

Local Environmental Management Plan – Stratford-on-Avon District Council

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1 Introduction

- 1.1.1 This Local Environmental Management Plan (LEMP) outlines site-specific control measures within the Stratford-on-Avon District Council (SoADC) area.
- 1.1.2 This LEMP builds upon but does not repeat the HS2 general environmental requirements set out in the Code of Construction Practice (CoCP) (available online at: https://www.gov.uk/government/publications/environmental-minimum-requirements).
- 1.1.3 This LEMP contains control measures and standards to be implemented within SoADC 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.
- 1.1.4 For ease of reference the LEMP mirrors the topic headings in the CoCP.
- 1.1.5 Information of relevance to the formation and maintenance of this LEMP (as shown in figure 1) is contained within this document, or links are provided to where it can be accessed. This includes:
 - Information from traffic, environmental surveys and ground investigation works.
 This could either be seasonal ecological surveys, tree surveys, noise monitoring, ground settlement or the results of ground investigations detailing levels of contamination (where present) and the nature of the ground;
 - Feedback on pertinent information from on-going engagement; and,
 - Results of petitions of the Parliamentary process which have resulted in amendments to the mitigation measures contained within the CoCP.



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

- 1.1.6 This LEMP has been prepared taking into account findings of the Environmental Statement (ES), Additional provision 1 (AP1) and Supplementary Environment (SES) AP2 as well as SES3 and AP4 ES where relevant. It has evolved during the Parliamentary process and engagement with the Local Authority and other stakeholders, such as members of the National Environment Forum, which have informed its development. This LEMP may be subject to further refinement, amendment and expansion as necessary as the project design progresses.
- 1.1.7 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.
- 1.1.8 The Nominated Undertaker (HS2 Ltd)¹ and/or its Contractors (refer to Section 4 below) will continue to engage with the local stakeholders. This will take the form of engagement events which will be carried out to introduce and brief the communities on local environmental information, management and mitigation as detailed within this document.
- 1.1.9 The HS2 Environmental Memorandum identifies key worksites along the route of HS2 Phase One that are environmentally sensitive in terms of nature conservation, terrestrial and aquatic ecology, water resources, geomorphology, recreation and amenity, landscape, public open space and agricultural land. The criteria for inclusion are 'worksites where a key significant impact (that has been agreed with the HS2 National Environment Forum² members) is generated in any of the environmental topics' as mentioned above. There are currently no environmentally sensitive worksites identified within SoADC
- 1.1.10 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 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 safety and wellbeing.
- 1.1.11 HS2 documents referenced in this LEMP can be found on the www.gov.uk website.

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.

1.2 Area and scope

- 1.2.1 The SoADC area covers one Community Forum Area. Plans showing more details of the Scheme, as revised in AP4, an overview of the local authority area covered by this LEMP, are presented in the Environmental Statement (ES) maps (CFA 16 Volume 2 map books ES Ref 3.2.216) CT-05-001 to CT-06-001;
 - CFA16: CT-05-079b (SES, AP2 ES), CT-05- 080 (SES3, AP4 ES), CT-05-080-R1 (ES), CT-05-081 (SES3, AP4 ES), CT-05-081-L1 to 081-L2 (ES), CT-05-082 (SES, AP2 ES), CT-05-082-R1 to R2 (ES), CT-05-083 (SES3, AP4 ES), CT-05-084 to 084-L1 (SES, AP2 ES), and CT-05-085 to 088a (SES3, AP4 ES).
- 1.2.2 Construction worksites and areas required for construction works are shown within the CT- 05 maps.

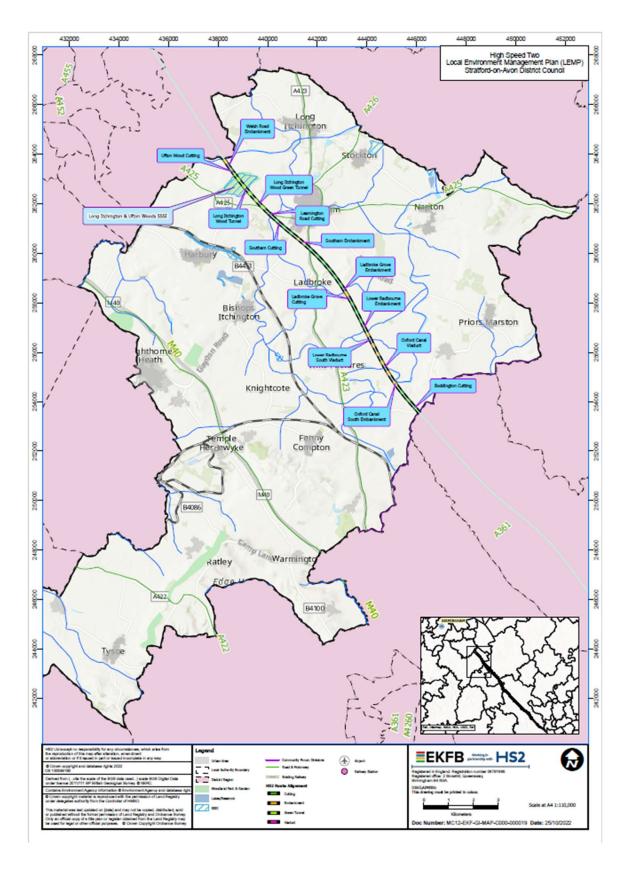


Figure 2: Stratford-on-Avon District Council (SoADC) Context Map

1.2.3 The main structures to be constructed within the SoADC area are listed in Table 1. The compounds to facilitate the construction are listed in Table 2.

Table 1: Major Assets within SoADC area

Major Asset Name	Туре	Start Chainage
Boddington Cutting	Cutting	116400 (starts o/s of SoADC)
Oxford Canal Viaduct	Viaduct	118.600
Oxford Canal North Embankment	Embankment	118.700
Lower Radbourne South Viaduct	Viaduct	119.900
Lower Radbourne North Viaduct	Viaduct	120.370
Ladbroke Grove Cutting	Cutting	120.580
Ladbroke Cutting	Cutting	122.280
Windmill Lane Green Overbridge	Overbridge	122.800
Southam Cutting	Cutting	125.100
River Itchen Viaduct (EKFB/BBV border)	Viaduct	126.400
Long Itchington Wood Tunnel	Tunnel	126.700

Table 2: Compounds within SoADC Area

Compound Name	Туре	Chainage
Heave trial (Wormleighton) (EKFB)	Satellite compound	116.600/117.300
Southam (A423) (EKFB)	Main Compound	124.000
Long Itchington Tunnel Compound (South) (BBV)	Satellite compound	126.600
Long Itching Tunnel North Portal (North) (BBV)	Main Compound	129.100

1.2.4 The Enabling Works Contractors (EWC) have carried out a range of survey and investigation works which commenced in early 2017. The EWC have also carried out some construction work including the provision of early ecological mitigation sites and highways improvement works.

- 1.2.5 The EWC works should be completed by the end of 2022 with remaining scope passed to the Main Works Civils Contractor (MWCC), EFKB. The scope to be passed to MWCC is still being determined but is likely to encompass: completion of fencing works; archaeological mitigation; ongoing ecological surveys; maintenance of ecological mitigation sites and tree planted areas.
- 1.2.6 The Main Works Civils Contractor developed the Scheme Design between July 2017 and April 2020 and Notice to Proceed, which provided approval to begin detailed design and construction works.
- 1.2.7 It is anticipated that the following work activities within SoADC boundary are to take place during core and non-core working hours during the construction period, these will include but are not limited to:
 - advance works, including: site investigations 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;
 - Earthworks to create cuttings and embankments along the route. Construction of structures including bridges, viaducts and culverts.
 - works to conventional railway track, signalling and other railway systems;
 - high speed railway installation works and systems fit-out including: establishment
 of construction compounds; infrastructure installation, traction power supplies,
 overhead line equipment and communications features; connections to utilities;
 removal of construction compounds; and,
 - system testing and commissioning.

2 Purpose of the Local Environmental Management Plan

- 2.1.1 This LEMP focuses on the area specific control measures by topic as relevant to construction works within the SoADC area. The measures described will be applied by the Nominated Undertaker and its Contractors throughout the construction period to reduce the potential environmental impacts within the SoADC area during construction.
- 2.1.2 The Nominated Undertaker and its Contractors will develop the detailed Environmental Management Plans, taking into account this LEMP and the Environmental Minimum Requirements. The detailed Environmental Management Plans will remain confidential due to contractual agreements. However, certain plans will be discussed with the relevant environmental bodies. Management plans for the environmentally sensitive worksites will be submitted for information with relevant Schedule 17, or where appropriate heritage, applications.

3 Policy and environmental management principles

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

4 Implementation

- 4.1.1 Details relating to implementation, such as enforcement and site management measures, are provided in Section 4 of the CoCP.
- 4.1.2 On 16 November 2016 contracts were awarded for three Enabling Works
 Contractors (EWC) working on behalf of HS2 Ltd across Phase 1 of the project. There
 is a contract boundary within the SoADC area; the Contractors covering the area are:
 - Fusion, a joint venture between Morgan Sindall Infrastructure Services, BAM Nuttall Ltd and Ferrovial Agroman. Fusion cover the majority of the SoADC area from the boundary with South Northamptonshire, at Wormleighton to the River Itchen, east of Southam; and,

- Laing O'Murphy Joint Venture (LM-JV) brings together Laing O'Rourke and J. Murphy & Sons. LM-JV cover the SoADC area from the River Itchen to the boundary with Warwick District Council just south of the Grand Union Canal.
- 4.1.3 On 17 July 2017 contracts were awarded for HS2's Main Works Civils Contractors (MWCC). The MWCC for the SoADC area are EKFB (formally CEK/EK), from the boundary with South Northamptonshire near Wormleighton to the River Itchen east of Southam, and BBVJV, covering the area from the River Itchen to the boundary with Warwick District Council just south of the Grand Union Canal.
- 4.1.4 EKFB is a joint venture made of Eiffage, Kier, Ferrovial and BAM Nuttall and BBV is a joint venture between Balfour Beatty and VINCI.

5 General requirements

5.1 General control measures

- 5.1.1 General control measures relating to community relations, hours of work, pollution incident control and security etc. are identified in Section 5 of the CoCP.
- 5.1.2 To reduce the likelihood of an environmental incident or nuisance occurring, measures from Section 5 of the CoCP will be implemented, as detailed in section 5.2 to 5.16 below.
- 5.1.3 HS2 and its Contractors will be running a series of engagement events and activities that will cover the upcoming programme of works and associated environmental controls where appropriate.

5.2 Community relations

As detailed within the CoCP, the Nominated Undertaker and Contractors will implement the Community Engagement Framework, which will be reviewed and updated regularly. The framework will focus on engagement during construction with the community including local residents, businesses, community groups, stakeholders, land owners, community resources and 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. See also HS2 Information Paper G2: Community Relations.

- 5.2.2 Successful management of the project will involve establishing and maintaining good relations with site neighbours. The arrangements for this will be set out in the HS2 Community Engagement Framework and as per arrangements listed in Class Approval for matters ancillary to development under Schedule 17 such as site lighting, dust suppression, works screening and road mud control measures. Liaison with the community and other stakeholders will take place to provide overviews of the construction programme, updates on forthcoming works, as well as the opportunity for members of the public and stakeholders to discuss issues and provide feedback. HS2 and its Contractors have initiated engagement along the route via focussed engagement events.
- 5.2.3 For the purposes of this LEMP, a third party is an organisation with whom HS2 Ltd has entered into a legal agreement to undertake works on its behalf, to be delivered under the powers of the High Speed Rail (London West Midlands) Act (the Act), or the third party's own powers (e.g. permitted development). Such agreements require the third parties to comply with the requirements of the Act and the EMRs, including the CoCP. Third parties relevant to this LEMP include utility companies such as Western Power Distribution and Severn Trent Water.
- In addition, information on the construction of HS2 in SoADC will be made available to the local community through the HS2 website (available online at: https://www.hs2.org.uk/in-your-area/local-community-webpages/).
- 5.2.5 Ongoing engagement with local interests and community groups will occur during construction, as listed in Appendix 2 of this LEMP. (This list is indicative and will be subject to change as more information becomes available).

Advanced notice of works

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

5.3 Working hours

Consents

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

Core working hours

- 5.3.2 Core working hours will be from 08:00 18:00 on weekdays (excluding bank holidays) and 08:00 13:00 on Saturdays. See also HS2 Information Paper D4: Working Hours.
- 5.3.3 A period of up to one hour before and up to one hour after core working hours will be required for start-up and close down activities as detailed within the CoCP. To maximise the productivity within the core working hours, the one hour start up and close down periods will include activities such as deliveries, workforce arrival/departure, unloading, maintenance and general preparation works etc. During this period plant and machinery that is likely to cause disturbance to local residents will not be allowed to operate. This period will not be an extension of the core working hours. Working outside of these hours would need to be agreed through the S61 consenting process with SoADC. Emergencies (not repairs and maintenance) may be undertaken outside core hours.
- 5.3.4 Certain work activities at specific locations within the local authority area will need to take place outside of the core working hours for safety and engineering purposes. These work activities (which may include construction associated with Infrastructure works and Rail works, including Possessions) will be covered by the Section 61 process.

5.4 Construction site layout and good housekeeping

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

5.5 Site lighting

- 5.5.1 All construction sites will be lit in accordance with the requirements of the CoCP as detailed within Section 5.4 and approval of site lighting in Schedule 17 Part 1 of the Act (in accordance with Class Approval for matters ancillary to development under Schedule 17, Section 5. Artificial Lighting).
- 5.5.2 Site lighting will be designed to avoid light pollution to surrounding buildings, ecological receptors, local residents, railway operations, passing motorists, pedestrians, cyclists and other sensitive land uses, where reasonably practicable.

5.6 Worksite security

- 5.6.1 The intention is to achieve safe and secure worksites, with balanced and appropriate security measures that are commensurate with the risk, as detailed within Section 5.5 of the CoCP.
- 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.
- 5.6.3 Contractors will be responsible for ensuring that the site/working areas and plant and materials are secure from use by unauthorised persons at all times. Securing sites will involve the use of physical, electronic and human resources in a proportionate and cost effective manner.
- In some situations, particularly in an urban setting, consideration will be given to extra visibility for the public and workforce at night (e.g. use of half-timber/half-infill (i.e. Perspex) at hoarding corners together with convex mirror to prevent blind spots). All sites will have security lighting to ensure the safety of passing pedestrians and other traffic.
- 5.6.5 Security provisions will be deployed at all HS2 sites and working areas on a 24/7 basis this may include CCTV cameras, alarms and security personnel. This approach will help protect assets with measures that deter, delay and detect intrusion.

5.7 Hoardings, fencing and screening

- 5.7.1 Temporary fencing will be installed along site perimeters. The type of fence will be dependent upon the nature of use of the adjacent land with regard to environmental and safety considerations. General fencing adjoining agricultural land will be post and rail fencing. Compound fencing will be 2.4m security fencing.
- 5.7.2 In a small number of areas the site perimeter will be fenced with solid hoarding for visual screening purposes during the construction phase, in line with measures described within Section 5.6.1 of the CoCP, if appropriate. To date no locations have been identified for such hoardings.

5.7.3 Acoustic fencing up to 3.6m high may, on occasions, be used to control construction noise. Specific hoarding locations and heights for noise screening will be agreed through the Section 61 consenting process with SoADC. The locations will be included in this LEMP as and when the screening designs are finalised.

5.8 Unexploded ordnance

5.8.1 A risk assessment for the possibility of unexploded ordnance being found within construction areas has been undertaken, as detailed within Section 5.7 of the CoCP. Following desk studies and risk assessments, the majority of land within the LLAU has been assessed as having a low risk of encountering unexploded ordnance. Within SoADC area, all areas of the LLAU have been determined as Low risk.

5.9 Electromagnetic interference

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

5.10 Temporary living accommodation

5.10.1 No on-site workers' temporary living accommodation is currently proposed, any such accommodation will be approved in advance by the local authority, as detailed within Section 5.9 of the CoCP.

5.11 Occupational healthcare

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

5.12 Clearance and re-instatement of sites on completion

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

5.13 Pollution incident control and emergency preparedness

- 5.13.1 The Contractor's Pollution Incident Control and Emergency Preparedness Plan(s) will have due regard to local receptors as detailed in Sections 6 to 16 of this LEMP.
- 5.13.2 The Contractors will also consider measures and processes to be implemented in the event of environmental non-conformances.

Local control measures

- 5.13.3 The Contractors' Pollution Incident Control and Emergency Preparedness Plan(s) will need to include the following pollution prevention and control mechanisms:
 - Static plant will be used with secondary containment measures, such as internal
 or external bunds with the capacity to hold 110% of fuel stored within. Additional
 measures such as use of plant nappies and drip trays to retain any leakage of
 fuel or oil and reduce the risk of surface water or groundwater pollution will be
 used where appropriate.
 - Spill kits will be provided where appropriate where risks of surface water or groundwater pollution are present to allow our response to any incidents become more effective, particularly in vulnerable areas.
 - Oil interceptors will be used at site offices and work compounds.
 - Appropriate measures such as use of bunds of non-erodible material or silt or sediment fences will be used adjacent to watercourses.

5.14 Fire prevention and control

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

5.15 Extreme weather events

5.15.1 The Contractor's 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.

5.16 Carbon Management Plans

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

5.17 Interface management between adjacent construction areas

5.17.1 The Nominated Undertaker will oversee the interface between the Contractors as detailed within Section 5.15 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 309ha of agricultural land will lie within the construction boundary in the SoADC area. Approximately 10% of this land is of the best and most versatile quality (Grades 2 and 3a), 89% is moderate quality land (Subgrade 3b) and 1% is Grade 4.
- 6.2.2 The extents of land to be returned to agricultural, used for environmental mitigation or utilized permanently for the scheme are currently in discussion with the local authorities, landowners and other stakeholders.
- 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 the approximately 43ha of land within the construction boundary in the SoADC area that is to be restored to agriculture.

6.3 Local control measures

- 6.3.1 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.
- 6.3.2 Where topsoil and subsoil will be stripped across the site, a Soil Resources Plan (SRP) will be prepared. The SRP will establish the type and volume of the topsoil and subsoil to be stripped, the designated location of the stockpiles and the proposed use of conserved soils for land restoration. There is a commitment in the main ES for the reuse of soils on the Scheme.

- 6.3.3 In the provision of early ecological mitigation areas, the topsoil and subsoil will be entirely reused within the boundaries of each site and therefore an SRP will not be produced for these sites.
- 6.3.4 In areas where construction is planned the area will be stripped of topsoil (and subsoil where required). Temporary material stockpiles will be clearly recorded, and the topsoil and subsoil will be reused to restore land for its intended end use.
- 6.3.5 Measures will be implemented to promote biosecurity and minimise the risk that invasive non-native species and diseases being spread as a consequence of the project. Further details are provided in Section 6 of the CoCP. Appropriate construction, handling, treatment and disposal procedures will be implemented in relation to invasive species and noxious weeds.
- 6.3.6 Measures for the protection of farm infrastructure and crops will be subject to liaison with landowners, occupiers and land agents.
- 6.3.7 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 and can be seen at this link:

https://www.gov.uk/government/publications/hs2-guide-for-farmers-and-growers

7 Air quality

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

³ Guidance on the Assessment of the Impacts of dust from construction and demolition: Institute of Air Quality Management (IAQM), February 2014; Air Quality Monitoring in the Vicinity of Demolition and Construction Sites: IAQM, November 2012; and The Control of Dust and Emissions during Demolition and Construction: GLA Supplementary Planning Guidance Document, July 2014.

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.
- 7.2.2 For air quality, relevant sensitive receptors include locations where there are residential properties, other types of property where there is human exposure over extended periods, for example hospitals and schools, and locations where there are designated ecological sites with sensitive vegetation. The potential impacts are considered in terms of dust soiling on people and property; human health effects of dust and air pollutant emissions; and effects of dust deposition on vegetation.
- 7.2.3 The locations of these receptors have been classified as 'low', 'medium' and 'high' risk using the Institute of Air Quality Management (IAQM) methodology⁴, in relation to emissions of dust from construction and demolition activities. Sensitive receptors are located within 20m of the site boundary and of dust generating activities along certain sections of the route. In the SoADC boundary, the specific locations with relevant receptors that should explicitly be considered in the Contractor's working methods include:
 - properties around Starbold Farm on A423 Banbury Road, Southam;
 - properties around B4451 Kineton Road, Southam;
 - · properties around Stoneythorpe Lodge,
 - A425 Leamington Road, Southam; and,
 - the ecological site Long Itchington and Ufton Woods SSSI.
- 7.2.4 Receptors affected by emissions from anticipated construction traffic include: properties along the A423 Banbury Road, between Southam and Watergall; and properties along the A425 Leamington Road between Southam and the B4455 Fosse Way. These locations were assessed to experience a negligible impact but should remain under review with regard to any changes to plans for the movement of excavated material during the construction phase.

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

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 7.2.2, which can include; ensuring drop heights from excavators to vehicles involved in the transport of excavated material are kept to the reasonably practicable minimum; 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 and vehicle clean; covering materials, deliveries or loads entering and leaving the construction site; buildings or structures to be demolished will be sprayed with water or screened as necessary, prior to and during demolition; 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.
- 7.3.4 For SoADC the relevant category of vehicle emission standard is the 'Rest of Route'. Within the 'Rest of Route' category, there are requirements for heavy road vehicles to be powered by EURO VI engines (with targets for cleaner engines) and for cars and vans to be Euro 6 diesel and Euro 4 petrol⁵. There are also targets for the use of Ultra Low Emission vehicles.
- 7.3.5 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 SoADC, the relevant category of NRMM emission standard is Rest of Country. Within the Rest of Country the requirement is for NRMM to be powered by EU stage IV from 2020) ⁶.

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

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

7.4 Monitoring procedures

- 7.4.1 An inspection monitoring programme will be implemented by the Contractor to assess the effectiveness of the control measures as outlined in Section 7.3 in the CoCP. In the SoADC area, 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. Monitoring of NOx or nitrogen deposition is not necessary in this area as the relevant CFAs state that there are no impacts originating from the proposed works.
- 7.4.2 The monitoring programme, including locations for dust monitoring is in the process of being agreed. Monthly report of monitoring data from HS2 air quality surveys will be made publicly available throughout construction on the HS2 website at this address: https://www.gov.uk/government/collections/monitoring-the-environmental-effects-of-hs2
- 7.4.3 The HS2 Air Quality Strategy gives further information on monitoring, including the process to determine where monitoring would be required and the monitoring methods to be used. This document is available at the same website address as referenced in paragraph above.

8 Cultural heritage

- 8.1.1 General control measures relating to cultural heritage are provided in Section 8 of the CoCP. Further control measures for Cultural Heritage are provided in the Hs2 Phase One Heritage Memorandum within the Environmental Minimum Requirements and the specific documents identified therein.
- 8.1.2 Schedule 18 and Schedule 19 to the Act concern how legislation in respect of listed buildings and scheduled monuments respectively apply to the Phase One works. Schedule 20 to the Act provides a regime for the removal of human remains and related funerary monuments.

- 8.1.3 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. Upon completion of HERDs works the findings and final extent of the investigation have been shared and agreed with the local authority.
- 8.1.4 Works associated with the scheme will impact both designated and non-designated archaeological and built heritage assets in SoADC. 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).

8.2 Sensitive receptors

- 8.2.1 The following designated heritage assets are located within or adjacent to the Scheme and therefore require particular attention by the Contractor:
 - Medieval settlement at Wormleighton (LBS013) Scheduled Monument adjacent to the Scheme;
 - Wormleighton village -- Conservation Area and listed buildings adjacent to the Scheme; and,
 - Stoney Thorpe Hall Lodge Gates and Gatepiers (LBS096) Grade II listed building adjacent to the Scheme.
- 8.2.2 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 main ES (Appendices CH-001-016, CH-002-016, CH-003-016 and CH-004-016 and Maps CH-01-101, CH-01-102, CH-01-103, CH-01-104, CH-01-105a) and Volume 5 of the SES and AP2ES (Appendices CH-002-016, CH-003-016 and CH-004-016 and Map CH-01-105a).

8.3 Local control measures

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

- Detailed provisions with regard to settlement and listed buildings are outlined in the Settlement Policy / HS2 Information Paper: C3 Ground Settlement.
- 8.3.2 Those Listed Buildings 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 SoADC, which sets out arrangements for obtaining approvals for protective or monitoring works to these buildings.
- 8.3.3 Where practicable, below ground assets will be preserved in situ beneath mitigation earthworks through the adoption of appropriate design measures.
- 8.3.4 Where practicable, construction methodologies will reduce the impacts on buried and upstanding remains.
- 8.3.5 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 Risk assessments, appropriate structural and/or condition surveys and vibration monitoring will be undertaken at locations of archaeological or built heritage interest adjacent to construction sites, prior to, during and following construction works, as detailed within Section 8.4 of the CoCP.

9 Ecology

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

9.2 Sensitive receptors

- 9.2.1 The following locations which lie within or are adjacent to the Scheme in SoADC Council are designated for nature conservation. These locations are shown within the Volume 5 map books of the ES:
 - Long Itchington and Ufton Wood SSSI and ancient woodland (Ch128+000) located above Long Itchington Tunnel and within 500m of the land required for the construction of the Scheme.

- Sensitive habitat receptors outside of designated sites are displayed within the Volume 5 map books of the ES. These include:
- an area of secondary broadleaved woodland known as Berryhill Plantation (Ch116+500), close to the Warwickshire – Northamptonshire boundary, directly east of Wormleighton, is within the land required for the construction of the Scheme;
- Oxford Canal (Ch118+700);
- fish ponds and associated woodland at Lower Radbourne (Ch120+400);
- woodland known as Ladbroke Fox Covert (Ch122+100);
- species-rich hedgerows at Windmill Lane, Ladbroke (Ch122+650) within the land required for the construction of the Scheme;
- woodland known as Windmill Hill Spinney (Ch123+200);
- Hill Farm Wood adjacent to the A425 Leamington Road (Ch126+250);
- Thorpe Rough ancient woodland (Ch127+500) is situated near Heath Farm southeast of Long Itchington and Ufton Woods SSSI and lies adjacent to the land required for the construction of the Scheme;
- woodland known as Bascote Heath Wood (Ch127+700); and,
- Grand Union Canal (Ch129+600) on the border between the SoADC and South Warwickshire District Council areas.
- 9.2.2 Key protected or important species known to occur in the vicinity of the works are:
 - bats (roosts and key commuting and foraging habitat);
 - great crested newt and other amphibians;
 - bird species (e.g. warblers and stock doves & Schedule 1 Species);
 - terrestrial invertebrate assemblages;
 - otter (a confirmed holt and two potential holts are present on the River Itchen near Dallas Burston Polo Club);
 - badger;
 - common reptiles;
 - notable plants (e.g. spurge laurel, broad-leaved helleborine, early purple orchid and veteran wild pear trees); and,
 - aquatic plants (e.g. water soldier and sea clubrush).
- 9.2.3 Further information on designated sites and legally protected species occurring in this area can be found within Volumes 2 and 5 of the main ES.
- 9.2.4 Contractors will check whether any protected species licences are required prior to work commencing or where such licences have been obtained, ensure compliance with the requirements of the licence.

- 9.2.5 Natural England has granted the HS2 organisational Great Crested Newt and Badger licences across Phase 1 in April 2017. Contractors will be required to 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.
- 9.2.6 All actions required to comply with licences, will be undertaken by suitably qualified specialist ecologists licensed to undertake the work.

9.3 Local control measures

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

Table 3: Standard ecological issues and control measures relevant to this area

Receptor	Issue	Standard control measure/s
Designated Sites	The Scheme affects SSSI, LWS and non-statutory wildlife sites.	Measures to reduce habitat loss should be included in planning of construction works, such as avoiding siting temporary material stockpiles, construction materials and vehicle parking within designated sites. Potentially hazardous materials should also be located away from designated sites and stored correctly
		Specific measures for control of surface water and for air and water-borne pollution should also take account of the proximity of these designated sites.
Ancient Woodland	The Scheme will result in the loss of ancient woodland.	Measures to reduce habitat loss should be included in planning of construction works. Translocation of ancient woodland soils and vegetation will be undertaken where appropriate, following the design

Receptor	Issue	Standard control measure/s
		specification set out in the relevant Ecology Site Management Plans.
Bats	All UK bat species and their roosts (even if bats are not present) are fully protected under both UK and European legislation. The Scheme will result in the loss of confirmed bat roosts in trees and buildings.	Adhere to requirements of licences and, where relevant, Ecology Site Management Plans.
	The Scheme will result in the loss of trees and buildings identified as having moderate or high potential to support roosting bats, but no evidence of their use has been recorded to date through survey work.	Adopt precautionary approach. Follow appropriate Working Method Statement for demolition of buildings and felling of trees.
	Retained bat roosts are present in close proximity to the Scheme. Caution is required to ensure that these roosts are not disturbed during works.	Where practicable, undertake activities causing disturbance during seasonal periods when bats are likely to be absent. Ensure lighting is directed away from known roosts. Minimise night time working in close proximity to retained roosts. Where practicable, temporary structures will be erected to screen the entrances/exits of retained roosts from construction areas.
	The Scheme will result in the loss of and disruption to bat foraging areas and commuting routes.	Where practicable, undertake activities causing loss or disruption during seasonal

Receptor	Issue	Standard control measure/s
		periods when bats are likely to be less active.
		Retain as much of the key habitat for as long as possible and establish new areas as quickly as possible to reduce the effects.
		Ensure lighting is directed away from foraging areas and commuting routes.
		Reduce night time working in close proximity to foraging areas and commuting routes.
Breeding birds	The nests and eggs of all bird species are legally protected against being damaged or taken. Some species are specially protected against disturbance whilst	Habitat clearance should be conducted outside of the bird nesting season (March to August inclusive) where practicable.
	nesting. The Scheme will result in the loss of nesting bird habitat, including vegetation, buildings and structures.	If habitat clearance is carried out during the bird nesting season then an appropriate Working Method Statement shall be completed in advance of clearance works commencing.
Great crested newt	Great crested newts and their habitats are fully protected under both UK and European legislation.	Adhere to requirements of HS2 great crested newt organisational licence, method statements, and Ecology Site Management
	The Scheme will result in the loss of water bodies and terrestrial habitat used by great crested newts.	Plans.
Common amphibians	The Scheme will result in the loss of waterbodies supporting common amphibians. Clearance during peak	Drain down of ponds should be conducted outside of the main breeding period for amphibians (March to July) where practicable.

Receptor	Issue	Standard control measure/s
	periods of occupation could result in the loss of these populations.	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

Receptor	Issue	Standard control measure/s
		if potential setts are identified and an ecologist contacted for advice.
Hazel dormouse	Hazel dormice and their habitats are fully protected under both UK and European legislation. The Scheme will result in the loss of habitats that are suitable for hazel dormouse, although this species has not been recorded along the Scheme to date.	Where relevant adhere to requirements of licences and Ecology Site Management Plans.
Otter	Otters are fully protected under both UK and European legislation. All major watercourses crossed by the Scheme have otters present or are potentially suitable to support them. It is not expected that there will be any fragmentation of otter movement routes, however, there is the potential for disturbance during construction along some parts of the Scheme.	Adhere to requirements of licences and, where relevant, Ecology Site Management Plans. Ensure that route of safe passage for otters is maintained throughout construction at crossing points. Use fencing as required to prevent otters being forced over existing road crossings. Reduce light spill onto watercourses.

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).

- 9.3.3 Where work is to be undertaken under European protected species licences, applications and method statements are prepared by qualified ecologists who are specialists in their particular field. The works are subject to approval by Natural England and all works are monitored by a Named Ecologist or Accredited Agent. Some licences will be subject to ongoing monitoring and record submission to Natural England. Copies of applications and records submitted in support of licences are maintained by Natural England.
- 9.3.4 Ecological Site Management Plans (ESMP) will be prepared prior to any works commencing on site for each statutory and non-statutory site of nature conservation importance and ancient woodland affected by construction, including measures to avoid or minimise adverse effects. Drafts of these management plans will be discussed with relevant environmental bodies, including for instance; Natural England, the Wildlife Trusts, the Environment Agency and the Woodland Trust who hold copies.
- 9.3.5 Some Ecological Mitigation Sites have already been constructed ahead of works commencing. These sites are also subject to an ESMP which sets out the design objectives and long-term maintenance of the sites. The sites within, or immediately adjoining the SoADC area boundary, are listed in Table 5. These ESMP documents are consulted with Wildlife Groups, Woodland Trust and Local Authorities who hold copies.

Table 4: Ecological Mitigation Site ESMPs

Details	Chainage
Pond 030-AA-117002	117.400
Radbourne Fishpond – LS050	120.200
Windmill Hill - LS093/94	123.400
Southam – LS122	125.400

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.
- 9.4.2 Some European protected species licences will be subject to ongoing monitoring and record submission to Natural England. Copies of applications and records submitted in support of licences is maintained by Natural England.
- 9.4.3 ESMPS detail ongoing maintenance and monitoring requirements for nondesignated sites or ecological mitigation sites. Updates will be shared with the bodies consulted on the development of the ESMP.

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, of properties within 30m of excavations, will be confirmed by the settlement report prepared during the detailed design stage. Where determined as necessary, monitoring equipment will be installed on selected adjacent conventional tracks and on selected adjacent buildings. The monitoring strategy, methodology and programme, including the location of monitoring equipment, will be discussed with the local authorities and land/building owners prior to commencement of construction.
- 10.1.3 Monitoring arrangements may be installed by the Nominated Undertaker's specialist Contractor under an advanced contract and monitoring initiated prior to commencement on site, at which point the ongoing responsibility for monitoring would be passed to the Contractor.
- 10.1.4 Baseline readings will be taken prior to the commencement of excavation or piling. All monitoring will be planned, commissioned and carried out in agreement with relevant land/building owners and other relevant parties. HS2 might also establish alternative contractual arrangements for the initial monitoring equipment installation and movement monitoring prior to site commencement by the Contractor.

- 10.1.5 Where significant buildings tensile stresses are 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.
- 10.1.6 Monitoring might 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.
- 10.1.7 Prior to the commencement of construction, structural surveys and condition/defect surveys will be commissioned where structures are within the predicted zone of influence.

11 Land quality

- 11.1.1 Further land quality study work including intrusive ground investigation (where needed) and analysis will be conducted prior to construction in order to confirm areas of suspected land contamination that could be disturbed or encountered during construction of the Scheme. Contaminated sites beyond the Scheme will be considered only in terms of its potential impact on the Scheme. 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 (and can be seen in Volume 5 mapbook of the main ES):
 - Harp Farm by A423 Banbury Road (124+260 to 124+420);
 - vehicle breakdown recovery business near Harp Farm (124+510 to 124+600);
 - sheep wash (116+440 to 116+470);
 - infilled ponds and clay pit at Harp Farm (124+170 to 124+310);
 - assumed infilled well at Harp Farm (124+280);
 - infilled pit between Harp Farm and Starbold Farm (124+280);
 - Warwick House Industrial Park (124+770 to 124+890);
 - Kineton Road Industrial Estate (125+290 to 125+480);
 - assumed infilled well at Fields Cottage (125+360);
 - assumed infilled well at The Fields House (125+520);
 - former tanks at The Old Coach House (125+590);
 - fuel filling station within supermarket site off Kineton Road (125+590); and,
 - assumed infilled well off Learnington Road (126+680).
- 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, local employees, construction and / or maintenance workers;
 - controlled waters, including ground waters in various secondary A aquifers, secondary (undifferentiated) aquifer and unproductive strata;
 - the built environment, including buildings, property and underground structures and services; and,
 - the natural environment.

11.3 Local control measures

11.3.1 Ground investigations are to be undertaken to assess areas of potential contamination within the Scheme. Following a conceptual ground model, a risk assessment and a remedial strategy will be prepared, as needed. Consultation with SoADC and the Environment Agency will take place during the formulation of the 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 Camden, this will take place off-site at a soil treatment facility or an appropriately permitted landfill site.
- 11.3.3 Excavation through Harp Farm and the site of the vehicle breakdown recovery business in the SoADC 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.
- 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 Stratford-on-Avon District including those for building stone, cement raw materials, deep coal and sand and gravel.
- 11.4.2 Mitigation of potential impacts on these mineral resources can include prior extraction of the resource for use within the Scheme or elsewhere. Extraction may be limited to areas of environmental mitigation earthworks within the Scheme adjacent to rather than beneath the track bed, which will require good founding conditions. A plan will be discussed in advance of the construction works with the landowner and / or mineral owner / operator, the mineral planning department at Warwickshire County Council 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 are provided in Section 12 of the CoCP.

12.2 Sensitive receptors

- 12.2.1 With reference to the set-up and location of temporary works, the Contractors will have due regard to limiting impacts of the character on the following landscape character areas (LCAs):
 - Radbourne Ironstone Fringe LCA;
 - Southam Village Farmlands LCA;
 - Ufton Vale Farmlands LCA; and,
 - Leamington Plateau Fringe LCA.
- 12.2.2 The Contractor will also have due regard to limiting visual intrusion on the following visual receptors:
 - Residents in the area, including those in Wormleighton, those along the A423
 Banbury Road (including several farmsteads and individual rural properties),
 B4451 Kineton Road, Ridgeway Lane and a residential property off Welsh Road
 and consented housing proposed to be built on Southam football club land;
 - Recreational users on PRoW and other routes through the area, including Public Bridleways SM116, SM96 and SM6, Public Footpaths SM101, SM116a, SM200, SM96a, SM90, SM89, SM33, SM21, SM24, SM19 and SM6a, Oxford Canal and towpath, Radbourne Lane and Ridgeway Lane; and,
 - People travelling through the area along roads, including A423 Banbury Road, Stoneton Lane, Wills Pastures Road, B4451 Kineton Road, Welsh Road and A425 Leamington Road.

12.3 Local control measures

- 12.3.1 Measures that have been incorporated into the CoCP to avoid or reduce landscape and visual effects during construction include the following (see main ES Volume 5):
 - maximise retention and protection of existing trees and vegetation where possible;
 - use well-maintained hoardings and fencing;
 - design lighting to avoid unnecessary intrusion onto adjacent buildings and other land uses;
 - replacement of any trees intended to be retained which may be accidentally felled or die as a consequence of construction works;
 - appropriate design, implementation and maintenance of planting and seeding works and implement landscape management measures throughout the construction period as landscape works are completed;

- temporary bunds to be positioned to screen views to the route during construction;
- identify specific locations for construction compound layouts and site access in relation to existing vegetation to reduce visual impacts where practicable; and,
- identify specific locations of temporary material stockpiles to reduce visual impacts.

12.4 Trees

- 12.4.1 The 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, 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 multistorey 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 Volume 5- map book (ref: ES3.5.4)
- 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 The avoidance and mitigation measures in this area will avoid airborne construction noise adverse effects on the majority of residential receptors and communities. There are numerous residential and non-residential properties located in proximity to the proposed works sites, which, without appropriate mitigation, are likely to experience adverse effects from construction noise and/or vibration. Specific noise sensitive receptors identified include:

Residential:

- Chapel Bank Cottage, Chapel Bank Lane, Southam;
- Harp Farm, Banbury Road, Southam;
- The Oaks, Banbury Road, Southam;
- Field Cottage, Kineton Road, Southam;
- The Old Coach House, Kineton Road, Southam;
- Stoney Thorpe Lodge, Leamington Road, Southam; and,
- Lower Farm, Leamington Road, Southam.
- Woodmeadow Farm, Welsh Road, Southam

Non-residential:

- Dallas Burston Polo Club, Leamington Road, Southam;
- Codemasters, Leamington Road, Southam; and,
- Kineton Road Industrial Estate, Kineton Road, Southam.
- HS2 ltd will continue to seek reasonably practicable measures to further reduces or avoid these significant effects.

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 Stratford-on-Avon District Council and local stakeholders, and reflected in revisions to 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 SoADC through the Section 61 process, as set out in the HS2 S61 guidance document. As identified in the ES, examples of best practicable means measures that may be employed by the 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 porta-cabins between noisy works and sensitive receptors.
- 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.

13.4 Monitoring

of-hs2.

- 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. These can be found on the HS2 website at this address:

 https://www.gov.uk/government/collections/monitoring-the-environmental-effects-
- 13.4.2 In SoADC, further pre-construction baseline monitoring at specific locations is proposed to be undertaken and specific monitoring locations are currently being agreed with SoADC. It should be noted that alternative locations may be identified as a result of these discussions.
- 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 SoADC if a written request is made. In addition, monthly noise monitoring reports will be made publicly available throughout construction. The monthly reports will include information such as measurement methodology and monitoring locations. The reports will be available on the HS2 website:

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:
 - Local Traffic Management Plans (LTMPs) will set out our proposals for traffic management measures for each work site within particular areas along the route;
 - 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.
 - HS2 will require its Contractors to undertake such 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.
- 14.1.3 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 LTMP. In the SoADC area, these include:
 - A423 Banbury Road;
 - A425 Daventry Road;
 - the A425 west of Southam and Welsh Road, due to the increase in HGV traffic;
 and.
 - B4455 Fosse Way.

Site access

- 14.2.2 A number of vehicle access points to the construction sites will be required and, therefore, 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.
- 14.2.3 Routes for construction traffic will be subject to approval of the relevant planning authority in accordance with Schedule 17 of the Act when large construction vehicle movements exceed 24 single movements (12 two way movements) per day to and/or from a site.
- 14.2.4 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 road closures and diversions will be required of the following roads:
 - Wormleighton Road with overnight and / or weekend closures;
 - Stoneton Lane with overnight and / or weekend closures;
 - Wills Pastures Road;
 - Windmill Lane will be subject to a long term closure with access to the farm maintained;
 - A423 Banbury Road with overnight and / or weekend closures;
 - B4451 Kineton Road with overnight and / or weekend closures; and,
 - A425 Learnington Road with overnight and / or weekend closures.
 - In addition to the above, the following permanent diversions will be made:
 - Radbourne Lane; and,
 - Ladbroke Hill Lane.

- 14.3.2 The Public rights of way affect by the scheme in this area are;
 - Footpath SM101; Footpath SM116a; Bridleway SM116; Footpath SM 200; Footpath SM96a; Bridleway SM96; Footpath SM90; Footpath SM89; Footpath SM33.
 - Minor adjustments to Oxford Canal towpath (which is also Footpath SM200 at this point) may be required during construction.
- 14.3.3 Since completion of the Environmental Statement in 2012, the construction methodology and programme has been reviewed and, as a result, it has been necessary to alter the plans proposed in the ES.
- 14.3.4 All reasonable endeavours will be made to ensure connectivity across the line of route for as long as is reasonably practicable and safe. Where this is not possible, a number of alternatives will be assessed for feasibility, such as diversions and weekend/evening closures.
- Only if it is deemed unsafe for a PRoW to remain open and there are no reasonable alternatives will the PRoW be closed. Closures will be kept to the minimum practicable duration and construction of the associated permanent work(s) is currently under review, with a view to accelerate the completion of PRoW permanent diversions.
- 14.3.6 All closures and diversions will be assessed in full for EMR compliance, and any works must have an associated Schedule 4 submission, which will be communicated and agreed with Stratford-on-Avon Council through the due processes outlined in the HS2 Act.
- 14.3.7 There are currently no private access diversions required.
- 14.3.8 In addition, permanent realignments / diversions are required to the following accesses:
 - Lower Radbourne Farm access;
 - Ladbroke Grove Farm access;
 - · Ladbroke Hill Farm access; and,
 - Starbold Farm access.
- 14.3.9 All temporary closures and diversions will be subject to appropriate consultation, 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 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 Characterisation of materials will be determined by the Contractor to ascertain suitability for reuse, recycling, recovery or disposal to inert, non-hazardous or hazardous landfill.
- 15.2.2 Materials Management Plans will be developed in accordance with the Definition of Waste: Development Industry Code of Practice 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 of will be undertaken by the Contractors in line with the Environment Agency's guidance. This includes:
 - Technical Guidance WM2 Hazardous Waste, Interpretation of the Definition and Classification of Hazardous Waste (3rd Edition 2013)⁷;
 - Technical Guidance WM3 Guidance on the classification and assessment of waste (July 2015)⁸

⁷ Environment Agency (2013), Technical Guidance WM2 – Hazardous Waste, Interpretation of the Definition and Classification of Hazardous Waste (3rd Edition 2013).

⁸ NRA, SEPA, EA (2015), Technical Guidance WM3: Waste Classification – Guidance on the Classification and Assessment of Waste, Version 1.1.GB

- Waste sampling and testing for Disposal⁹;
- Technical Guidance WM2 Appendix D Waste Sampling, A Supplement to Hazardous Waste, Interpretation of the Definition and Classification of Hazardous Waste (3rd Edition 2013)¹⁰

Transport of waste and materials

15.2.4 Opportunities for the off-site re-use of surplus excavated material will be identified and utilised where reasonably practicable. Surplus excavated material will only be sent to landfill as an option of last resort. Further information on the management of material and waste is provided in HS2 Information Paper E3: Excavated Material and Waste Management.

16 Water resources and flood risk

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:
 - Alluvium (Secondary A aquifer); head deposits (Secondary undifferentiated aquifer); Rugby Limestone Member and occasional sandstones of the Mercia Mudstone Group (Secondary A aquifers); The Saltford Shale Member, Penarth Group and Mercia Mudstone Group (Secondary B aquifers), Langport Member and dolomitic siltstones of the Mercia Mudstone Group (Secondary undifferentiated aquifers).
 - There are no source protection zones (SPZs) associated with this area.
 - Surface water features include the Grand Union Canal, Oxford Canal, River Itchen and three of its tributaries, and a tributary of River Leam.
 - Water dependant habitats include Ufton Fields Nature Reserve, a SSSI and Local Nature Reserve (LNR); and Long Itchington and Ufton Woods SSSI and Ancient Woodland. There are a number of potential water dependent ecological sites within the study area, which include, but are not limited to: Southam Meadow South Local Wildlife Site (LWS); Thorpe Rough (Ancient Woodland); and Print Wood (LWS and Ancient Woodland).

⁹ Environment Agency (2013), Waste Sampling and Testing for Disposal to Landfill, March 2013.

¹⁰ Environment Agency (2013), Technical Guidance WM2 – Appendix D Waste Sampling, A Supplement to Hazardous Waste, Interpretation of the Definition and Classification of Hazardous Waste (3rd Edition 2013).

- Abstractions public / private and licensed / unlicensed: there is a licensed surface water abstraction from the River Itchen. Licensed groundwater abstractions from the Charmouth Mudstone Group, the Langport Member Limestone and the Mercia Mudstone Group. Information from SoADC suggests that there are no unlicensed abstractions from surface water for potable supply.
- Artificial waterbodies include the Grand Union Canal and the Oxford Canal.
- 16.2.2 The Contractor's Pollution Incident Control Plan will have due regard to the local flood risk sources (i.e. surface, artificial, groundwater and sewers) and key receptors and take into account any proposed risk management and / or mitigation measures.
- 16.2.3 The Contractor will have due regard to the following areas within Environment Agency Flood Zones 2 and 3, which are zones at risk of river flooding:
 - River Itchen and its tributaries; and,
 - tributary of the River Leam.
- 16.2.4 The Contractor will have due regard to local flood water receptors and their respective flood histories: areas at risk of surface water flooding, as shown on the Environment Agency's Updated Flood Maps for Surface Water. These are mostly associated with watercourses.

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 ground, groundwater, watercourses or surface water sewers in the surrounding receptors.
- As outlined in the CoCP, BPM will be used (e.g. through the use of silt traps and appropriate attenuation, if required) prior to the discharge of water to watercourses, groundwater or surface water sewers, subject to obtaining the required permits or consents. As noted in Section 5.13 of this document, a pollution incident control management system will incorporate procedures for alerting relevant water supply companies and reducing impacts to public supply SPZs and local private abstractions in this area.

- 16.4.3 Where there is the possibility that work may materially affect groundwater, 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. This will include at risk WFD elements as identified in the ES route wide WFD assessment. The monitoring programme scope and duration will be developed and agreed with the Environment Agency in consultation with other 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 other 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 and not adversely affect those who have a protected right to abstract water.
- 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 Prevention¹¹. Groundwater and surface water monitoring plans will be prepared, where piling could result in below ground contamination.
- 16.4.7 Temporary excavated material stockpiles, construction compounds and site offices will be located outside of areas at risk of flooding where reasonably practicable, to avoid affecting the level of risk of flooding. Site specific flood risk management plans will be prepared prior to works within the flood plains to manage the potential risks. These plans will take account of the flood risk assessments produced for the main ES and include any proposed risk management or mitigation measures, if required.
- 16.4.8 Drainage from the works will be attenuated and discharged to watercourses or sewers, under agreement, at a controlled rate and, where required, with approval of the Environment Agency and, where appropriate, the drainage authority in accordance with Schedule 33 Part 5 of the Act.
- 16.4.9 Cuttings (both retained and open) in the area may need to be excavated below the natural water table, although this is uncertain in the absence of detailed ground investigation. The impact of both temporary and permanent dewatering will be re-

¹¹ Environment Agency (2001), Piling and Preventative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution.

assessed as more information becomes available and mitigation measures identified. Mitigation measures may include re-infiltration of abstracted groundwater, pumping to support sensitive features or the use of engineering control, such as grouting or secant piling to reduce the amount of water flowing from the aquifer. A hydrogeological risk assessment will be produced for all construction earthworks activities where affects to the groundwater are anticipated.

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

Appendix 1: Glossary of terms

Term	Definition
AP	Additional Provision
CFA	Community Forum Area
СоСР	Code of Construction Practice
Contractor	The Contractor on a construction site is responsible for planning, managing and coordinating themselves and/or the works and all other Subcontractors working on their site, or any other Contractor directly employed by the Nominated Undertaker to undertake key construction works on site.
СоРА	Control of Pollution Act 1974
ES	Environmental Statement
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
LTMP	Local Traffic Management Plan
Nominated Undertaker	The body or bodies appointed to implement the powers of the HS2 Act 2017 to construct and maintain the railway.
PRoW	Public rights of way
RRVs	Road Rail Vehicles. A vehicle which can operate both on rail tracks and road, often used for railway maintenance.

Term	Definition
RTMP	Route-wide Traffic Management Plan
SBI	Site of Biological Importance
Scheme	The Scheme to which this CoCP relates is the high-speed railway between London - West Midlands. This is a high-speed railway between London - West Midlands with a connection via the West Coast Main Line at conventional speeds to the North West and Scotland 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
SMI	Site of Metropolitan Importance
SoADC	Stratford-on-Avon District Council
SPZ	Source Protection Zone
SRP	Soil Resources Plan
SSMP	Site Specific Management Plan
TMP	Traffic Management Plan

Appendix 2: Non-exhaustive list of Local Interest and Community Groups in Stratford-on-Avon District

Political/Councils		
Stratford-on-Avon District Council	Southam Town Council	
Warwickshire County Council	Stockton Parish Council	
Ladbroke Parish Council	Ufton Parish Council	
Priors Hardwick parish Council	Wormleighton Parish Council	
Napton-on-the Hill Parish Council	Local Member of Parliament	
Long Itchington Parish Council	Radbourne Parish Council	
The Warwickshire, Solihull and Coventry Local Access Forum	St Peter's Church, Wormleighton Parochial Church Council	
Other Sensitive Receptors		
Long Itchington Church of England Primary School	Landowners/occupiers affected by the Scheme	
Southam College	Dallas Burston Polo Club	
Environmental, Conservation and Charities		
Ramblers Association	Environmental Agency	
Bat Conservation Trust	Woodland Trust	
Warwickshire Wildlife Trust	National Farmers Union	
Natural England	Countryside and Landowners Association	
Delivery Partners		
Severn Trent Water	UK Power Networks	
Anglian Water	British Telecom	
Veolia Water	Virgin Media	
Canal and Rivers Trust	Lower Radbourne Water Authority	
Highways England	Western Power Distribution	
SES	Sustrans	

Social Groups	
Codemasters, Lower Farm, Stoneythorpe	British Horse Society
Southam Rugby Football Club	Peak and Northern Footpath Society
Southam United Football and Bowls Club	RSPB Lichfield and District Local Group
The Ramblers (Local Group)	Stratford Cycling Club

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