
High Speed Rail
(London-West Midlands)
Local Environmental Management Plan
Solihull Metropolitan
Borough Council

December 2017



Department for Transport

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

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

Telephone: 08081 434 434

General email enquiries: HS2enquiries@hs2.org.uk

Website: www.gov.uk/hs2

A report prepared by Lang O'Rourke and Mace on behalf of HS2 Ltd.

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

© High Speed Two (HS2) Limited, 2017, except where otherwise stated.

Copyright in the typographical arrangement rests with High Speed Two (HS2) Limited.

This information is licensed under the Open Government Licence v2.0. To view this licence, visit www.nationalarchives.gov.uk/doc/open-government-licence/version/2 **OGI** or write to the Information Policy Team, The National Archives, Kew, London TW9 4DU, or e-mail: psi@nationalarchives.gsi.gov.uk. Where we have identified any third-party copyright information you will need to obtain permission from the copyright holders concerned.



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

Contents

1	Introduction	3
	1.2 Area and scope	4
2	Purpose of the Local Environmental Management Plan	5
3	Policy and environmental management principles	5
4	Implementation	6
5	General requirements	6
	5.1 Community relations	6
	5.2 Working hours	7
	5.3 Construction site layout and good housekeeping	8
	5.4 Site lighting	8
	5.5 Worksite security	9
	5.6 Hoardings, fencing and screening	9
	5.7 Unexploded ordnance	10
	5.8 Electromagnetic interference	10
	5.9 Temporary living accommodation	10
	5.10 Occupational healthcare	10
	5.11 Clearance and re-instatement of sites on completion	10
	5.12 Pollution incident control and emergency preparedness	10
	5.13 Fire prevention and control	11
	5.14 Extreme weather events	11
	5.15 Carbon management plans	11
	5.16 Interface management between adjacent construction areas	11
6	Agriculture, forestry and soils	11
	6.2 Sensitive receptors	11
	6.3 Local control measures	12
7	Air quality	12
	7.2 Sensitive receptors	13
	7.3 Local control measures	14
	7.4 Monitoring procedures	14
8	Cultural heritage	15
	8.2 Sensitive receptors	15
	8.3 Local control measures	15
	8.4 Monitoring	16
9	Ecology	16
	9.2 Sensitive receptors	16
	9.3 Local control measures	19
	9.4 Monitoring	23

10	Ground settlement	24
11	Land quality	24
	11.2 Potential contamination sources and sensitive receptors	25
	11.3 Local control measures	25
	11.4 Minerals	26
12	Landscape and visual	26
	12.2 Sensitive (significantly affected) receptors	26
	12.3 Local control measures	27
	12.4 Trees	28
	12.5 Site buildings for office and welfare	28
13	Noise and vibration	28
	13.2 Sensitive receptors	29
	13.3 Local control measures	30
	13.4 Monitoring	30
14	Traffic and transport	31
	14.2 Local control measures	32
	Sensitive receptors	32
	Site access	32
	14.3 Works to the Highway and Access Measures	33
	14.4 Monitoring procedures	34
15	Waste and materials	34
	15.2 Local control measures	35
	Testing and classification of materials	35
16	Water resources and flood risk	36
	16.2 Sensitive receptors	36
	16.3 Potential sources of contamination	37
	16.4 Local control measures	37
	Appendix 1: Glossary of Terms	39
	Appendix 2: Non-exhaustive list of Community Groups in SMBC	42
	Appendix 3: Worksite locations and boundaries	44
	List of figures	
	Figure 1. Key workstreams that will provide additional information for the LEMPs.	3
	List of tables	
	Table 1: Standard ecological issues and control measures relevant to this area	19

1 Introduction

- 1.1.1 This Local Environmental Management plan (LEMP) sets out site specific control measures to be adopted by HS2 Contractors working within the Solihull Metropolitan Borough Council (SMBC) area. 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 SMBC 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 maintenance of this LEMP is contained within this document, or links are provided to where it can be accessed. This includes:
- Information from traffic, environmental surveys and ground investigation works. This could either be seasonal ecological surveys, tree surveys, noise monitoring, ground settlement or the results of ground investigations detailing levels of contamination (where present) and the nature of the ground;
 - Feedback on pertinent information from on-going engagement; and
 - Results of petitions of the Parliamentary process which have resulted in amendments to the mitigation measures contained within the CoCP.



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

- 1.1.5 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, 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 Following the award of contracts, the Contractors will implement the requirements of the LEMPs and the CoCP through their own Environmental Management System (EMS), which will be certified to BS EN ISO 14001.
- 1.1.7 The Nominated Undertaker (HS2 Ltd)¹ and/or its Contractors will 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 (LWM-HS2-EV-REP-000-000033) identifies key worksites along the route of HS2 Phase One that are environmentally sensitive in terms of nature conservation, terrestrial and aquatic ecology, water resources, geomorphology, recreation and amenity, landscape, public open space and agricultural land. The criteria for inclusion are 'worksites where a key significant impact (that has been agreed with the HS2 National Environment Forum² members) is generated in any of the environmental topics' as mentioned above. There is one site identified in SMBC, this being Berkswell Marsh SSSI. The Site Specific Management Plan for this site will be presented within Appendix 4 when this has been prepared.
- 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 presented in the Environmental Statement (ES) maps (CFA18-19 and CFA23-25 Volume 2 Map Books and ES maps CT-05-099 to CT-05-109 and CT-05-133 to CT-05-136).
- 1.2.2 Construction worksites and areas required for construction works are shown within the maps listed in Appendix 3.
- 1.2.3 It is anticipated that the following general descriptions of work activities are to take place during core and non-core working hours during the construction period within SMBC:
 - advance works, including: site investigations, ground investigations and

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

² The 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

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
- works to highways including A45 Coventry Road and associated service roads, M42 Junction 6, Stonebridge roundabout; and
- people mover works, carriageway, airport and rail crossing works.
- system testing and commissioning.

2 Purpose of the Local Environmental Management Plan

2.1.1.1 This LEMP focuses on the area specific control measures by topic as relevant to construction works within the SMBC area. The measures described will be applied by the Nominated Undertaker and its Contractors throughout the construction period to reduce the potential environmental and community impacts within the SMBC area during construction.

2.1.1.2 The Nominated Undertaker and its Contractors will develop detailed environmental management mitigation through their EMS, taking into account this LEMP and the Environmental Minimum Requirements.

3 Policy and environmental management principles

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

4 Implementation

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

5 General requirements

5.1 Community relations

- 5.1.1 General control measures relating to community relations, hours of work, pollution incident control and security etc. are identified in Section 5 of the CoCP.
- 5.1.2 To reduce the likelihood of an environmental incident or nuisance occurring, measures from Section 5 of the CoCP will be implemented, as detailed below.
- 5.1.3 As detailed within Section 5 of the CoCP, the Nominated Undertaker and its Contractors will implement the Community Engagement Framework. The framework will focus on engagement during construction with the local communities and on the specific needs of protected groups (as defined in the Equalities Act 2010) especially those who may be affected by construction impacts in the immediate vicinity of the works. A range of tools will be used to achieve this that will tailor engagement to local needs.
- 5.1.4 Successful management of the project will involve understanding communities and their needs, actively engaging, listening and responding. The arrangements for this are set out in the HS2 Community Engagement Framework. Liaison with the local community will take place to consistently provide timely, clear tailored information on the construction programme, updates on forthcoming works. It will also provide the opportunity for members of the public to respond, discuss issues and provide feedback that can be acted upon. This information will be included in the local area plan for community engagement.
- 5.1.5 The local area plan will take account both of distinct geographic distribution of the communities within SMBC and will involve the Contractors and any relevant third parties and stakeholders, for which there will be co-ordination arrangements.
- 5.1.6 For the purposes of this LEMP, a third party is an organisation with whom HS2 Ltd has entered into a legal agreement to undertake works on its behalf, to be delivered under the powers of the High Speed Rail (London – West Midlands) Act (the Act), or the third

party's own powers (e.g. permitted development). Such agreements require the third parties to comply with the requirements of the Act and the EMRs, including the CoCP. Third parties relevant to this LEMP include Network Rail, Highways England, and utility companies such as Severn Trent Water, National Grid, Cadent and Western Power Distribution.

- 5.1.7 Ongoing engagement with local interests and community groups will occur during construction, as listed in Appendix 2 of this LEMP. (NB: This list is indicative and will be subject to change as more information becomes available.)

Advanced notice of works

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

5.2 Working hours

Consents

- 5.2.1 The framework for seeking consents from SMBC for working hours under section 61 of the Control of Pollution Act 1974 is set out in the CoCP.

Core working hours

- 5.2.2 Core working hours will be from 08:00 – 18:00 on weekdays (excluding bank holidays) and 08:00 – 13:00 on Saturdays. See also HS2 Information Paper D4: Working Hours.

- 5.2.3 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. 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 SMBC. Please note that emergencies (not repairs and maintenance) may be undertaken outside core hours.

- 5.2.4 Certain work activities at specific locations within the SMBC 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 works and rail works, including possessions) will be covered by the Section 61 process and are likely to include:

- the majority of the works at Carol Green Rail underbridge will be undertaken during core working hours; however there may be a number of activities where this is not possible due to the interface with the operation of the Rugby to Birmingham rail line and these will be undertaken outside of the core hours;

- the majority of works to the A45 Coventry Road and associated service roads will be undertaken during core working hours with some adjacent and tie-in works to the existing carriageway taking place outside of core working hours;
- the majority of works to the M42 junction 6 will be undertaken during core working hours, with some night and weekend working;
- the majority of the people mover works will be undertaken during core working hours with some adjacent and tie-in works to the existing carriageway, airport and rail crossing works taking place outside of core working hours;
- deliveries of large components, such as bridge beams, heavy plant and equipment; and
- setting up temporary vehicle and pedestrian diversions.

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

- Carol Green Rail Underbridge;
- People Mover crossing Rugby to Birmingham Line; and
- People Mover works at Birmingham International Station.

5.2.6 To limit the number of possessions that will be undertaken, a protective barrier will be installed where practicable between the existing railway and HS2 sites to maximise the works to be carried out during core working hours where stipulated clearance can be met, in accordance with s.61 processes.

5.2.7 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.

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

5.3 Construction site layout and good housekeeping

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

5.4 Site lighting

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

5.4.2 Where reasonably practicable, site lighting will be designed to avoid light pollution to surrounding buildings, ecological receptors, structures used by protected species, local

residents, railway operations, passing motorists and other sensitive land uses, where reasonably practicable.

5.5 Worksite security

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

5.6 Hoardings, fencing and screening

- 5.6.1 The site perimeter will generally be fenced with 2.4m high solid hoardings that will be appropriately decorated, in line with measures described within Section 5.6.1 of the CoCP, if appropriate.
- 5.6.2 Hoardings up to 3.6m high will, on occasions, be used to control construction noise. At locations where existing fencing may need to be removed, temporary wire mesh fencing or other suitable alternatives will be used. Specific hoarding heights in SMBC will be included in this LEMP as and when the hoarding designs are finalised.
- 5.6.3 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.
- 5.6.4 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. Details can be found in Information Paper D10: Worksite Security.

5.7 Unexploded ordnance

5.7.1 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.

5.8 Electromagnetic interference

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

5.9 Temporary living accommodation

5.9.1 Temporary workers accommodation is proposed at the following locations:

- A452 Kenilworth Road Overbridge Satellite Compound, located to the east of the A452 and north of Mercote Hall Lane;
- Birmingham Interchange, located to the east of the M42 and north of East Way.

The provision of on-site workers' temporary living accommodation will be considered and approved in advance by the local authority, as detailed within Section 5.9 of the CoCP.

5.10 Occupational healthcare

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

5.11 Clearance and re-instatement of sites on completion

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

5.12 Pollution incident control and emergency preparedness

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

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

Local control measures

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

- static plant will be used with secondary containment measures such as plant nappies to retain any leakage of fuel or oil and reduce the risk of 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 adjacent to watercourses, such as the River Blythe, Bayleys Brook, River Blythe Bypass channel, Shadow Brook and Hollywell Brook;
- implementing a surface water or groundwater monitoring plan, particularly in relation to works which may affect aquifers, for example, excavations and piling; and
- any work that might have an impact on groundwater quality will need formal approval by the EA via the Schedule 33 Part 5 in the Act.

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

5.13 Fire prevention and control

5.13.1 The Contractor's 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.

5.14 Extreme weather events

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

5.15 Carbon management plans

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

5.16 Interface management between adjacent construction areas

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

6 Agriculture, forestry and soils

6.1.1 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 416ha of agricultural land will lie within the construction boundary in the SMBC area. Approximately 69% of this land is of the best and most versatile quality in Grades 2 and 3a and the remaining 31% is moderate quality land in Subgrade 3b.

6.2.2 Approximately 171ha will be required permanently for the Scheme, with 243ha 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, particularly in respect of farm infrastructure and crops. This includes interruptions to drainage systems, livestock water supplies and irrigation systems, the potential for dust deposition on crops, particularly field vegetables; interruptions to farm and field accesses; and the maintenance of appropriate stock-proof fencing. This also applies to approximately 234ha of land within the construction boundary in the SMBC area that is to be restored to agriculture.

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. In the provision of early ecological mitigation areas the top soil and sub-soil will be entirely reused within the boundaries of each site and therefore an SRP will not be produced for these sites.
- 6.3.2 In areas where compounds are to be created, it is envisaged that each area will be stripped of topsoil in accordance with the SRP. Temporary material stockpiles will be clearly recorded and the topsoil will be reinstated.
- 6.3.3 In respect of storage areas for soil and excavated materials, and within the wider construction site, the presence and spread of invasive, non-native species (plants and animals) and noxious weeds will be controlled through the adoption of an appropriate management regime. This will identify and effectively treat areas which might also threaten adjoining agricultural areas.
- 6.3.4 Appropriate construction, handling, treatment and disposal procedures will be implemented in relation to invasive species and noxious weeds. Route-wide measures will also be implemented to promote bio-security and 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

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

- 7.1.2 Contractors will be required to manage dust, air pollution, odour and exhaust emissions during the construction works in accordance with Best Practicable Means (BPM) and refer to current publications on 'best practice'³.

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 Air quality construction assessment locations and the impacts at relevant receptors are identified in the main ES (Volume 2: CFA 18-19 and CFA 23-25 Reports, Chapter 4 Air quality and the Volume 5: Appendices AQ-001-018, AQ-001-019, AQ-001-023, AQ-001-024 and AQ-001-025), SES and AP₂ ES (SES and AP₂ ES Volume 2: CFA 18-19 and 23-25), and SES₃ and AP₄ ES (SES₃ and AP₄ ES Volume 2: CFA 18-19 and CFA23-25). The receptors considered most sensitive are those located within 20m of construction works and/or routes used by construction vehicles; these are specifically referred to in this LEMP.
- 7.2.4 In the SMBC area, these receptors are mainly residential properties but also include ecological receptors and include B4101 Waste Lane, Balsall Common; Truggist Lane; Marsh Lane; Lavender Hall Farm, Lavender Hall Lane; Top Lodge and Final Home, Park Lane; Berkswell Marsh Site of Special Scientific Interest (SSSI); Patrick Farm, Meriden Road; Pasture Farm, south of A45 Coventry Road; Old Station Road; Middle Bickenhill Lane; Park Farm and Common Farm, A452 Chester Road; Yorkminster Drive, Chelmsley Wood. Receptors potentially affected by emissions from anticipated construction traffic are mainly along the B4101 Waste Lane, A45 Coventry Road, M42 junction 6, A452 Kenilworth Road, Park Lane, A452 Chester Road, Middle Bickenhill Lane, and Coleshill Heath Road.
- 7.2.5 The Institute of Air Quality Management (IAQM) methodology⁴ for assessment of dust from demolition and construction has been used to classify the risk of dust impacts as 'low', 'medium' and 'high' risk at the locations of relevant sensitive receptors. The locations to be explicitly considered in the Contractor's working methods were assessed to have a low to high risk of dust impacts without mitigation measures.

³ 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

⁴ Institute of Air Quality Management (2011) *Guidance on the assessment of the impacts of construction on air quality and the determination of their significance*

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, which can include; the provision of dust suppression measures to be carried out in all areas of the site that are likely to generate dust, measures to keep roads and accesses clean and vehicle and the enclosure, shielding or provision of filters on plant likely to generate excessive quantities of dust beyond the site boundaries.
- 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 SMBC 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 2020⁵. 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 SMBC 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 IIIB⁶ from 2017 and from EU stage IV from 2020⁷. 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 will be implemented by the Contractor to assess the effectiveness of the control measures as outlined in section 7.3 of the CoCP. In SMBC, the monitoring procedures may include continuous automatic monitoring of airborne dust, including the setting a relevant site action level for dust (defined as a dust measurement threshold above which investigation will be required). The monitoring being undertaken by HS2 supplements existing air quality monitoring which is part of national and local authority surveys.
- 7.4.2 The monitoring programme, including locations for dust monitoring is in the process of being agreed. Monthly reports of monitoring data from HS2 air quality surveys will be made publically available throughout construction. These can be found on the HS2 website at this address: <https://www.gov.uk/government/collections/monitoring-the-environmental-effects-of-hs2>.

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

- 7.4.3 The HS2 Air Quality Strategy gives further information on monitoring, including the process to determine where monitoring would be required and the monitoring methods to be used. This document is available at the same website address as referenced in paragraph above.

8 Cultural heritage

- 8.1.1 General control measures relating to cultural heritage are provided in Section 8 of the CoCP. Further control measures for cultural heritage are provided in the Hs2 Phase One Heritage Memorandum within the Environmental Minimum Requirements and the specific documents identified therein.
- 8.1.2 A route-wide Generic Written Scheme of Investigation: Historic Environment Research and Delivery Strategy (GWSI:HERDS) has been prepared which sets out the general principles for design, evaluation, mitigation, analysis, reporting and archive deposition to be adopted for the design development and construction of the Scheme.
- 8.1.3 Works associated with the scheme will impact both designated and non-designated assets in SMBC. 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.

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 CH-002-018 to CH-002-019 and CH-002-023 to CH-002-025 and Map series CH-02).
- 8.2.2 Contractors will have due regard for the following designated heritage assets:
- Grade II* listed Park Farmhouse
 - Grade II listed Jerrings Hall Farm
 - Grade II Lavender Hall Farmhouse
 - Grade II Barn at Lavender Hall Farmhouse
 - Castle Bromwich Conservation Area

8.3 Local control measures

- 8.3.1 Where practicable, construction methodologies will be required to reduce the impacts on heritage assets. The CoCP sets out the provisions that will be adopted to control those effects, including the use of appropriate equipment and methods to limit ground disturbance and settlement followed by monitoring, protection and remediation. A programme of settlement monitoring and the implementation of avoidance measures where appropriate will be undertaken by the Contractor. Detailed provisions with

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

- 8.3.2 Schedule 18 of the Act and are the subject of Heritage Agreements with SMBC and Historic England. These agreements require details of works concerning each of the listed buildings to be submitted to SMBC for approval, and Historic England for consultation where applicable.
- 8.3.3 In addition, those listed buildings which may require works to maintain or restore their character, or for the affixing of monitoring apparatus are named in Table 2 of Schedule 18 of the Act. Listed buildings named in Table 2 are also covered by a Heritage Agreement with SMBC, 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.

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 Contractor will be made aware of locations designated for nature conservation, which are located within or adjacent to the Scheme in the SMBC area.
- 9.2.2 Designated sensitive habitat receptor sites are shown in the Volume 5 map books of the ES (Volume 5, Ecology Map Books CFA18-19 & 23-25) and SES and AP2 ES (Volume 5 Environmental Topic Map Books: Ecology CFA18-19 & 23-25). From south to north these include:
- Little Poors Wood LWS – a small deciduous woodland of 1.2ha in size with habitat of principal importance.
 - Beanit Farm Hedge LWS – a species rich hedgerow with a small section within the construction area.
 - Kenilworth Greenway Country Park – a disused railway that is mainly wooded with small patches of coarse grassland.

- Berkswell Marsh SSSI – the SSSI is located adjacent to Sixteen Acre Wood on the Berkswell Estate, 10m east of the land required for construction;
- Berkswell Marsh Meadow LWS – a large field mainly comprising species-rich marshy grassland. The northern and eastern sections are within land required for construction;
- River Blythe SSSI – the channel of the River Blythe is designated as a SSSI. The River Blythe is crossed by the route of the Scheme. Two short stretches of the river are located within land required for construction, one to the north of the B4102 Meriden Road and another at Stonebridge Island;
- Patrick Farm Meadow LWS - an area of species-rich semi-improved and marshy grassland that is located within the land required for construction;
- Mouldings Green Farm, Hampton-in-Arden LWS – a linear mosaic of habitats located within the River Blythe SSSI floodplain. The southern section lies within the land required for construction;
- Denbigh Spinney LWS – an area of wet woodland that is located within the land required for construction; and
- Coleshill Pool Wood LWS – an area of broad-leaved semi-natural woodland that lies within the land required for construction.

9.2.3 Sensitive habitat receptors outside of designated sites are displayed within the following series of Volume 5 maps of the main ES and relevant SES and AP amendments (EC-001-50b to EC-001-055 and EC-001-66a to EC-001-067). These include:

- Bayleys Brook channel (where it leaves Berkswell Marsh LWS but before its confluence with the River Blythe SSSI);
- Marsh Lane nature reserve;
- Horn Brook;
- Shadow Brook;
- Hollywell Brook;
- An unnamed brook at Denbigh Spinney LWS;
- Broadleaved woodland located at Marlowes Wood and Sixteen Acre Wood;
- Broadleaved plantation woodland within:
 - land to the west of The Roughs and north of Lodge Farm;
 - land to the south of The Roughs; and,
- Marlowes Wood, to south of Berkswell Marsh SSSI;
- Species-rich semi-improved neutral grassland at:
 - Odnau End Farm;

- Beechwood Farm;
- fields adjacent to River Blythe SSSI; and,
- land adjacent to Park Farm;
- Hedgerows throughout the area, including:
 - west of Kenilworth Greenway;
 - to the south of Lavender Hall Lane; and,
 - at Park Farm and Brickfield Farm;
- Lakes, ponds and small water bodies in various locations, including:
 - to the north of Packington Lane and east of the A446 Stonebridge Road;
 - at Brickfield Farm, to the west of Coleshill and Bannerly Pools SSSI; and,
 - Pendigo Lake;
- Marshy grassland and marginal vegetation on both sides of Hollywell Brook at Park Farm and along the east side of the River Blythe; and
- The River Cole.

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

- bats;
- breeding and wintering birds (particularly barn owl);
- great crested newt;
- common amphibian species (common toad, common frog and smooth newt);
- otter;
- common reptile species (common lizard, slow-worm and grass snake);
- badger;
- *Notaris scirpi* (a species of weevil);
- aquatic-macro invertebrates (diving beetles including *Rhantus suturalis* and *Hydroporus neglectus*);
- floating club-rush; and
- fish assemblages (including stone loach, brown trout and bullhead).

9.2.5 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:

- Indian balsam – within land required, including at Mouldings Green Farm;
- Japanese knotweed and variegated yellow archangel – including within land required, at and adjacent to Denbigh Spinney LWS;
- Rhododendron – including at a location less than 100m west of Coleshill and Bannerly Pools SSSI;
- Giant hogweed- there are past records of this species which may be present or may be by the time of construction.

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

9.2.7 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 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

9.2.9 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 SMBC.

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

Species/ species group	Issue	Standard control measure
Designated Nature Conservation Sites	There are two 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 areas 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

Species/ species group	Issue	Standard control measure
		set out in the relevant Ecology Site Management Plans.
Bats	<p>All UK bat species and their roosts (even if bats are not present) are fully protected under both UK and European legislation.</p> <p>The Scheme will result in the loss of confirmed bat roosts in trees and buildings.</p>	Adhere to requirements of licences and, where relevant, Ecology Site Management Plans.
	<p>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.</p>	Adopt precautionary approach. Follow appropriate Working Method Statement for demolition of buildings and felling of trees.
	<p>Retained bat roosts are present in close proximity to the Scheme. Caution is required to ensure that these roosts are not disturbed during works.</p>	<p>Where practicable, undertake activities causing disturbance during seasonal periods when bats are likely to be absent.</p> <p>Ensure lighting is directed away from known roosts.</p> <p>Reduce night time working in close proximity to retained roosts.</p> <p>Where practicable, temporary structures will be erected to screen the entrances/exits of retained roosts from construction areas.</p>
	<p>The Scheme will result in the loss of and disruption to bat foraging areas and commuting routes.</p>	<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>Reduce 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>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>

Species/ species group	Issue	Standard control measure
	The Scheme will result in the loss of nesting bird habitat, including vegetation, buildings and structures.	
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.	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.
Common reptiles	Common species of reptile (grass snake, adder, common lizard and slow worm) are protected from intentional killing or injury. Common reptiles are widespread, and the Scheme will result in the loss of confirmed and potential reptile habitat.	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. 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.
Badger	Badgers and their setts 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 to be stopped if potential setts are identified and an ecologist contacted for advice.

Species/ species group	Issue	Standard control measure
Otter	<p>Otters are fully protected under both UK and European legislation.</p> <p>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 during construction along some parts of the Scheme.</p>	<p>Adhere to requirements of licences and, where relevant, Ecology Site Management Plans.</p> <p>Ensure that route of safe passage for otters is maintained throughout construction at crossing points.</p> <p>Use fencing as required to prevent otters being forced over existing road crossings.</p> <p>Reduce light spill onto watercourses.</p>
Water vole	<p>Water voles are fully protected under UK legislation.</p> <p>The Scheme will result in the loss of confirmed and potential water vole habitat.</p>	<p>An appropriate Working Method Statement should be produced in advance of works commencing, where relevant.</p> <p>Adhere to requirements of translocation licence, where relevant.</p> <p>Contractors 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.</p>
Weevil <i>Notaris scirpi</i>	<p>Works associated with the Scheme will result in the loss of marginal vegetation alongside Hollywell Brook.</p>	<p>Adhere to requirements of method statements for the provision of marginal habitat alongside the Hollywell Brook.</p>
Diving beetles	<p>Works associated with the Scheme will result in the loss of ponds at the following locations which support notable diving beetle assemblages including three county rare species (<i>Helochares lividus</i>, <i>Hygroglyphus geminus</i> and <i>Rhantus suturalis</i>):</p> <ul style="list-style-type: none"> • Beechwood Farm • North of Middle Bickenhill Lane • Brickfield Farm. 	<p>Adhere to requirements of method statements for the provision of two new ponds south of Coleshill and Bannerly Pools SSSI.</p>
Floating club-rush	<p>Works associated with the Scheme will result in the loss of ponds that support the county rare floating club-rush to the north of Middle Bickenhill Lane.</p>	<p>Adhere to requirements of method statements for the translocation of floating club-rush to the proposed receptor site south of Coleshill and Bannerly Pools SSSI.</p>

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

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

9.4 Monitoring

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

10 Ground settlement

- 10.1.1 General control measures relating to ground settlement are provided in Section 10 of the CoCP. Specific measures to reduce and repair settlement and requirements with regard to assessment, surveys and monitoring are contained in the Settlement Policy / HS2 Information Paper C3: Ground Settlement.
- 10.1.2 Requirements for monitoring will be confirmed by the settlement report prepared during the detailed design stage. Where determined as necessary, monitoring will be undertaken on selected adjacent buildings, structures and the conventional railway tracks. Baseline readings will be taken prior to the commencement of excavation.
- 10.1.3 The monitoring strategy, methodology and programme, including the choice and location of monitoring equipment, will be discussed and agreed with the local authorities and land/building owners prior to commencement of construction.
- 10.1.4 Where significant building movement is predicted to be caused by excavation induced ground movements, ground treatment/improvement techniques might be required to ensure that if ground movement occurs, it stays within agreed and acceptable limits thereby limiting the impacts on buildings.
- 10.1.5 Monitoring may be required where existing sensitive buildings/structures/utilities are in close proximity to the planned excavation works. An assessment of the sensitivity of each building/structure/utility in close proximity to the excavation works will be carried out at the detailed design stage. This will then inform the design/specification of the monitoring system for that building/structure/utility and will also inform the design of any movement mitigation works if these are deemed necessary by the designer.
- 10.1.6 Prior to the commencement of construction, structural surveys and condition/defect surveys will be commissioned where structures are at likely risk of potentially damaging settlements.

11 Land quality

- 11.1.1 Further land quality study work including intrusive ground investigation (where needed) and analysis will be conducted HS2 Ltd. prior to construction in order to confirm areas of suspected land contamination within the Scheme for the area. Contaminated sites beyond the Scheme will be considered only in terms of its potential impact on the Scheme. For the purposes of this LEMP it is assumed that no new land quality constraints will be identified during these pre-construction surveys. If new constraints are identified then the LEMP would be updated accordingly. No contaminated sites (in accordance with the meaning defined in Part 2a of the Environmental Protection Act, 1990) have been formally identified by the Regulator (in accordance with and the Contaminated Land (England) Regulations 2000) within the Scheme.

11.1.2 General control measures relating to land quality are provided in Section 11 of the CoCP.

11.2 Potential contamination sources and sensitive receptors

11.2.1 The following land with potentially contaminative existing or historical uses has been identified as a possible contaminative risk to HS2 works within the SMBC area:

Infilled pond (LQ-01-050a, I7); Dismantled railway (LQ-01-050a, G6), Infilled pond (LQ-01-050a, G6) Infilled pit (LQ-01-050a, G6), various other sites (LQ-01-050a, F6; LQ-01-050a, F6; LQ-01-050a, E6; LQ-01-050a, E7; LQ-01-050a, E6; LQ-01-050a, E6; LQ-01-050a, E6; LQ-01-050a, D6), Infilled ponds (LQ-01-050a, E6); Berkswell electricity station (LQ-01-050b, F5, F6, G5, G6), Infilled pond (LQ-01-050b, E6); Kenilworth to Balsall dismantled Railway (LQ-01-050b, beginning in B7, ending in I6); Lavender Hall Landfill (LQ-01-051, G7, H7); Lavender Hall Farm (LQ-01-051, G7); Infilled marl pits (LQ-01-051, H6, H7 and F7); Lincoln Farm Café Landfill (LQ-01-052, H7); Infilled sand and gravel Pit (LQ-01-052, A5); Berkswell Quarry restored (LQ-01-052, G6 and G7); Possible historical munitions storage area (LQ-01-052, F6 and F7); Infilled sand and gravel pit (LQ-01-052, F7); Jacksons Brickworks (LQ-01-053, H6, H7, H8, I6, I7, I8, I9, J7, J8, J9); Infilled pond (LQ-01-053, H8); Cottage Farm (LQ-01-053, H8); Hampton in Arden to Shustoke dismantled rail line (LQ-01-053, runs north west – south east across site, relevant sections begin in G6 and end in H8); Myrtle Cottage Farm and Garage Services (LQ-01-053, G8); Park Farm Quarry (LQ-01-053, E6, F5, F6); Backfilled borrow pits associated with M42 construction (LQ-01-053, D7, E7, F7, E8, F8); Historic Warren Farm with tank (LQ-01-053, E8); Park Farm (LQ-01-053, F5); Middle Bickenhill Landfill (LQ-01-053, E6); Infilled pits (LQ-01-053, E5); Brackenlands Farm Landfill (LQ-01-053, B5, B6).

11.2.2 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, schools, users of public open space, local employees, construction and/or maintenance workers
- surface water: including; the River Blythe, River Blythe Bypass Channel, Bayleys Brook, Shadow Brook, Hollywell Brook, River Cole, artificial and natural ponds and drains and several unnamed watercourse/ditches
- controlled waters, including groundwaters in Principal aquifers (Tile Hill Mudstone and Bromsgrove Sandstone), various Secondary A aquifers and Secondary B aquifer (Mercia Mudstone);
- the built environment, including buildings, property and underground structures and services
- the natural environment – including, River Blythe SSSI, Berkswell Marsh SSSI, and the species they support.

11.3 Local control measures

11.3.1 Ground investigations are being undertaken to assess areas of potential contamination within the Scheme. Following development of a conceptual site model and a risk assessment a remedial strategy will be prepared, as needed. Consultation with SMBC

and the Environment Agency should take place, as appropriate, during the formulation of any remedial strategy, 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 from the site are to be separated from other materials and treated, as necessary. Where reasonably practicable, material will be reused within the Scheme, where it is suitable for use. Treatment techniques could include stabilisation methods, soil washing, appropriately permitted bio-remediation to remove oil contaminants and disposal off site. For material from SMBC, this may take place off-site at a soil treatment facility or an appropriately permitted landfill site.
- 11.3.3 Excavation through Lavender Hall Farm, Jacksons Brickworks and Middle Bickenhill Lane historical landfill sites in the SMBC 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 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 adversely 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 The Scheme crosses a number of Mineral Safeguarding Areas in the SMBC area, including those for building stone, sand and gravel and coal as well as Preferred Areas for sand and gravel extraction. Some of these sites have current planning permission for mineral extraction within the Scheme boundary.
- 11.4.2 Mitigation of potential impact on these mineral resources can include prior extraction of the resource for use within the project or elsewhere. Extraction may be limited to areas of environmental mitigation earthworks within the Scheme adjacent to rather than beneath the trackbed, which will require good founding conditions. A plan will be discussed in advance of the construction works with the landowner and/or mineral owner, the mineral planning department at SMBC and any other interested parties to assist in achieving an effective management of minerals within the location of the affected Mineral Safeguarding Areas as well as Preferred Areas and Areas of Search.

12 Landscape and visual

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

12.2 Sensitive (significantly affected) receptors

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

- Coventry Rural Fringe LCA
- Balsall Common Rural LCA
- Solihull Rural Heartland LCA
- Balsall Common residential LCA
- Blythe Valley LCA
- Hampton-in-Arden LCA
- M42 Corridor LCA
- Chelmsley Wood LCA
- Cole Valley LCA

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

- residents in the area, particularly on the edges of Balsall Common, Berkswell, Bradnocks Marsh, Hampton-in-Arden, Kingshurst, Bacon's End, Smith's Wood,, along Middle Bickenhill Lane, Waste Lane and Hodgett's Lane, and Chelmsley Wood, as well as isolated residences interspersed throughout the landscape;
- recreational users of the extensive network of footpath, cycleways and bridleways near the Scheme, including the Kenilworth Greenway, the Heart of England Way (M214), M215 , M216, M217, M186, Green Lane (M77), M54 and M55 and PROW generally within 1km of the route;
- patrons of leisure based commercial enterprises including Lavender Hall fisheries, the Berkswell Estate, Marsh Lane Nature Reserve, the Packington Estate, the Toby Carvery and The Little Owl Public Houses, visitors to Melbicks Garden & Leisure Centre, the NEC and the National Motorcycle Museum and users of Heath Park and Bluebell Recreational Ground;
- employees in commercial units at Little Beanit Farm Holiday Cottages, Patrick Farm, Quartz Point Business Park , Birmingham Business Park and throughout the NEC complex; and
- people travelling through the area along roads, including along Waste Lane, Truggist Lane, Hodgetts Lane, A452 Kenilworth Road, B4102 Meriden Road, Diddington Lane, Cornets End lane, Middle Bickenhill Lane, A452 Chester Road, Solihull Parkway, A446 Stonebridge Island, Coleshill Heath Road, A45 Coventry Road and the B4118 Water Orton Road

12.2.3 The lead Contractor shall also discuss the possibility of advance planting off-site with landowners in the SMBC 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 of well-maintained hoardings and fencing
- design lighting to avoid unnecessary intrusion onto adjacent buildings and other land uses
- replace any trees felled as a consequence of construction works
- prevention of damage to the trees and landscape features adjacent to the construction sites due to movement of construction vehicles and machinery
- 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
- position temporary bunds to be positioned to screen views to the route construction
- the design of construction compound layouts to prevent damage to the retained trees as well as reduce visual and other impacts where practicable.
- identify specific locations of temporary material stockpiles to reduce visual impacts.

12.4 Trees

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

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

12.5 Site buildings for office and welfare

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

13 Noise and vibration

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

13.2 Sensitive receptors

- 13.2.1 Noise and vibration construction assessment locations, at sensitive residential and non-residential properties, are identified within Noise and Vibration SES2 and AP3 Volume 5 SV-03 and SV-04 map series (ref.: ES 3.5.1.9.3 and 3.5.1.9.4).
- 13.2.2 Noise insulation is being offered for qualifying buildings as defined in the noise insulation and temporary rehousing policy within HS2 Information Paper E23. Noise insulation or temporary rehousing will mitigate residents being significantly affected by levels of construction noise inside their dwellings.
- 13.2.3 Qualification for noise insulation and temporary re-housing will be identified. Qualifying buildings are being identified in the SMBC area early enough so that noise insulation can be installed, or temporary rehousing provided, before the start of the works predicted to exceed noise insulation or temporary rehousing criteria.
- 13.2.4 The avoidance and mitigation measures in this area will avoid airborne construction noise adverse effects on the majority of residential receptors, communities and non-residential sensitive receptors. Non-residential sensitive receptors for which the ES, or subsequent SES and AP reports, have reported likely direct significant adverse effects from construction noise and/or vibration are located at:
- British Legion Club, located on Station Road, Balsall Common;
 - Bibury House guest house located on the A452 Kenilworth Road north of Balsall Common;
 - commercial units at Patrick Farm, B4102 Meriden Road;
 - the site of the Island Project School at Diddington Hall, depending on the future use of the site;
 - the closest NEC buildings to the people mover, Exhibition hall 1 and the Pavilion area;
 - Crowne Plaza Birmingham NEC and Hilton Birmingham Metropole hotels at the NEC;
 - Novotel, Ibis and Etap hotels at Birmingham Airport; and
 - Proposed new hotel at Birmingham Airport adjacent to Diamond House offices.
- 13.2.5 Residential communities for which the ES, or subsequent SES and AP reports, have reported likely direct significant adverse effects from construction noise and/or vibration are located at:
- Approximately 10 dwellings off Truggist Lane, Berkswell;
 - Approximately 5 dwellings on Lavender Hall Lane, Berkswell; and
 - Approximately 10 dwellings on the A452 Kenilworth Road, north of Balsall Common

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 SMBC, 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 SMBC through the Section 61 process. 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.

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

13.3.3 Two residential buildings (Patrick Farm, Meriden Road, and Park Farm, Chester Road) were identified in the ES and/or subsequent SES and AP reports as potentially experiencing noise levels higher than the noise insulation trigger levels as defined in the CoCP (Section 13) and are currently identified as qualifying for a noise insulation package as detailed within the noise insulation and temporary rehousing policy (to be issued).

13.3.4 Qualifying properties will be periodically reviewed, including following any material changes in the proposed construction method and the local control measures 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.

13.4.2 Monitoring has been agreed with SMBC at the following locations:

- Hodgett's Lane (Burton Green Auto-Transformer Feeder Station)
- Marcote Cottages (Bradnock Auto-Transformer Station)
- Meadow Cottages (Birmingham Interchange Station and People Mover Depot)
- Common Farm (Interchange Auto-Transformer Station)

- 13.4.3 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 SMBC if a written request is made. In addition, monthly noise monitoring reports will be made publically available throughout construction. The monthly reports will include information such as measurement methodology and monitoring locations. These can be found on the HS2 website at this address: <https://www.gov.uk/government/collections/monitoring-the-environmental-effects-of-hs2>.
- 13.4.4 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 Route-wide, local area and site specific traffic management measures will be implemented during the construction of the project on or adjacent to public roads, bridleways, footpaths and other Public rights of way (PRoW) affected by the Scheme as necessary. These measures are guided by Section 14 of the CoCP.
- 14.1.2 The CoCP sets out a number of measures to ensure the impacts from construction traffic on the local community are reduced by its Contractors where reasonably practicable:
- A Route-wide Traffic Management Plan (RTMP) setting out generic traffic management measures to be implemented during the construction of the project;
 - The Local Traffic Management Plans (LTMP) will set out matters such as planned worksites, lorry routes and the programme of major traffic management measures expected to be necessary within particular areas along the route;
 - Contractors will prepare site specific traffic management measures, which will be subject to consultation and, as necessary, consent;
 - Contractors will prepare construction workforce travel plans with the aim of encouraging the use of sustainable modes of transport to reduce the impact of workforce travel on local residents and businesses; and
 - For road cleanliness Contractors will be required to use all reasonably practicable measures to avoid/limit and mitigate the deposition of mud and other debris on the highway.
- 14.1.3 HS2 will require its Contractors to undertake such appropriate monitoring as is necessary to ensure compliance with the requirements of the CoCP, and this will include the maintenance of records of traffic management measures installed.
- 14.1.4 Information relating to construction traffic is also provided in the following Information Papers:

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

14.2 Local control measures

Sensitive receptors

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

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

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

- Pedestrians using footways to local roads, including B4101 Kelsey Lane/Waste Lane; Diddington Lane; the B4102 Meriden Road; Park Lane; Lavender Hall Lane; Station Road/Truggist Lane; Coleshill Heath Road; Bickenhill Parkway; Middle Bickenhill Lane; Northway, Southway and East Way A45 Service Road) and some of the main roads (listed below) and also 17 public rights of way (PRoW) affected by the Scheme;
- Cyclists using off-road cycle paths and a number of roads identified as advisory cycle routes, including: Station Road/Truggist Lane, Lavender Hall Lane, Diddington Lane, Old Station Road, B4102 Meriden Road; and Main Road;
- Kenilworth Greenway; and
- Strategic roads, including; A452 Kenilworth Road; A45 Coventry Road; A452 Chester Road; A446 Stonebridge Road and the M6 and M42.

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 followings:

- B4101 Waste Lane to construct a worksite access and for tie-in of the off-line Waste Lane overbridge;
- Truggist Lane for construction of the viaduct;
- Lavender Hall Lane to construct a bridge over the Scheme
- B4102 Meriden Road to construct the overbridge;
- Diddington Lane for tie-in of off-line highway works;
- A452 Kenilworth Road for tie-in of off-line highway works;
- M42 between junctions 6 and 7 and M42 junction 6 and M6 junction 4;
- A45 Coventry Road, A452 Chester Road, A446 Stonebridge Road and the A452 Chester Road/A446 Stonebridge Road/Solihull Parkway roundabout;
- B4438 Bickenhill Parkway; and
- roads around Birmingham Airport, Birmingham International station and the NEC, including Airport Way/Hermes Road roundabout, the Station Link Road, East Way, Pendigo Way, East Car Park Road and the Perimeter Road

14.3.2 The northern section of Middle Bickenhill Lane will be permanently closed. Park Lane will be permanently diverted, with the existing alignment being closed

14.3.3 Alternative temporary routes and permanent diversions are required for the following PRoW:

- Kenilworth Greenway;
- FP M114 (temporary and permanent);
- FP M115 (temporary and permanent);
- FP M191;
- FP M192;
- FP M196;
- FP M197;
- FP M214;
- FP M215;
- FP M216;

- FP M217;
- FP M218;
- FP M230A; and
- the footpath around Pendigo Lake.

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

14.3.5 A network of haul roads will be created within the area to minimise construction traffic on public highways.

14.3.6 In addition to road closures, traffic management will be in place on the A452 Kenilworth Road, the B4101 Waste Lane, Truggist Lane, Lavender Hall Lane, Park Lane, the B4102 Meriden Road, A45/A452 Stonebridge Island, the M42, including junction 6 and between junctions 6 and 7, the M6 junction 4, A452 Chester Road/B4438 Bickenhill Parkway roundabout, the A45 Coventry Road, A452 Chester Road, A446 Stonebridge Road and Coleshill Heath Road.

14.3.7 Civil engineering works will necessitate temporary rail track possessions in this area. Key railway systems installation works in this section of the route will take approximately nine months to complete and will include modification of the existing rail overhead line equipment to achieve a lower contact wire height, to accommodate the construction of the Carol Green Rail underbridge over the Rugby to Birmingham rail line. Disruption to rail users will be minimised by limiting possessions, where reasonable practical, to overnight, off-peak or weekend periods. Where necessary, rail replacement services will be provided.

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

14.4 Monitoring procedures

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

15 Waste and materials

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

15.2 Local control measures

Testing and classification of materials

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

Transport of waste and materials

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

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

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

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

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

16 Water resources and flood risk

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

16.2 Sensitive receptors

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

- Local aquifers: Tile Hill Mudstone – Carboniferous Warwickshire (Principal aquifer), Glaciofluvial sands and gravels (Secondary A aquifer), Alluvium (Secondary A aquifer), River terrace deposits (Secondary A aquifer), Arden Sandstone (Secondary A aquifer), Glaciolacustrine (Secondary A aquifer), and Mercia Mudstone (Secondary B aquifer)
- Surface water features: River Blythe, River Cole (works are undertaken in the catchment of this river although it is not directly affected by works), Shadow Brook, Bayleys Brook, Horn Brook, Lavender Hall Fisheries, Berkswell Estate Fishing Lake, Hollywell Brook, Pendigo Lake, unnamed watercourse at Denbigh Spinney, tributaries of the River Tame and numerous ponds within and surrounding the land required for construction and 13 springs in close proximity
- Water dependent habitats: River Blythe SSSI, Berkswell Marsh SSSI (wet woodland and marshy grassland), Patrick Farm Meadow LWS (marshy grassland), Mouldings Green Farm LWS (marshy grassland and ponds) and Denbigh Spinney LWS (wet woodland).
- Abstractions: Two licensed and three unlicensed groundwater abstractions.

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

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

- River Blythe
- Bayleys Brook
- the River Blythe Bypass channel
- Shadow Brook
- Hollywell Brook
- Denbigh Spinney watercourse
- River Cole
- River Tame

16.2.4 The Contractor will have due regard to the following local flood water receptors and their respective flood histories:

- surface water - areas at risk of surface water flooding, as shown on the Environment Agency's Flood Maps for Surface Water. These are mostly associated with watercourses.
- sewer – locations identified in both the Warwickshire County Council (WCC) and SMBC Strategic Flood Risk Assessment (SFRA) and Preliminary Flood Risk Assessment (PFRA); and
- groundwater – locations identified in both the WCC and SMBC SFRA and the PFRA.

16.3 Potential sources of contamination

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

16.4 Local control measures

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

16.4.2 As outlined in the CoCP, best practice measures will be used (e.g. through the use of silt traps and appropriate attenuation, if required) prior to the discharge of water to watercourses, groundwater or surface water sewers, subject to obtaining the required permits or consents. This could apply to runoff from wheel washing facilities or from general construction activities. As noted in Section 5.12 of this document, a pollution incident control management system will be produced which will incorporate procedures for reducing impacts to local private abstractions in this area.

16.4.3 Where there is the possibility that work may affect aquifers, a groundwater monitoring plan will be implemented, as outlined in Section 16 of the CoCP.

16.4.4 A programme of groundwater and surface water monitoring will be undertaken prior to, during and following completion of the construction works. The monitoring programme scope and duration will be developed and agreed with the Environment Agency in consultation with relevant stakeholders as necessary (Lead Local Flood Authority (LLFAs) and Internal Drainage Board (IDBs)). A management strategy will also be agreed with the Environment Agency in consultation with relevant stakeholders that will cover any physical mitigation required for the protection of public water supply.

16.4.5 If dewatering from excavations is required, it will be carried out in consultation with the Environment Agency and will take into consideration risks posed to water quality or quantity.

16.4.6 If required, appropriate guidance will be adhered to, including the Piling and Preventative Ground Improvement Methods on Land Affected by Contamination:

Guidance on Pollution Prevention¹². 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. 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 31 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, 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.

¹² Environment Agency (2001), Piling and Preventative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution

Appendix 1: Glossary of Terms

AP	Additional Provision
CFA	Community Forum Area
CoCP	Code of Construction Practice
Contractor	The Contractor on a construction site responsible for planning, managing and co-ordinating themselves and/or the works and all other contractors working on their site, or any other contractor directly employed by the Nominated Undertaker to undertake key construction works on site.
CPC	Safe Urban Driving Certificate of Professional Competence
DRI	Demolition Recovery Index
EMS	Environmental Management System
ES	Environmental Statement
FORS	Fleet Operators Recognition Scheme
GWSI:HERDS	Generic Written Scheme of Investigation: Historic Environment Research and Delivery Strategy
HGVs	Heavy Goods vehicles
HS2	High Speed 2
HS2 Ltd	High Speed Two Limited - is a company wholly owned by the Department for Transport, established in 2009 to develop plans for a new high speed network and present a route connecting London - West Midlands.
IAQM	Institute of Air Quality Management
IP	Information Paper
LCAs	Landscape character areas
LEMP	Local Environmental Management Plan

LNR	Local Nature Reserve
LSWSI	Location Specific Written Scheme of Investigation
LTMP	Local Traffic Management Plan
LWS	Local Wildlife Site
NBRI	New Build Recovery Index
NEF	National Environment Forum, comprised of Government departments and statutory bodies and established to advise on environmental policy for HS2, including project-wide strategies for reducing the environmental impact of the line and principles for the Code of Construction Practice.
Nominated Undertaker	The body or bodies appointed to implement the powers of the Act to construct and maintain the railway.
PFRA	Preliminary Flood Risk Assessment
PRoW	Public rights of way
RRVs	Road Rail Vehicles, a vehicle which can operate on both rail tracks and road, often used for railway maintenance
RTMP	Route-wide Traffic Management Plan
SBI	Site of Biological Importance
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).
Scheme	The Scheme to which this CoCP relates is the high-speed railway between London - West Midlands. This is a high speed railway between London - West Midlands with a connection via the West Coast Main Line at conventional speeds to the North West and Scotland 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
SLI	Site of Local Importance
SMBC	Solihull Metropolitan Borough Council
SMI	Site of Metropolitan Importance
SPZ	Source Protection Zone
SRP	Soil Resources Plan
SSMP	Site Specific Management Plan
Third Party	For the purposes of the LEMPs, an organisation with whom HS2 Ltd has entered into a legal agreement to undertake works on its behalf, to be delivered under Act powers 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 might include Network Rail, Highways England, and utility companies.
TMP	Traffic Management Plan
TPC	Traffic Plan Coordinator
WFD	Water Framework Directive
WSI	Written Scheme of Investigation

Appendix 2: Non-exhaustive list of Community Groups in SMBC

- SMBC
- Local Members of Parliament
- HS2 Community Forums:
 - Stoneleigh, Kenilworth & Burton Green (CFA 18)
 - Coleshill Junction (CFA19)
 - Balsall Common & Hampton in Arden (CFA 23)
 - Birmingham Interchange & Chelmsley Wood (CFA 24)
 - Castle Bromwich and Bromford (CFA 25)
- Environment Agency
- Natural England
- Highways England
- Transport for West Midlands
- Network Rail
- Birmingham Airport
- Castle Bromwich
- Chelmsley Wood Town Council
- Bickenhill Parish Council
- Hampton –in-Arden Parish Council
- Balsall Parish Council
- Berkswell Parish Council
- Great Packington Parish Council
- Little Packington Parish Council
- landowners/occupiers directly affected by the Scheme
- local residents
- residents and community associations
- amenity groups
- emergency services
- representatives from local faith groups

- local businesses
- Warwickshire, Solihull and Coventry Local Access Forum

Appendix 3: Worksite locations and boundaries

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

Document number	Map number	Map name
C223-CSI-EV-DPL-030-519900-AP04	CT-05-099	Construction Phase SES3 and AP4 ES
C223-CSI-EV-DPL-030-519902-AP04	CT-05-099a-L1	Construction Phase SES3 and AP4 ES
C223-CSI-EV-DPL-030-519903-AP04	CT-05-099a-L2	Construction Phase SES3 and AP4 ES
C223-CSI-EV-DPL-030-520100-AP02	CT-05-100a	Construction Phase SES and AP2 ES
C224-ARP-EV-DPL-040-205101-AP02	CT-05-101	Construction Phase SES and AP2 ES
C224-ARP-EV-DPL-040-205102-AP02	CT-05-102	Construction Phase SES and AP2 ES
C224-ARP-EV-DPL-040-205103-AP04	CT-05-103	Construction Phase SES3 and AP4 ES
C224-ARP-EV-DPL-040-205104-AP02	CT-05-104	Construction Phase SES and AP2 ES
C224-ARP-EV-DPL-040-205005-AP04	CT-05-105a	Construction Phase SES3 and AP4 ES
C224-ARP-EV-DPL-040-205205-AP04	CT-05-105a-L1	Construction Phase SES3 and AP4 ES
C224-ARP-EV-DPL-040-205106-AP04	CT-05-106	Construction Phase SES3 and AP4 ES
C224-ARP-EV-DPL-040-205206-AP05	CT-05-106-L1	Construction Phase SES4 and AP5 ES
C224-ARP-EV-DPL-040-205306-AP05	CT-05-106-L2	Construction Phase SES4 and AP5 ES
C224-ARP-EV-DPL-040-205107-AP04	CT-05-107	Construction Phase SES3 and AP4 ES
C223-CSI-EV-DPL-030-521700-AP02	CT-05-108	Construction Phase SES and AP2 ES
C223-CSI-EV-DPL-030-521900-AP04	CT-05-109	Construction Phase SES3 and AP4 ES
C223-CSI-EV-DPL-030-526300-AP04	CT-05-133	Construction Phase SES3 and AP4 ES
C223-CSI-EV-DPL-030-526500-AP04	CT-05-134a	Construction Phase SES3 and AP4 ES
C223-CSI-EV-DPL-030-526700-AP04	CT-05-135a	Construction Phase SES3 and AP4 ES
C224-ARP-EV-DPL-040-205136-AP04	CT-05-136	Construction Phase SES3 and AP4 ES

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

www.gov.uk/hs2