10.1.2 Requirements for monitoring will be confirmed by the monitoring plan that has been prepared during the detailed design stage. Where determined as necessary, monitoring will be undertaken on selected adjacent buildings, structures and the

conventional railway tracks. Baseline readings will be taken prior to the commencement of excavation.

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

11 Land quality

- 11.1.1 Land quality study work including intrusive ground investigation and analysis have been conducted prior to construction in order to confirm areas of suspected land contamination within the Scheme¹⁰. These investigations have enabled identification and safe design of remediation works. No new land quality constraints have been identified during these pre-construction surveys.
- 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

¹⁰ No contaminated sites (in accordance with the meaning defined in Part IIa 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

11.2.1 The following land with potentially contaminative existing or historical uses has been identified as a prospective contaminative risk to HS2 works:

- the Old Oak Common rail depot; commercial units to the north of the Grand Union Canal around Hythe Road and the A219 Scrubs Lane, together with the railway land in between;
- numerous former and current commercial/light industrial land parcels and railway lines to the north-west and west of Old Oak Common including the Victoria Road Industrial Estate (around the Victoria Road crossover box); and
- Ground gases generally, including those associated naturally with direct contact of the Lambeth Group deposits.

11.2.2 With regard to the above identified sites, the Contractors will have due regard to the following sensitive receptors:

- protection of the public, including residents in existing properties, local employees, construction and/or maintenance workers;
- controlled waters, including the Grand Union Canal;
- the built environment, including buildings, property and underground structures and services such as the Thames Water combined sewer network; and
- the natural environment and public amenity.

11.3 Local control measures

11.3.1 Ground investigations have been undertaken to assess areas of potential contamination within the Scheme. Following the development of a conceptual site model and a risk assessment a remedial strategy has been prepared and shared with LBHF. The remedial strategy includes measures to be taken if unexpected contamination is encountered as outlined in Section 11 of the CoCP.

11.3.2 Engagement with LBHF is ongoing and included the formulation, execution, and close out stages of the OOC remedial strategy. The activities to be engaged on are:

- Preliminary Risk Assessment
- Site investigation Scheme
- Quantitative Risk Assessment
- Conceptual Site Model (CSM)

- Remediation methodology
- Remediation verification
- Long term monitoring as applicable

11.3.3 Contractors will engage with LBHF as appropriate, during the remediation of the site. The northern half of the Old Oak Common site has been remediated to allow the box construction works to commence. The current remediation strategy focuses on the southern half of the site.

11.3.4 The remediation strategy for Old Oak Common encompasses the following principles:

- Where reasonably practicable, material will be reused within the Scheme, where it is suitable for use. Contaminated soils excavated from the site are to be separated from other materials and treated, as necessary. For material from LBHF, if unable to be treated on-site, this will take place off-site at a soil treatment facility or an appropriately permitted landfill site.
- Treatment techniques include stabilisation methods, soil washing, appropriately permitted bio-remediation to remove oil contaminants.

11.3.5 Both tunnelling and excavation will be required in LBHF. Should unexpected contaminated materials within the area be identified during the works it will be excavated, then treated and re-used, or removed, as appropriate.

11.3.6 Similar measures will be undertaken as needed at any 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

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

12.2 Sensitive receptors

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

- Wormwood Scrubs Open Space LCA;
- Old Oak Common depot and Surrounding Transport Infrastructure LCA;
- Old Oak Common Residential LCA; and
- Kensal Green and St Mary's Cemeteries LCA.

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

- residents in Wells House Road;
- recreational receptors including users of Wormwood Scrubs open space; and
- people at work and people passing through the area, generally located around Wormwood Scrubs.

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 Volume 5):

- maximising the retention and protection of existing trees and vegetation where possible;
- use of well-maintained hoardings and fencing;
- designing lighting to avoid unnecessary intrusion onto adjacent buildings and other land uses;
- replacement of any intended retained trees that are accidentally felled or die as a consequence of construction works;
- appropriate design, implementation and maintenance of planting and seeding works and implementation of management measures, to continue through the construction period as landscape works are completed;
- the design of construction compound layouts to prevent damage to the retained trees as well as reduce visual and other impacts where practicable; and

- the specific location of temporary material stockpiles to reduce visual impacts.

Trees

- 12.3.2 The Contractors will give consideration to where trees and other planting can be established early in the construction programme. The contractors will ensure any early planting during construction is maintained to promote healthy growth.
- 12.3.3 Where practicable, the Contractors will agree the details of tree protection measures, in accordance with BS5837, with LBHF, in advance of any works in the vicinity of trees.

Site Buildings for Office and Welfare

- 12.3.4 Buildings will generally be of a temporary modular type; they will typically be multi-storey to maximise construction space and limit land take. The Main Site Office for Old Oak Common is anticipated to be completed by quarter three 2021.

13 Noise and vibration

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

13.2 Sensitive receptors

- 13.2.1 Noise and vibration construction assessment locations, at sensitive residential and non-residential properties, are identified in the ES on plan(s) SV-003-004 in the Sound, Noise and Vibration Volume 5 map book (ref.: ES 3.5.1.9.1) and Volume 5: Appendix SV-003-004. For further details of these receptors and the potential adverse impacts identified, refer to Volume 2: CFA4 Report in the main ES, SES and AP2 ES and SES3 and AP4 ES.
- 13.2.2 The mitigation measures will avoid airborne construction noise adverse effects on the majority of residential receptors and communities in this area. However, one residential community at Wells House Road and one at Midlands Terrace, on the boundary on LBHF and LBE is forecast to experience direct adverse effects during construction of the Old Oak Common Station.

13.3 Local control measures

13.3.1 Site specific best practicable means measures to control noise and vibration have been identified through the Parliamentary process and discussions with LBHF and local stakeholders, and reflected in this document. Furthermore, site specific measures have been identified by the Contractors on a site-by-site and activity-by-activity basis and agreed with LBHF through the Section 61 process. As identified in the ES, examples of best practicable means measures that will be employed by the Contractors 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
- local control measures will be periodically reviewed, including following any material changes in the proposed construction method and appointment of the Contractors.

13.3.2 No residential buildings within LBHF were identified in the ES as qualifying for a noise insulation package as detailed within the Noise Insulation and Temporary Rehousing Policy.

13.3.3 A number of residential buildings within LBE, adjacent to HS2's LBHF worksites, on Wells House Road have been identified as being potentially eligible for noise insulation. As such, HS2 has offered these properties noise insulation prior to the start of construction works, regardless of whether the properties will formally become eligible based on the site activities.

13.3.4 Residential properties that qualify for a noise insulation package will be periodically reviewed, including following any material changes in the proposed construction method and the local control measures and appointment of the Contractors.

13.4 Monitoring

13.4.1 HS2 requires its Contractors to undertake and report such monitoring as is necessary to ensure and demonstrate compliance with all noise and vibration commitments and the requirements of the CoCP. As set out in section 4.3.10 of the CoCP, where the Contractors are monitoring noise, dust and air quality with equipment capable of streaming data in real time, this will be made available to LBHF if a written request is received by the HS2. In addition, monthly noise

monitoring reports will be made publicly available throughout construction on the <https://www.gov.uk/government/organisations/high-speed-two-limited> website. The monthly reports will include information such as measurement methodology and monitoring locations.

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

14 Traffic and transport

- 14.1.1 Transport and traffic plans have been prepared, in accordance with the Code of Construction Practice, Section 14: A Route-wide Traffic Management Plan (RTMP11) sets out the strategic requirement that the Contractors will need to follow, which has been consulted on with all highway authorities through the Highways Sub Group to the Planning Forum. This is a publicly available document.
- 14.1.2 The Local Traffic Management Plans (LTMP) set out how traffic will be managed on a sub-regional level. LTMPs have been consulted through local Traffic Liaison Group meetings. Additional LTMPs may be issued, as and when required, by other HS2 contractors undertaking any construction works not covered by this LTMP. Consultation, consents and notifications for site specific highway works will continue to be undertaken via the local Traffic Liaison Group.
- 14.1.3 Information on how the local impacts of construction will be mitigated, in particular those associated with the removal of excavated and demolition materials; delivery of construction materials; and construction offices are included within the LTMP or on a site-specific basis.
- 14.1.4 Site specific traffic management measures, as detailed within the CoCP, will be discussed with highway authorities and the emergency services via local meetings.
- 14.1.5 General control measures relating to traffic and transport are provided in Section 14 of the CoCP. Information relating to construction traffic is also provided in Information papers:
- D11: Maintaining access to residential and commercial property during construction;

¹¹ <https://www.gov.uk/government/publications/hs2-phase-one-route-wide-traffic-management-plan>

- 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 Key sensitive receptors have been to be considered during development of the LTMP. These receptors include:

- A40 Western Road/Savoy Circus; and
- Old Oak Common Lane/Savoy Circus.

Site access

14.2.2 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 works in LBHF. Highway access notifications and/or approvals will be undertaken in accordance with Schedule 4 of the Act.

14.2.3 Routes for construction traffic will be subject to approval of the relevant planning authority in accordance with the Schedule 16 of the Act when large construction vehicle movements exceed 24 single movements (12 two way movements) per day.

14.2.4 Site specific lorry routes are as per the Environmental Statement and further detailed in the LTMP. All excavated material from the work sites will be removed by road prior to implementation of the Willesden Euroterminal (WET) railhead and connecting conveyor system.

Transport Networks and Services

14.2.5 Bus services are within the immediate area and any impacts will be mitigated through engagement with TfL, LBHF and LBE.

14.2.6 There is one designated cycle route within LBHF; with TfL cycleway 34 also currently under construction. Any potential impacts will be managed in accordance with the TfL Temporary Traffic Management handbook.

14.3 Works to the Highway and Access Measures

14.3.1 There will be a temporary full road closure of Old Oak Common Lane for up to one year for works related to the Old Oak Common Lane underbridge satellite

compound. Traffic would be restricted to local access only and a 3.5km diversion would be introduced for general traffic, generally via A4000 Victoria Road/A4000 Wales Farm Road and the A40. Pedestrian access will be maintained along the whole length of Old Oak Common Lane throughout most of the 12 month period of construction with occasional short-term closures for certain construction works or other key reasons such as safety.

14.3.2 Temporary lane closures will be implemented for the retaining wall stabilisation works (Old Oak Common Retaining Wall) for frequent periods over the next 12 months. Further discussions will be held with LBE and LBHF and TfL regarding the need to undertake any further mitigation works.

14.3.3 The access within the HS2 Act for the Stamford Brook satellite compound is required to be via Braybrook Street. This access requires construction vehicles to use the fire access gate on Wulfstan Street in order to access Braybrook Street. An alternative access constructed along Old Oak Common Lane may be proposed, if requested by LBHF, that BBVS can implement in accordance with an Undertaking and Assurance given to LBHF.

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

14.4 Monitoring procedures

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

15 Waste and materials

15.1.1 All waste will be managed in accordance with the waste hierarchy which aims to reduce waste at source and to reduce the quantity that requires final disposal to landfill. This applies to excavated material arising on-site, which will be reused within the Scheme as far as reasonably practicable, as well as material from demolition and construction activities. This approach is described in greater detail in HS2 Phase One Information Paper E3: Excavated Material and Waste Management and in Section 15 of the CoCP local control measures.

15.2 Local control measures

Testing and classification of materials

- 15.2.1 The 'basic characterisation'¹² 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 Materials Management Plans (MMP)s will be developed as needed in accordance with the Definition of Waste: Development Industry Code of Practice¹³ to set out the methods for re-using surplus soils at specific sites or a cluster of sites on the Scheme or transferred to another development site.
- 15.2.3 The following activities will NOT be managed under an MMP: Materials taken to a permitted landfill site; Materials taken to a permitted Waste Transfer Site such as WET; Materials taken to a mineral's restoration site operating under a waste recovery permit; Materials taken to a permitted waste treatment site; Materials reused for backfilling utilities works.
- 15.2.4 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 Disposal¹⁴;
 - Technical Guidance WM3 – Guidance on the classification and assessment of waste (1st edition 2015)¹⁵.

Transport of waste and materials

- 15.2.5 Further information on the management of material and waste is provided in HS2 Information Paper E3: Excavated Material and Waste Management.

16 Water resources and flood risk

¹² Basic characterisation' refers to the characterisation of excavated material to help define the type of re-use for which it is suitable (e.g. DMRB soil classes). Characterisation of waste would include the allocation of an EWC code (in accordance with The List of Wastes (England) Regulations 2005 SI No. 895) and a detailed evaluation of the waste properties. The latter is based on a combination of the detailed knowledge of the source process and chemical testing.

¹³ CL:AIRE Definition of Waste: Development Industry Code of Practice, version 2, March 2011

¹⁴ Environment Agency (2013), *Waste Sampling and Testing for Disposal to Landfill, March 2013*.

¹⁵ Environment Agency (2015), Technical Guidance WM3 – Guidance on the classification and assessment of waste (1st edition 2015) (1st Edition 2015).

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

16.2 Sensitive receptors

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

- Local aquifers beneath the London Clay, including Lambeth Group (secondary A aquifer), Thanet Sand Formation (Secondary A aquifer); and White Chalk Subgroup (Principal aquifer);
- Abstractions, including four licensed groundwater abstractions; and
- Artificial water bodies, including: Grand Union Canal (Paddington Arm).

16.2.2 The Contractors' pollution incident control plans 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 Contractors have due regard to the following local flood water receptors and their respective flood histories:

- Surface Water - The flood map for surface water and preliminary flood risk assessment modelling suggests that there are areas within this study area that have a high risk of surface water flooding in a 1 in 200 annual probability (0.5%) rainfall event. The areas within LBHF currently at risk of surface water flooding close to above-ground infrastructure required for the Scheme include isolated topographic depressions at Old Oak Common. Surface water flood risk locations are identified on plan WR-01-004 within water resources – London- West Midlands Map book ref: ES 3.5.1.11.1;
- Sewers (Thames Water Utilities Ltd) - Thames Water Utilities Ltd historical sewer flooding records show that there have been a number of sewer flooding incidents in the study area; and
- A potential risk of flooding associated with a breach of the Grand Union Canal (Paddington Arm) has been identified close to the proposed Old Oak Common station.

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 of surface water sewers in the surrounding receptors.
- 16.4.2 As outlined in the CoCP, best practice measures will be used (e.g. through the use of silt traps and appropriate attenuation, if required) prior to the discharge of water to watercourses, groundwater or surface water sewers, subject to obtaining the required permits or consents. This could apply to runoff from wheel washing facilities or from general construction activities. As noted in Section 5.7 of this document, a pollution incident control plan will be produced which will incorporate procedures for alerting relevant water supply companies and reducing impacts to public supply Source Protection Zones (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 and where appropriate in consultation with relevant stakeholders.
- 16.4.5 If dewatering from excavations is required, it will be carried out in consultation with the Environment Agency and Thames Water. It will take into consideration risks posed to water quality of 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 Prevention¹⁶. Groundwater and surface water monitoring plans will be prepared, where piling could affect below ground contamination.
- 16.4.7 Temporary excavated material stockpiles, construction compounds and site offices will be located outside of areas at risk of flooding where reasonably practicable, to avoid having an impact on the risk of flooding. Where construction compounds cannot be located outside flood risk areas, there will be a site specific flood risk management plan prepared prior to construction to manage the potential risks.

¹⁶ Environment Agency (2001), Piling and Preventative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution

These plans will take account of the flood risk assessments produced for the 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 32 Part 5 of the Act.

16.4.9 Additional information, such as how the Scheme complies with the Water Framework Directive, as well as further provisions for engagement with stakeholders, monitoring and protection of local water resources are outlined in HS2 Information Paper E1: Control of Environmental Impacts and HS2 Information Paper E4: Water resources and flood risk.

Appendix 1: Glossary of Terms

AP	Additional Provision
BBVS JV	Balfour Beatty VINCI Systra Joint Venture
Class Approvals	The class approval allows the Secretary of State to approve appropriate measures ancillary to development under Schedule 17, removing the need for repeated individual approvals from planning authorities. For example storage sites for materials, artificial lighting, dust suppression.
CFA	Community Forum Area
CoCP	Code of Construction Practice
Contractor	The Contractor on a construction site is responsible for planning, managing and co-ordinating themselves and/or the works and all other sub-Contractors working on their site, or any other Contractor directly employed by the nominated undertaker to undertake key construction works on site.
CoPA	Control of Pollution Act 1974
CSJV	Costain Skanska Joint Venture
EMS	Environmental Management System
ES	Environmental Statement
EWC	European Waste Code
HGVs	Heavy Goods Vehicles
HS2	High Speed Two

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
LBHF	London Borough of Hammersmith and Fulham
LCAs	Landscape Character Areas
LEMP	Local Environmental Management Plan
LTMP	Local Traffic Management Plan
MWCC	Main Works Civils Contractor
Nominated Undertaker	The body or bodies appointed to implement the powers of the Act to construct and maintain the railway.
RTMP	Route-wide Traffic Management Plan
RRVs	Road Rail Vehicles. A vehicle which can operate both on rail tracks and road, often used for railway maintenance.
SBI.I	Site of Borough Importance Grade I
SBI.II	Site of Borough Importance Grade II
Scheme	The Scheme to which this LEMP relates is the proposed high-speed railway between London - West Midlands. This is a high speed railway between London - West Midlands with a connection via the West Coast Main Line at conventional speeds to the North West and Scotland. It includes four high speed rail stations at London Euston, Old Oak Common (West London), Birmingham Airport (Birmingham Interchange) and Birmingham (Curzon Street).
SCSJV	Skanska Costain STRABAG Joint Venture
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).
SMI	Site of Metropolitan Importance
SPZ	Source Protection Zone
TfL	Transport for London
UKAS	United Kingdom Accreditation Service

WET	Willesden Euroterminal
WSI	Written Scheme of Investigation

Appendix 2: Non-exhaustive list of Community Groups in London Borough of Hammersmith and Fulham

- The Friends of Wormwood Scrubs;
- Wormwood Scrubs Charitable Trust
- Residents of Braybrook Street and the surrounding area
- Wells House Road Residents Association;
- The Island Triangle Residents' Association;
- Old Oak Common Primary School
- Old Oak Community Centre
- London Borough of Hammersmith & Fulham;
- Old Oak and Park Royal Development Corporation;
- Environment Agency;
- First Greater Western;
- Heathrow Express;
- Network Rail
- Hitachi IEP depot
- TfL; and
- Crossrail.