

HS2

Local Environmental Management Plan - North Warwickshire Borough Council

Document no: 1MC08-BBV-EV-PLN-N000-000024

Security classification: OFFICIAL

Handling Instructions: none

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1. Introduction

1.1 Purpose

1.1.1 This Local Environmental Management plan (LEMP) sets out site specific control measures to be adopted by HS2 Contractors working within the North Warwickshire Borough Council (NWBC) area. 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://assets.publishing.service.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 NWBC area throughout. The sections within this LEMP should not be read in isolation from other sections due to the interconnected nature of the measures between disciplines.

1.1.3 For ease of reference the LEMP mirrors the topic headings in the CoCP. Information of relevance to the formation and development of this LEMP (as shown in figure 1) is contained within this document, or links are provided to where it can be accessed. This includes:

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



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

- 1.1.4 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 Forum¹, which have informed its development. This LEMP may be subject to further refinement, amendment and expansion as necessary as the project design progresses.
- 1.1.5 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.
- 1.1.6 The Nominated Undertaker (HS2 Ltd)² and/or its Contractors will continue to engage with the local stakeholders. This will take the form of engagement events which will be carried out to introduce and brief the communities on local environmental information, management and mitigation as detailed within this document. 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

¹ 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.

² HS2 Ltd is the Nominated Undertaker. The two terms are used interchangeably throughout the LEMP.

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.

- 1.1.7 The HS2 Environmental Memorandum identifies key worksites along the route of HS2 Phase One that are environmentally sensitive in terms of nature conservation, terrestrial and aquatic ecology, water resources, geomorphology, recreation and amenity, landscape, public open space and agricultural land. The criteria for inclusion are 'worksites where a key significant impact (that has been agreed with the HS2 National Environment Forum members) is generated in any of the environmental topics as mentioned above. There are currently no such sites identified in NWBC.
- 1.1.8 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 CT-05-108 to CT-05-117 and CT-05-133 to CT-05-136a, plus CT-06-108 to CT-06-117 and CT-06-133 to CT-06-136a. This LEMP covers the mainline area of the scheme from Junction 7 of the M6 in the south, up to just above Middleton in the North. The LEMP also includes the 'North cord' of Delta Junction, which runs from Hams Hall to Water Orton, and the 'Birmingham spur' of Delta Junction, which runs from Junction 7 of the M6 to Water Orton.
- 1.2.2 Construction worksites and areas required for construction works are shown within the CT- 05 maps listed in Volume 2 of the Main ES. A plan of the HS2 route through the NWBC area is shown in Figure 2.

1.2.3

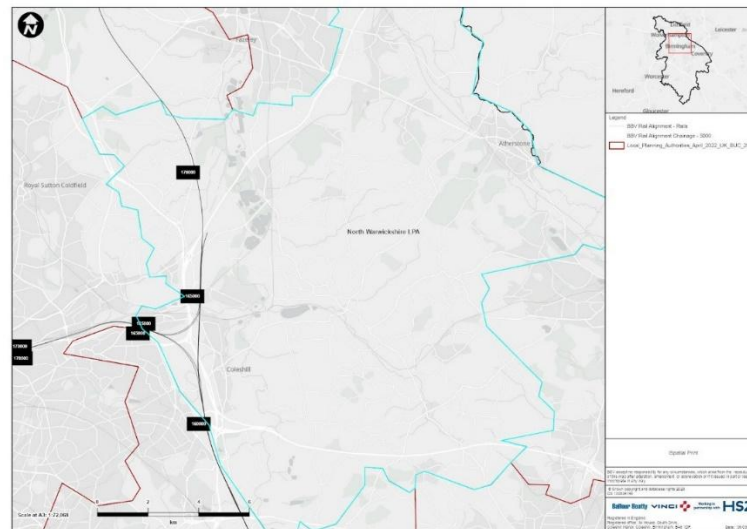


Figure 2: HS2 route through North Warwickshire Borough Council area.

1.2.4

It is anticipated that the following work activities will take place during the construction period within NWBC:

- Advance works, including: site investigations, ground investigations and associated environmental surveys and surveys further to those already undertaken;
- Enabling works, including: utilities works in the wider area; highway and public right of way (PRoW) diversions; building demolitions; translocation of animal species, archaeological investigations, vegetation clearance and fencing of the route, 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; and
- High speed railway installation works and systems fit-out including:
 - Establishment of construction compounds; infrastructure installation, traction power supplies, overhead line equipment and communications features; connections to utilities; removal of construction compounds; and System testing and commissioning.

1.2.5

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 NWBC area is the LM Joint Venture, a joint venture between Laing O'Rourke and J. Murphy & Sons.

- 1.2.6 LMJV carried out ecological surveys, translocation and mitigation, invasive species exclusion, planting, fencing, archaeological works, brick-by-brick demolition of Coleshill Barn, finalising the bridge works over the River Tame and junction works on the Birmingham Road outside the River Tame site during 2021 in the NWBC area. The EWC contract in Area North completed their final works in July 2023.
- 1.2.7 On 17 July 2017 contracts were awarded for HS2's Main Works Civils Contractors (MWCC). The MWCC for the NWBC area is Balfour Beatty Vinci (BBV). BBV is a joint venture made of Balfour Beatty Group Ltd, VINCI Construction Grands Projects, Vinci Construction Group, Notice to proceed with the construction of HS2 was given on the 15th April 2020.
- 1.2.8 Since being awarded the contract BBV has been developing the design for the scheme, conducting the required ground investigation and utility surveys to inform the design process.
- 1.2.9 Early and advanced work included:
- Site inspections & preparations;
 - Establishment of compounds (fencing, concrete slabs, office/welfare units, access points);
 - Topsoil & subsoil stripping and stockpiling;
 - Material stockpiling;
 - Haul road construction;
 - UXO surveys;
 - Site drainage;
 - Test piling;
 - Traffic management; and
 - Utility diversions.
- 1.2.10 From Q3 in 2021 work began on permanent works associated with the scheme these works will continue throughout 2025.
- 1.2.11 The design and construction activities include:
- Construction of Bromford Tunnel East Portal, Curdworth Box, River Tame viaducts, Chattle Hill box, Gilson Cutting & Embankment, M42 Coleshill Box, River Cole Re-alignment, Birmingham Spur Dive under, Green Lane Embankment, Marsh Lane Embankment, Attleboro Farm Embankment, Attleboro Lane Bridge diversion, Water Orton 1, 2 and 3 viaducts, Coleshill East and West viaducts, River Cole viaducts, M42-M6 Link East and West viaducts;
 - Mineral extraction;

- Construction of Faraday Avenue
- Embankment to Hunts Green Underbridge;
- Construction of Coppice Lane Cutting to Drayton Lane Embankment;
- Construction of access bell mouths;
- Construction of temporary road diversions;
- Working platform construction;
- Earthworks;
- Sheet piling;
- Construction of pile mats, bored piles, pile caps;
- Construction of guide walls, u-shape walls;
- Construction of central deck off-line;
- Dewatering wells installation;
- Tower crane installation;
- Raft slab construction;
- Construction of permanent 'box' structures;
- Construction of permanent underbridge structures e.g. base slab, walls, cover slab, abutment & wing wall;
- Public Right of Way temporary diversions; and
- Installation of root protection fencing.

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 NWBC 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 NWBC area during construction.
- 2.1.2 The Nominated Undertaker's Contractors will develop detailed environmental site management mitigation through their EMS, taking into account this LEMP and the Environmental Minimum Requirements (EMRs)

3. Policy and Environmental Management Principles

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

4. Implementation

- 4.1.1 Details relating to implementation, such as enforcement and site management measures, are provided in Section 4 of the CoCP.

5. General Requirements

5.1 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, including:

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

5.1.3 General control measures are detailed in sections 5.2 to 5.16 below.

5.1.4 Within NWBC there is a Special Management Zone which is in place to engage with communities affected by the interface between Phase One and Phase Two of the scheme. The Special Management Zone will specifically cover the Parish Council areas of Lea Marston, Kingsbury, Curdworth, Wishaw and Middleton with North Warwickshire.

5.1.5 As detailed within Section 5 of the CoCP, the Nominated Undertaker and its Contractors will implement the Community Engagement Framework. The framework will focus on engagement during construction with the local communities and on the specific needs of protected groups (as defined in the Equalities Act 2010) especially those who may be affected by construction impacts in the immediate vicinity of the works. A range of tools will be used to achieve this that will tailor engagement to local needs.

5.1.6 Successful management of the project will involve understanding communities and their needs, actively engaging, listening and responding. The arrangements for this are set out in the HS2 Community Engagement Framework. Liaison with the local community will take place to consistently provide timely, clear tailored information on the construction programme, updates on forthcoming works. It will also provide the opportunity for members of the public to respond, discuss issues and provide feedback that can be acted upon. This information will be included in the local area plan for community engagement. HS2 and its Contractors have initiated engagement along the route via focussed engagement events.

- 5.1.7 The Local Area Plan will take account both of distinct geographic distribution of the communities within NWBC and will involve the Contractors and any relevant third parties and stakeholders, for which there will be co-ordination arrangements.
- 5.1.8 For the purposes of this LEMP, a third party is an organisation with whom HS2 Ltd has entered into a legal agreement to undertake works on its behalf, to be delivered under the powers of the High-Speed Rail (London – West Midlands) Act (the Act), or the third party's own powers (e.g. permitted development). Such agreements require the third parties to comply with the requirements of the Act and the EMRs, including the CoCP. Third parties relevant to this LEMP include Network Rail, Highways England, and utility companies such as Severn Trent Water, National Grid, Cadent and Western Power Distribution.
- 5.1.9 Ongoing engagement with local interests and community groups will occur during construction, as listed in Appendix B: Non-exhaustive list of community groups in NWBC of this LEMP. (NB: This list is indicative and will be subject to change as more information becomes available).

5.2 Advanced Notice of Works

- 5.2.1 The Nominated Undertaker and its Contractors are committed to informing communities on matters of interest and relevance. Therefore, they will ensure that stakeholders affected by the proposed construction works, as outlined in the ES, will be informed in advance of works by methods outlined in the community engagement framework and as per Section 5.1.4 of the CoCP.
- 5.2.2 To reduce the likelihood of an environmental incident or nuisance occurring, measures from Section 5 of the CoCP will be implemented, as detailed below.
- 5.2.3 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.

5.3 Working Hours

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

Core Working Hours

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

- 5.3.3 A period of up to one hour before and up to one hour after core working hours will be required for start-up and close down activities as detailed within the CoCP. To maximise productivity within the core working hours, the 1hr start up and close down periods will include activities such as deliveries, workforce arrival/departure, unloading, maintenance and general preparation works. 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 NWBC.
- 5.3.4 Please note that emergencies (not repairs and maintenance) may be undertaken outside core hours.
- 5.3.5 Certain work activities at specific locations within the NWBC area will need to take place outside of the core working hours for safety and engineering purposes.
- 5.3.6 These work activities (which may include construction associated with station, infrastructure and rail works, including possessions) will be covered by the Section 61 process and are likely to include a number of railway possessions (to be carried out during non-core hours) will be required for the following locations:
- M6 Viaducts works;
 - Infrastructure improvements west of Melbicks Garden Center; and
 - Bromford Tunnel East Portal, from Cadbury Drive to Duddeston.
- 5.3.7 In circumstances where this is not practicable, the work will typically be carried out during possessions either during midweek nights or extended weekend nights. Every effort will be made to reduce work outside of core hours so as to avoid excessive community disturbance.
- 5.3.8 It is currently envisaged that a number of railway possessions (to be carried out during non-core hours) will be required for the following locations:
- The Birmingham to Nuneaton Railway Line crossings between the M42 and the Coleshill Industrial Estate;
 - The Birmingham to Derby Railway line crossing south of Faraday Avenue and north of where HS2 passes over the Minworth Effluent Conduit; and
 - The Kingsbury Railhead reception sidings and connections to the Birmingham and Derby Railway line (part of Kingsbury Road Railhead site LD-02-S3) between Faraday Avenue and Church Lane.

5.3.9 Road rail vehicles (RRVs³) 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.

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

5.4 Construction Site Layout and Good Housekeeping

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

5.5 Site Lighting

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

5.5.2 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.

5.6 Worksite Security

5.6.1 The intention is to achieve safe and secure worksites, with balanced and appropriate security measures that are commensurate with the risk, as detailed within Section 5.5 of the CoCP.

5.6.2 A security plan will be required for each site and where appropriate, security fencing and gates provided to perimeters of construction locations and site compounds. Fence type and construction will be appropriate to the level of security required and depend upon the likelihood of intruders, level of danger and visual impact to the environment.

5.6.3 Contractors will be responsible for ensuring that the site/working areas and plant and materials are secure from use by unauthorised persons at all times. Plant

³ Road Rail Vehicles (RRVs) will generally be delivered and operated outside of normal working hours 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.

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.

- 5.6.4 In some situations, particularly in an urban setting, consideration will be given to extra visibility for the public and workforce at night, e.g. use of half-timber/half-infill (i.e. perspex) at hoarding corners together with convex mirror to prevent blind spots. All sites will have security lighting to ensure the safety of passing pedestrians and other traffic. Details can be found in Information Paper D10: Worksite Security.
- 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 Hoarding, fencing and screening

- 5.7.1 The site perimeter will generally be fenced with 2.4m high solid hoardings that will be appropriately decorated, in line with measures described within Section 5.6.1 of the CoCP, if appropriate.
- 5.7.2 Hoardings up to 3.6m high may, on occasions, be used to control construction noise. At locations where existing fencing may need to be removed suitable alternatives will be used.
- 5.7.3 Opportunities to include temporary landscaping measures including but not limited to green hoardings, ivy screens, artificial ivy and instant hedging will be considered and where reasonably practicable implemented where there are clear benefits to local air quality, biodiversity and visual appearance of the area, taking into account costs, longevity and ease of maintenance.
- 5.7.4 Where there are earthworks along the line of route, such as cuttings and embankments, temporary fencing will be erected along the site boundaries. The type of fence will be dependent upon the nature of use of the adjacent land, as well as environmental, design, and safety considerations. Details can be found in Information Paper D10: Worksite Security.

5.8 Unexploded Ordnance

- 5.8.1 A risk assessment for the possibility of unexploded ordnance being found within construction areas will be carried out, as detailed within Section 5.7 of the CoCP.

5.9 Electromagnetic Interference

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

5.10 Temporary Living Accommodation

5.10.1 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. Occupational Healthcare

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

5.11 Clearance and Re-instatement of Sites on Completion

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

5.12 Pollution Incident Control and Emergency Preparedness

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

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

5.13 Local Control Measures

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

5.13.2 Static plant will be used with secondary containment measures, such as plant nappies, to retain any leakage of fuel or oil to reduce the risk of pollution;

5.13.3 Spill kits will be provided where appropriate to reduce the risk of pollution;

5.13.4 The use of oil interceptors at site offices and work compounds;

5.13.5 Appropriate measures such as use of bunds of non-erodible material or silt or sediment fences will be used adjacent to watercourses;

5.13.6 A surface water or groundwater monitoring plan will be implemented, particularly in relation to works that may affect aquifers, for example, excavations and piling; and

5.13.7 Work that might have an impact on groundwater quality will need formal approval by the EA via Schedule 33 Part 5 in the Act.

5.14 Fire Prevention and Control

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

5.15 Extreme Weather Events

5.15.1 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.

5.16 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 5.16 of the CoCP, which may be within the same or adjacent local authority boundaries.

6. Agriculture, Forestry and Soils

6.1 General

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

6.2 Sensitive Receptors

6.2.1 Approximately 493ha of agricultural land will lie within the construction boundary in the NWBC area. Approximately 81% of this land is of the best and most versatile quality (Grades 2 and 3a), 19% is moderate quality land (Subgrade 3b).

6.2.2 Approximately 476ha of the agricultural land will be required permanently for the scheme, with the remaining 17ha 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 the approximately 17ha of land within the construction boundary in NWBC 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 topsoil and subsoil will be entirely reused within the boundaries of each site and therefore an SRP will not be produced for these sites.

6.3.2 In areas where compounds are to be created, it is envisaged that each area will be stripped of topsoil in accordance with the SRP. Temporary material stockpiles will be clearly recorded, and the topsoil will be reinstated.

- 6.3.3 In respect of storage areas for soil and excavated materials, and within the wider construction site, the presence and spread of invasive, non-native species (plants and animals) and noxious weeds will be controlled through the adoption of appropriate management regimes. These will identify and effectively treat areas that could also threaten adjoining agricultural areas.
- 6.3.4 Appropriate construction, handling, treatment and disposal procedures will be implemented in relation to invasive species and noxious weeds. Route-wide measures will also be implemented to promote biosecurity and minimise the risk that invasive non-native species and diseases are spread by the scheme. Further details are provided in the CoCP.
- 6.3.5 Measures for the protection of farm infrastructure and crops will be subject to liaison with landowners, occupiers and land agents.
- 6.3.6 Following consultation with individual farmers, arrangements are being made with the farmer and documented in Farmers and Growers' packs. Details on the scope of these packs is included in the HS2 Guide for Farmers and Growers.

7. Air Quality

7.1 General

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

7.1.2 Contractors will be required to manage dust, air pollution, odour and exhaust emissions during the construction works in accordance with Best Practicable Means (BPM) and refer to current publications on 'best practice'⁴.

7.2 Sensitive receptors

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

7.2.2 For air quality, relevant sensitive receptors include locations where there are residential properties, other types of property where there is human exposure over extended periods, for example hospitals and schools, and locations where there are designated ecological sites with sensitive vegetation. The potential impacts have been considered in terms of dust soiling on people and property; human health effects of dust and air pollutant emissions; and effects of dust deposition on vegetation. Specific locations that should explicitly be considered in relation to construction traffic exhaust emissions include Properties along the B4455 Fosse Way, between Welsh Road and the A425 Southam Road. The locations were assessed to have 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.

7.2.3 In the NWBC boundary, the specific locations with relevant receptors that should explicitly be considered in the Contractor's working methods include:

- New Cottages on the B4114 Birmingham Road, Coleshill;
- Properties on the B4114 Birmingham Road, East of the A446;
- Properties on Gilson Road, West of Coleshill;
- Properties on Gilson Road in Gilson;
- Properties on the B4117 Watton Lane, Water Orton;

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

- Properties on Attleboro Lane, Water Orton;
- Properties on Plank Lane, Water Orton;
- Properties around Newlands Farm, Faraday Avenue, Curdworth;
- Properties around Marston Lane, Curdworth;
- Properties on Cuttle Mill Lane, Wishaw; and
- Parkgate Farm, A4091 Tamworth Road, Middleton.

7.2.4 The following statutory and non-statutory designated sites should be explicitly considered in the Contractor's working methods, including:

- Coleshill and Bannerly Pools Site of Specific Scientific Interest (SSSI);
- Coleshill Hall Farm Local Wildlife Site (LWS);
- Coleshill Park Belt LWS;
- Coleshill Sludge Lagoons LWS;
- Coleshill Sewage Works Grassland LWS;
- Hams Hall Woodlands LWS;
- Middleton Pool SSSI; and
- North Wood LWS.

7.2.5 The Institute of Air Quality Management (IAQM) methodology for assessment of dust from demolition and construction⁵ 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 medium risk of dust impacts without mitigation measures.

7.2.6 Specific locations that should explicitly be considered in relation to construction traffic exhaust emissions include: M42, M6 and A446 Stonebridge Road, where adjacent to Coleshill and Bannerly Pools, B4114 Birmingham Road, Coleshill; A446 Lichfield Road, Coleshill; A446 Lichfield Road between B4418 Marsh Lane and A4091 Tamworth Road; A4091 Tamworth Road between A446 Lichfield Road and Cuttle Mill Lane; and A446 Lichfield Road west of the A4091 Tamworth Road. These locations were assessed to have a negligible to slight adverse impact but should remain under review with regard to any changes to plans for the movement of excavated material during the construction phase.

7.2.7 In the NWBC boundary, the specific locations with relevant receptors that should explicitly be considered in the Contractor's working methods include: New Cottages on the B4114 Birmingham Road, Coleshill; properties on the B4114 Birmingham Road, east of the A446; properties on Gilson Road, west of Coleshill; properties on Gilson Road in Gilson; properties on the B4117 Watton Lane, Water Orton;

⁵ Institute of Air Quality Management (2011) Guidance on the assessment of the impacts of construction on air quality and the determination of their Local control measures.

properties on Attleboro Lane, Water Orton; properties on Plank Lane, Water Orton; properties around Newlands Farm, Faraday Avenue, Curdworth; properties around Marston Lane, Curdworth; properties on Cuttle Mill Lane, Wishaw; and at Parkgate Farm, A4091 Tamworth Road, Middleton.

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 8.2. Measures can include; planning the site layout; provision of dust suppression measures in all areas of the construction sites that are likely to generate dust; measures to keep roads, accesses and vehicles clean; and the enclosure, shielding or provision⁴ of filters on plant likely to generate excessive quantities of dust beyond the site boundaries. Specific measures for each site should be developed with regard to the particular activity being undertaken in proximity to sensitive receptors.
- 7.3.2 Dust suppression measures and works screening will be subject to approval in accordance with Schedule 17 of the Act. Further measures are detailed within Section 7 of the CoCP.
- 7.3.3 HS2 has set emission requirements and targets for the engines of Contractor cars, vans, and heavy road vehicles. These have been developed for the whole route and are categorised as follows: London Low Emission Zone, Clean Air Zone and Rest of Route. For NWBC the relevant category of vehicle emission standard is the Rest of Route. There are requirements for heavy road vehicles to be powered by EURO VI (or lower) engines and for cars and vans to be Euro 6 diesel and Euro 4 petrol from 2020⁶. There are also targets for the use of Ultra Low Emission Vehicles.
- 7.3.4 For NWBC 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.
- 7.3.5 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 LDC the relevant category of NRMM emission standard is the Rest of Country within which the requirement is for NRMM to be powered by

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

Euro stage IIIB⁷ from 2017 and from EU stage IV from 2020⁸. The HS2 Information Paper E31: Air Quality gives further information on the HS2 emission 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 NWBC 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 publicly available throughout construction. These can be found on the HS2 website at this address: <https://www.gov.uk/government/collections/monitoring-the-environmental-effects-of-hs2>. 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.

⁷ IIIA for constant speed engines of any power, as there is no corresponding Stage IIIB or IV at EU level.

⁸ Roman numerals are also used within the NRMM EU regulations but are not directly comparable to the road vehicle Euro standards.

8. Cultural Heritage

8.1 General

- 8.1.1 General control measures relating to cultural heritage are provided in Section 8 of the CoCP. Further control measures for cultural heritage are provided in the Hs2 Phase One Heritage Memorandum within the Environmental Minimum Requirements and the specific documents identified therein.
- 8.1.2 A route-wide Generic Written Scheme of Investigation: Historic Environment Research and Delivery Strategy (GWSI: HERDS) has been prepared which sets out the general principles for design, evaluation, mitigation, analysis, reporting and archive deposition to be adopted for the design development and construction of the scheme.
- 8.1.3 Works associated with the scheme will impact both designated and non-designated assets in NWBC. It is anticipated that during the MWCC construction activities only additional land acquired will require further archaeological surveys, as all required archaeological surveys within the LLAU have been completed by the EWC contractor. Full details of the works to be undertaken (i.e. archaeological investigations and built heritage recording) will be determined during the detailed design and will be set out in Project Plans and Location-Specific Written Scheme of Investigations (LS-WSI).
- 8.1.4 Schedule 18 and Schedule 19 to the Act concern how legislation in respect of listed buildings and scheduled monuments respectively apply to the Phase One works.

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 main ES (Appendices CH-001-019, CH-002-019, CH-003-019, CH-004-CH-001-020, CH-002-020, CH-003-020 and CH-004-020 and Maps CH-01-112, CH-01-113, CH-01-114a, CH-01-124, CH-01-114b, CH-01-115 and CH-01-116) and Volume 5 of the SES and AP2ES (Appendices CH-002-019, CH-003-019; CH-004-019; CH-004-CH-002-020 and CH-003-020 and Maps CH-01-113 and CH-01-114b) Local control measures
- 8.2.2 Where practicable, construction methodologies will be required to reduce the impacts on heritage assets. The CoCP sets out the provisions that will be adopted to control those effects, including the use of appropriate equipment and methods to limit ground disturbance and settlement followed by monitoring, protection and remediation. A programme of settlement monitoring and the implementation of

avoidance measures where appropriate will be undertaken by the Contractor. Detailed provisions with regarding settlement and listed buildings are outlined in the Settlement Policy / HS2 Information Paper: C3 Ground Settlement.

- 8.2.3 Those listed buildings to be demolished, altered or relocated are named in table 1 of Schedule 18 of the Act⁹ and are the subject of Heritage Agreements with NWBC and Historic England. These agreements require details of works concerning each of the listed buildings to be submitted to NWBC for approval, and Historic England for consultation where applicable.
- 8.2.4 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 Act¹⁰. Listed buildings named in Table 2 are also covered by a Heritage Agreement with NWBC, which sets out arrangements for obtaining approvals for protective or monitoring works to these buildings.
- 8.2.5 Where practicable, below ground assets will be preserved in situ beneath mitigation earthworks through the adoption of appropriate design measures.
- 8.2.6 Following the results of the archaeological surveys completed by EWC, where practicable, construction methodologies will have reduced the impacts on buried and upstanding remains. If further heritage assets are discovered during MWCC construction activities, the construction methodologies and design will be amended if required following consultation with the stakeholders.
- 8.2.7 The programme of archaeological and built heritage works will be undertaken by a specialist Contractor appointed by the Nominated Undertaker prior to and during the construction period in accordance with the provisions of the LS-WSI for archaeology and built heritage.

8.3 Monitoring

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

⁹ <https://www.legislation.gov.uk/ukpga/2017/7/schedule/18>

¹⁰ <https://www.legislation.gov.uk/ukpga/2017/7/schedule/18>

9. Ecology

9.1 General

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

9.2 Sensitive Receptors

9.2.1 The following locations which lie within or are adjacent to the scheme in NWBC are designated for nature conservation (and which are shown within the Volume 5 map books of the ES (Volume 5, Ecology Map Books CFA19, 20 and 24)). Note that the designations applying to these sites will impose constraints on working practices that will need to be adhered to:

- Coleshill and Bannerly Pools SSSI is located between the route and the A446 Stonebridge Road;
- River Blythe SSSI;
- Coleshill Hall Farm Local Wildlife Site (LWS) lies entirely within the land required for the construction of the scheme;
- Wheeley Moor Farm Meadows LWS is adjacent to the land required for the construction of the scheme;
- Coleshill Park Belt LWS is partially within the land required for the construction of the scheme;
- Marsh Lane Grassland & Marsh and Water Orton Triangle are both adjacent to the land required for the construction of the scheme;
- Coleshill Sewage Works Grassland LWS lies partially within the land required for the construction of the scheme;
- Coleshill Sludge Lagoons LWS lies partially within the land required for the construction of the scheme;
- Hams Hall Woodland LWS comprises three blocks of woodland, two of which (Hams Lane Wood and Sych Wood ancient woodland) lie partially within the land required for the construction of the scheme;
- North Wood LWS and ancient woodland is partially within the land required for the construction of the scheme; and
- Middleton Pool Site of Special Scientific Interest (SSSI) (Middleton Pool-Head Plantation) and Middleton Pool LNR have the same boundary and are located adjacent to the land required for the construction of the scheme. The SSSI and LNR are also fed by the Langley Brook, which will be crossed by the route of the scheme and the associated realignment of the A4091.

9.2.2 In addition, there are sensitive habitat receptors outside of designated sites. These are displayed within the Volume 5 map books of the main ES (Volume 5, Ecology Map

Books CFA19,20 and 24) and SES and AP2 ES (Volume 5 Environmental Topic Map Books: Ecology CFA19,20 and 24). From south to north these include:

- Grassland habitats at the meadows adjacent to the river Cole and the field north-east of Hall Walk within the land required for the construction of the scheme;
- River Cole, which will be realigned as a result of the scheme and crossed by viaducts and bridges, plus two of its unnamed tributaries that will be crossed by the scheme;
- A veteran pedunculate oak at Gilson known as the Dodder's Oak within the land required for the construction of the scheme;
- A plantation woodland belt adjacent to the Old Saltleians Rugby Football Club within the land required for the construction of the scheme;
- Broadleaved woodland area near Jack O'Watton industrial estate within the land required for the construction of the scheme;
- River Tame and two of its unnamed tributaries, which will be crossed by the scheme;
- Grassland habitat at Curdworth Bridge Meadow within the land required for the construction of the scheme;
- Broadleaved woodland adjacent to Plank Lane, Water Orton within the land required for the construction of the scheme;
- One important hedgerow south of Gypsy Lane and adjacent to the M42 within the land required for the construction of the scheme;
- An important hedgerow alongside the M42 within the land required for the construction of the scheme;
- An unnamed young plantation, between School Farm and the M42 and adjacent to Marston Lane within the land required for the construction of the scheme;
- Birmingham and Fazeley Canal, which is crossed by the scheme;
- Mill and Lower Mill Plantations at Cuttle Mill Fishery adjacent to the land required for the construction of the scheme;
- Roger's Coppice ancient semi-natural and re-planted broadleaved woodland adjacent to the land required for the construction of the scheme;
- Important hedgerows adjacent to Crowberry Lane, the A4097 Kingsbury Road and field boundaries in Middleton within the land required for the construction of the scheme;
- Walker's Spinney ancient woodland within the land required for the construction of the scheme;
- Middleton Lakes RSPB reserve within 350m of the land required for the construction of the scheme;
- Water dependent habitats (ground water fed lake and associated habitats) at Middleton Hall Farm Quarry within the land required for the construction of the scheme;

- Langley Brook and three of its unnamed tributaries, which are crossed by the scheme;
- Gallows Brook and another watercourse to the north, which are crossed by the scheme and are on the border between North Warwickshire Borough and Lichfield District; and
- Water dependent habitats: Coleshill Pools SSSI; Wheeley Moor Farm Meadows LWS; Coleshill Hall Farm LWS; Coleshill Park Belt LWS; Coleshill Sewage Works Grassland LWS; Marsh Lane Grassland and Marsh LWS; Water Orton Triangle LWS; Lea Marston Old Quarry LWS; Lea Marston Lake (LWS); and Coneybury Wood (LWS) and ancient replanted woodland.

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

- Bats (roosts and key commuting and foraging habitat);
- Notable plants (e.g. marsh dock);
- Great crested newt and other amphibians;
- Birds (e.g. barn owl, lapwing, little ringed plover, oystercatcher, yellow wagtail and sand martin);
- Terrestrial invertebrate assemblages;
- White-clawed crayfish;
- Otter;
- Common reptiles; and
- Badger.

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

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

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

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

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

9.3 Local control measures

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

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

| Receptor | Issue | Standard control measure |
|------------------|--|---|
| Designated sites | The scheme affects statutory and non-statutory wildlife sites and ancient woodland. | <p>Measures to reduce habitat loss should be included in ecological site management plans, such as avoiding siting temporary material stockpiles, construction materials and vehicle parking within designated sites.</p> <p>Potentially hazardous materials should also be located away from designated sites and stored correctly.</p> <p>Specific measures for control of surface water and for air and water-borne pollution should also take account of the proximity of these designated sites.</p> |
| 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 following the design specification set out in the relevant Ecology Site Management Plans. All works on or within 100 metres of ancient woodlands will be notified to the Woodland Trust. |
| Bats | All UK bat species and their roosts (even if bats are not present) are fully protected under UK legislation. The scheme will result in the loss of confirmed bat roosts in trees and buildings. | Adhere to requirements of licenses and, where relevant, Ecology Site Management Plans. |
| | The scheme will result in the loss of trees and buildings identified as having potential to support roosting bats. Ecological surveys have identified trees and buildings with bat roost potential | Confirmed bat roosts in trees will be felled under Natural England Bat License at specified times of the year. Potential bat roosts in trees will be soft felled under a Precautionary Method Statement (PWMS) with an Ecological Clerk of Works (ECoW) present. |
| | Retained bat roosts are present in close proximity to the scheme. Caution is required to ensure that | Where practicable, undertake activities causing disturbance during seasonal periods when bats are likely to be absent. Ensure lighting is directed away from known roosts. Where practicable, temporary structures will be erected to screen the entrances/exits of retained roosts from construction areas. |

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| | <p>these roosts are not disturbed during works.</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 nighttime working in close proximity to foraging areas and commuting routes.</p> |
| Breeding birds | <p>The nests and eggs of all bird species are legally protected against being damaged or taken. Some species are specially protected against disturbance whilst nesting.</p> <p>The scheme will result in the loss of nesting bird habitat, including vegetation, buildings and structures.</p> | <p>Habitat clearance should be conducted outside of the bird nesting season (March to August inclusive) unless unavoidable. If unavoidable, a PWMS will be required and an ECoW present on site.</p> |
| Great Crested Newt | <p>Great crested newts and their habitats are fully protected under UK legislation.</p> <p>The scheme will result in the loss of water bodies and terrestrial habitat used by great crested newts.</p> | <p>Adhere to requirements of HS2 great crested newt organisational license, method statements, and Ecology Site Management Plans.</p> <p>A PWMS will be required for non-licensable activities with an ECoW present on site.</p> |
| Common amphibians | <p>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.</p> | <p>Common amphibians will be captured during GCN and reptile translocation and moved to receptor sites.</p> <p>Drain down of ponds will be conducted outside of the main breeding period for amphibians (March to August) where practicable.</p> |
| Common reptiles | <p>Common species of reptile (grass snake, adder, common lizard and slow worm) are protected from intentional or reckless killing or injury.</p> <p>Common reptiles are widespread, and the scheme will result in the</p> | <p>Where works have the potential to kill or injure reptiles, but there is suitable habitat immediately adjacent to the work site that could support a viable population (with enhancements where necessary) the habitat manipulation and displacement approach should be followed. A PWMS will be produced in advance of works commencing and an ECoW will be present on site. Where there is no suitable habitat immediately adjacent to the work site, the reptile translocation approach may be implemented. A PWMS will be produced in advance of works commencing and an ECoW will</p> |

| | | |
|---|--|--|
| | loss of confirmed and potential reptile habitat. | be present on site. This will include details of the approach, any exclusion fencing required, and details of the receptor site. |
| Badger | <p>Badgers and their setts are protected under the Protection of Badger Act 1992.</p> <p>Badgers are widespread and the scheme will result in the loss of badger habitat, including setts.</p> | <p>Adhere to the requirements of the HS2 badger organisational license, method statements, and Ecology Site Management Plans.</p> <p>Avoid badger setts to reduce disturbance where they do not need to be closed. Some works may be carried out under PWMS and an ECoW will be present on site to create exclusion zones and brief the workforce.</p> <p>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.</p> |
| Aquatic wildlife such as fish, eels and aquatic invertebrates | There are watercourses within the vicinity of the works, some of which have been identified as supporting aquatic wildlife which could be at risk of direct impacts during channel works or indirectly from contamination. | <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 necessary Environment Agency authorization.</p> |
| General | Unexpected discovery of legally protected species during works. | There will be a procedure to follow in the unexpected event that protected species identified during construction. This will include seeking appropriate licenses and consulting with Natural England where unexpected finds of great crested newts or badgers are covered by the organizational licenses and works must be in accordance with those licenses. |

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 Ecological mitigation sites

9.4.1 LMJV have constructed a number of ecological mitigation sites to compensate for the loss of habitats due to the construction of the HS2 scheme, to form receptor sites for species translocated from the construction area to create biodiversity gain. The sites constructed to date in the NWBC area are detailed in the table below.

Table 2: Ecological mitigation sites in the North Warwickshire Borough Council area

| Name of site | Location | Details of site |
|----------------------------------|---|---|
| Coleshill Sewage Treatment Works | The site is approximately 1.65ha in size and is centred on National Grid reference SP 1994 9131. It is situated approximately 3km east of Water Orton, Warwickshire and is within the River Tame Anker and Mease Catchment. The site is bounded by the built environment of Coleshill, with the M42 and M6 located to the west. | The site will in part provide mitigation and compensation for the loss of grassland and wetland habitat from the Lea Marston Sludge Beds Local Wildlife Site (LWS). The site shall be designed to provide habitat which is suitable for the translocation of four Warwickshire notable plant species (marsh willowherb <i>Epilobium palustre</i> , yellow loosestrife <i>Lysimachia punctata</i> , great burnet <i>Sanguisorba officinalis</i> and bog stitchwort <i>Stellaria alsine</i>), and one Warwickshire rare plant species (marsh dock <i>Rumex palustris</i>). Habitats to be planted are woodland, species-rich grassland, wet grassland and wetland/marginal plants. Three scrapes will be created. |
| Coleshill Manor | The Site is located east of Birmingham and south of Water Orton, between the M6 and the M42 motorways. | The site is designed to provide ecological mitigation and compensation for the loss of woodland from Coleshill Park Belt Local Wildlife Site (LWS) and the loss of two ponds, one of which is a great crested newt (GCN) <i>Triturus cristatus</i> breeding pond. Habitats to be planted include woodland, woodland edge, semi-improved grassland and wetland/marginal plants. Four new ponds will be created along with hibernacula. |
| Curdworth | The site is located within North Warwickshire Borough, close to the M42 motorway, approximately 1.5km northeast of Curdworth and 3.5km southwest of Kingsbury. The Site is to the east of the Leeds spur section of the HS2 route, adjacent to the A4097 Kingsbury Road | The site is designed to create an area of woodland habitat to compensate for the loss of woodland along the A4907 Kingsbury Road and Marston Lane, provide alternative roosting provision for the loss of the Myotis species maternity roost and the Natterer's bat Myotis nattereri roost locally and enhance habitat links and foraging opportunities for nearby bat roosts. The habitat creation will include construction of a bat house and planting. |
| Curdworth | The site is located between the town of Curdworth and the Kingsbury Water Park in Warwickshire). | The site is designed to provide ecological mitigation and compensation for reptiles, particularly grass snake (<i>Natrix helvetica</i>). A matrix of rough neutral grassland, scrub, and woodland edge will be planted at the site, and features that will contribute to the sites' function as a suitable reptile receptor site will include reptile basking banks, a pond suitable for amphibian prey, and swales. |
| Water Orton East | The site is situated on the southern fringe of the village of Water Orton, Warwickshire, northeast of Birmingham and surrounded by the M6 and the M6 Toll roads. | The site is designed to contribute to the compensation for the loss of great crested newt (GCN) <i>Triturus cristatus</i> breeding and terrestrial habitat locally. The habitat creation measures at the site include provision of one new pond, woodland, and species-rich neutral grassland in combination with retention of existing hedgerows and woodland (as applicable) to provide suitable receptor sites for GCN. |

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|------------------|--|---|
| Water Orton West | The site is situated on the southern fringe of the village of Water Orton, Warwickshire, northeast of Birmingham and surrounded by the M6 and the M6 Toll roads. | The site is designed to contribute to the compensation for the loss of great crested newt (GCN) <i>Triturus cristatus</i> breeding and terrestrial habitat locally. The habitat creation measures at the site include provision of three ponds, woodland, and species-rich neutral grassland in combination with retention of existing hedgerows and woodland (as applicable) to provide suitable receptor sites for GCN. |
|------------------|--|---|

9.4.2 Further ecological mitigation sites are yet to be designed and will be detailed in further versions of the LEMP once the design is complete.

9.5 Monitoring

9.5.1 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 General

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

11.1.1 Further land quality study work including intrusive ground investigation (where needed) and analysis will be conducted prior to construction in order to confirm areas of suspected land contamination that could be disturbed or encountered during construction of the scheme. Contaminated sites beyond the scheme will be considered only in terms of its potential impact on the scheme. Pre-construction surveys have commenced and have been completed with no new land quality constraints identified in any case. In the event that new constraints are identified by the final pre-construction surveys then the LEMP will be updated accordingly. 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. Potential contamination sources and sensitive receptors.

11.1.3 Land with potentially contaminative existing or historical uses has been identified as a possible contaminative risk to HS2 works within the NWBC area is listed below:

- Timber yard, formerly a sawmill, located off Birmingham Road in Coleshill;
- Former sewage works at Gilson;
- Infilled pond located off the A446 Lichfield Road;
- Coleshill Gas Works historical landfill located in the northwest of Coleshill industrial estate;
- Birmingham to Nuneaton Line;
- Coleshill Sewage Treatment Works;
- Infilled pond located to the south of the River Tame at Coleshill;
- Former Hams Hall Power Station;
- Birmingham and Derby Line; and
- Mullensgrove Farm located to the east of the M42 motorway.
- Hanson Quarry located west of Aston Villa Training Centre

11.1.4 The following have been identified within or up to 250m from the area of land required to build the scheme:

- Vehicle depot off Junction 4 of the M6 motorway;
- Woodlands Cemetery historical landfill located off Birmingham Road in Coleshill;

- Former Coleshill Hall Hospital (now Coleshill Manor) with former tank off Manor Drive;
- Electricity substation off Gilson Drive;
- Infilled pond located between Gilson Road and Gilson Drive;
- Grimstock Hill historical landfill and Trajan Hill historical landfill, both located off Lichfield Road;
- Infilled pond at Gilson;
- Former garage off Lichfield Road;
- Infilled pit located to the south of the River Tame;
- Former works including coal and cement block factories, now Jack O'Watton Business park, located off the A446;
- Two infilled ponds located to the south of Vicarage Lane in Water Orton (North Chord);
- Infilled pond to the south of the existing Water Orton school;
- Infilled pond located off Birmingham Road in Water Orton (North Chord);
- Coleshill Water Reclamation Works historical landfill, located to the south of Hams Hall Distribution Park;
- Infilled pond;
- Infilled pit adjacent to the Birmingham and Derby Railway Line;
- Dog Kennel Belt historical landfill located to the east of Hams Hall electricity substation;
- Hams Hall electricity substation located off Hams Lane;
- Land west of Hams Lane historical landfill located to the west of Hams Lane;
- Dunton Island landfill adjacent to the A446-M42 junction;
- Land east of Hams Lane historical landfill located to the east of Hams Lane;
- Infilled pond located off Kingsbury Road;
- Birmingham Road historical landfill located off Birmingham Road on the outskirts of Lea Marston;
- Infilled pond to the north of Mullensgrove Farm;
- Lea Marston No.2 historical landfill located off Kingsbury Road;
- Infilled well located off Marston Lane adjacent to the Birmingham and Fazeley Canal and the M42 motorway;
- Infilled pit adjacent to Wheatley House off Kingsbury Road;
- Infilled pond adjacent to Parklands Stud;
- Infilled pond located off Kingsbury Road in Marston;
- M42 Mullensgrove Farm historical landfill located alongside the Birmingham and Fazeley Canal and the M42 motorway;
- Cocksparrow Farm historical landfill located at Cocksparrow Farm to the east of the M42 motorway;
- Infilled pond adjacent to Cocksparrow Farm to the east of the M42 motorway;
- Infilled pond to the east of Cocksparrow House Farm and the M42 motorway;
- Infilled well located between Maple Leaf Farm and Middleton House Farm;
- Middleton Hall No. 2 Historical Landfill;

- Middleton Hall sand and gravel historical landfill;
- Infilled well located off Crowberry Lane in Middleton; and
- Former petrol filling station located off Church Lane to the east of Middleton.

11.1.5 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 groundwaters in the Warwickshire Group bedrock (Principal aquifer) and various Secondary A and Secondary B aquifers;
- The built environment, including buildings, property and underground structures and services;
- The natural environment.

11.2 Local control measures

11.2.1 Ground investigations are to be undertaken to assess areas of potential contamination within the scheme. Following a conceptual site model and risk assessment a remedial strategy will be prepared, as needed. Consultation with NWBC and the Environment Agency will 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.

11.2.2 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, and appropriately permitted bioremediation to remove oil contaminants. Contaminated soil disposed off-site will be taken to a soil treatment facility, another construction site (for licensed treatment, as necessary, and reuse) or an appropriately permitted landfill site.

11.2.3 Excavation through Hams Hall Power Station and Mullensgrove Farm in the NWBC 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 affected adversely by the construction.

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

11.3 Minerals

- 11.3.1 The scheme crosses a number of Mineral Safeguarding Areas in the NWBC area, including those for building stone, sand and gravel, deep coal and brick clay.
- 11.3.2 Mitigation of potential impact 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, the mineral planning department at North Warwickshire Borough 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 General

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

12.2 Sensitive (Significantly Affected) Receptors

12.2.1 The lead Contractor will have due regard to limiting impacts of the works on the character of the following landscape character areas (LCAs) which are shown within the Volume 5 map books of the main ES (Volume 5, Landscape and visual map book for country: north):

- M42 Corridor LCA;
- Cole Valley LCA;
- River Tame Floodplain LCA; and
- Tame Valley Farmland LCA.

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

- Residents in the area, particularly Chelmsley Wood eastern edge, Smith's Wood (high rise buildings), Coleshill, Gilson, Chattle Hill, Water Orton, Cudworth, Lea Marston, Marston, Boddymoor Heath, Hunts Green and Middleton, as well as isolated groups of and individual residences interspersed throughout the landscape;
- Recreational users on PRow throughout the area, including the Heart of England Way and Centenary Way, plus those using public open spaces at Chelmsley Wood and those using the Birmingham and Fazeley Canal and towpath; and
- People travelling along the following roads and lanes in the area, including;
 - Coleshill Heath Road;
 - Yorkminster Drive;
 - B4114 Birmingham Road;
 - B4117 Gilson Road;
 - B4117 Watton Lane;
 - A446 Lichfield Road;
 - Gypsy Lane;
 - Coleshill Road;
 - Vicarage Lane;
 - Attleboro Lane;

- Plank Lane;
- B4118 Marsh Lane;
- B4118 Birmingham Road;
- B4118 Water Orton Road;
- Marsh Lane, Hams Lane;
- Church Lane (Lea Marston);
- A4097 Kingsbury Road;
- Blackgreaves Lane;
- Haunch Lane;
- Kingsbury Road;
- Marston;
- Bodymoor Heath Lane;
- A4091 Tamworth Road;
- Brick Kin Lane;
- Park Lane;
- Crowberry Lane; and
- Church Lane (Middleton).

12.2.3 The contractor shall also discuss the possibility of advance planting off-site with landowners and with NWBC to further screen the locations listed above.

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

12.3 Local Control Measures

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

- Maximise retention and protection of existing trees and vegetation where possible;
- Use well-maintained hoardings and fencing;
- Design lighting to avoid unnecessary intrusion onto adjacent buildings and other land uses; Trees intended to be retained which may be accidentally felled or die as a consequence of construction works will be replaced;
- 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; and
- Identify specific locations of temporary material stockpiles to reduce visual impacts.

12.4 Trees

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

12.4.2 The Contractor will carry out surveys and agree the details of tree retention and protection measures, in accordance with BS 5837:2012 Trees in relation to design, demolition and construction recommendations.

12.5 Site buildings for office and welfare

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

13. Noise and Vibration

13.1 General

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

13.2 Sensitive receptors

13.2.1 Noise and vibration construction assessment locations at sensitive residential and non-residential properties, are shown on the detailed maps in the main ES, Map Series SV-03 (Volume 5, Sound, noise and vibration map book: country north, ref ES 3.5.1.9.3). For further details of these receptors and the potential adverse impacts identified, refer to the main ES (Volume 2: CFA21 and CFA 22 reports, Section 11 and the Volume 5: Appendix SV-003-021 and SV-003-022 reports).

13.2.2 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

- Birmingham Road, Coleshill;
- Gilson Drive, Gilson;
- Meadowbank Drive, Gilson;
- Gilson Road, Gilson;
- Mickle Meadow, Water Orton;
- Long Leys Croft, Water Orton;
- Plank Lane, Water Orton;
- Attleboro Lane, Water Orton;
- Faraday Avenue, Curdworth;
- Dunton Hall, Kingsbury Road, Sutton Coldfield;
- Kingsbury Road, Sutton Coldfield;
- Marston Lane, Curdworth;
- Cuttle Mill Farm, Wishaw;
- Middleton House Farm, Middleton;
- Bodymoor Heath Road, Bodymoor Heath; and
- Church Lane, Middleton.

Non-residential

- Bromwich Court, Chattle Hill;
- International Automotive Components (IAC), Chattle Hill;
- Hams Lane, Coleshill, Birmingham;
- Dunton Veterinary Clinic, Kingsbury Road, Sutton Coldfield; and
- BMW, BMW Plant Hams Hall, Canton Lane, Hams Hall, Colehill.

13.3 Local Control Measures

- 13.3.1 Consents under section 61 of the Control of Pollution Act 1974 will be obtained for the construction works and applications will normally be made at least 28 days before the relevant work is due to start. The works will be carried out in accordance with the conditions of the consent. Furthermore, site specific measures will be identified by the works Contractor on a site-by-site and activity-by-activity basis and agreed with NWBC through the Section 61 process, as set out in the HS2 S61 guidance document.
- 13.3.2 Site specific best practicable means measures to control noise and vibration have been identified through the Parliamentary process and discussions with NWBC and are reflected in this document. Furthermore, site specific measures will be identified by the works Contractor on a site-by-site and activity-by-activity basis and agreed with NWBC through the Section 61 process. 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.
- 13.3.3 As identified in the CoCP, examples of BPM 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 compounds are in proximity to noise sensitive receptors. This may include placing any stacked porta-cabins 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.
- 13.3.4 Where, despite the implementation of BPM, the noise exposure exceeds the criteria defined in the CoCP (section 13), the Contractor may offer noise insulation or ultimately temporary re-housing.

- 13.3.5 Taking account of the avoidance and mitigation measures as set out in the CoCP, three residential buildings were forecast in the ES to experience noise levels higher than the noise insulation trigger levels as defined in the CoCP for both daytime and nighttime periods. These are two dwellings adjacent to Faraday Avenue and one dwelling in the vicinity of Kingsbury Road represented by assessment location ID 153252 and 153646 on plan SV-03-056 within the main ES, Volume 5, Sound, noise and vibration – Country North map book).
- 13.3.6 Local control measures will be periodically reviewed, including following any material changes in the proposed construction method and appointment of the works Contractor.

13.4 Monitoring

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

- 14.1.1 Route-wide, local area and site-specific traffic management measures will be implemented during the construction of the project on or adjacent to public roads, bridleways, footpaths and other Public Rights of Way (PRoW) affected by the scheme as necessary. These measures are guided by Section 14 of the CoCP.
- 14.1.2 The CoCP sets out a number of measures to ensure the impacts from construction traffic on the local community are reduced by its Contractors where reasonably practicable:
- A route-wide Traffic Management Plan (RTMP) setting out generic traffic management measures to be implemented during the construction of the scheme;
 - The Local Traffic Management Plans (LTMP) will set out matters such as planned worksites, lorry routes and the programme of major traffic;
 - Contractors will prepare site specific traffic management measures, which will be subject to consultation and, as necessary, consent;
 - Contractors will prepare construction workforce travel plans with the aim of encouraging the use of sustainable modes of transport to reduce the impact of workforce travel on local residents and businesses; and
 - For road cleanliness Contractors will be required to use all reasonably practicable measures to avoid/limit and mitigate the deposition of mud and other debris on the highway.
- 14.1.3 HS2 will require its Contractors to undertake such appropriate monitoring as is necessary to ensure compliance with the requirements of the CoCP, and this will include the maintenance of records of traffic management measures installed.
- 14.1.4 Information relating to construction traffic is also provided in the following Information Papers:
- D11: Maintaining access to residential and commercial property during construction;
 - E13: Management of traffic during construction;
 - E14: Highways and traffic during construction – legislative provisions; and
 - E30: Vehicle flow management and safety requirements during construction.

14.2 Local Control Measures

Sensitive Receptors

- 14.2.1 In relation to traffic and transport, key sensitive receptors will need to be considered when the Contractor develops the overall programme within the LTMP and the site-specific traffic management schemes.
- 14.2.2 These requirements will be addressed appropriately 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 NWBC area these include local roads that are affected by the scheme and include the following:
- B4114 Birmingham Road from A446 Stonebridge Road to A452;
 - Gilson Drive south of Gilson Road;
 - B4117 Gilson Road between Gilson Drive and A446 Stonebridge Road;
 - A446 Lichfield Road between B4114 Birmingham Road to A4091 Tamworth Road;
 - Church Lane between Crowberry Lane and the A4091 Tamworth Road;
 - A4091 Tamworth Road; and
 - A4097 Kingsbury Road.

Site Access

- 14.2.4 A number of vehicle access points to the construction sites will be required and so the construction vehicle movements will be spread over a number of roads within the area of the works. Highway access notifications and/or approvals will be undertaken in accordance with Schedule 4 of the Act.
- 14.2.5 Routes for construction traffic will be subject to approval of the relevant planning authority in accordance with the Schedule 17 of the Act when large goods vehicle movements exceed 24 single movements (12 two-way movements) per day to and/or from a site.
- 14.2.6 Any permanent highway works outside the limits of deviation as outlined in the Act will be subject to normal Highways legislation and Highway Authority powers.

14.3 Works to the Highway and Access Measures

- 14.3.1 Temporary and permanent road closures, overnight and at weekends, and diversions will be required. The scope is assumed as follows:
- B4117 Gilson Road, north of the village of Gilson;
 - A446 Lichfield Road at Chattle Hill; and
 - Hams Lane, north of Faraday Avenue.
- 14.3.2 There will be a coordinated programme of temporary traffic management, road closures and lane width restrictions on the M42, M6 and M6 Toll.
- 14.3.3 Temporary road closures, with overnight and weekend closures and diversions of the following roads will likely be required:
- B4114 Birmingham Road;
 - Gilson Drive to tie in to the realigned Gilson Road;
 - Attleboro Lane west of Water Orton;
 - Faraday Avenue (U&A in place for access twenty-four (24) hours a day and seven (7) days a week throughout the construction phase of those Relevant Works affecting Faraday Avenue and Hams Hall Business Park so far as is within the Nominated Undertaker's remit or control);
 - A4097 Kingsbury Road;
 - Bodymoor Heath Lane, east of A4091;
 - A4091 Tamworth Road;
 - Park Lane south of Middleton;
 - Crowberry Lane south of Middleton; and
 - Church Lane east of Middleton.
- 14.3.4 Permanent diversion will also be required to the following:
- Manor Drive, which is diverted to the west side of the HS2 route.
- 14.3.5 Alternative temporary routes and permanent diversions will be required for Footpath T15 north of Middleton.
- 14.3.6 Permanent realignments are required for the following PRow:
- Footpath M77, Green Lane, in the vicinity of Coleshill east and west viaducts to the north of the M42(N) to M6(S) connecting slip road;
 - Footpath M76 to the south of B4114 Birmingham Road;
 - Footpath M58 to the north of B4114 Birmingham Road;

- Footpath M54 in the vicinity of the realigned Gilson Road and also to the west of Gilson Drive;
- Footpath M57 to join the realigned footpath M54;
- Footpath M62 north of Gilson Road;
- Footpath M14 at Dunton Wood;
- Footpath M16 west of Hams Hall substation;
- Bridleway M23a Sweeney Lane;
- Footpath T17 near Hints Green routed over the realigned Bodymoor Heath Lane;
- Byway M450 Marston Lane where the existing alignment will be stopped up and a new replacement route provided; and Footpath M23 and M22 will be permanently stopped up and a permanent diversion provided via Seeney Lane.

14.3.7 There will be permanent stopping up of:

- Footpath M56 where it meets the realigned B4117 Gilson Road;
- Footpath M60 where it connects to the realigned M62;
- Footpath M43 with users redirected over the realigned Attleboro Lane; and
- Footpath M13 west of A4097 Kingsbury Road.

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 General

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

15.2 Local Control Measures

Testing and Classification of Materials

- 15.2.1 The 'basic characterisation'¹¹ 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 Practice¹² 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 Disposal¹³; and
 - WM3 – Guidance on the classification and assessment of waste (Version 1.2 2021)¹⁴.

¹¹ Basic characterisation refers to the characterisation of excavated material to help define the type of re-use for which it is suitable (e.g. DMRB soil classes). Characterisation of waste would include the allocation of an EWC code (in accordance with WM3) and a detailed evaluation of the waste properties. The latter is based on a combination of the detailed knowledge of the source process and chemical testing.

¹² CL:AIRE Definition of Waste Development Industry Code of Practice, Version 2, March 2011.

¹³ Environment Agency (2013), Waste Sampling and Testing for Disposal to Landfill, March 2013.

¹⁴ Environment Agency (2021) Technical Guidance WM3 – Guidance on the classification and assessment of waste (Version 1.2 2021)

15.3 Transport of waste and materials

- 15.3.1 Excavated material produced in NWBC is likely to be surplus to the requirements of the scheme. Surplus excavated material will be managed in accordance with the waste hierarchy as described above and the HS2 Excavated Materials Policy, which states:
- 15.3.2 *'Where it is not feasible or reasonably practicable to use excavated materials in the construction the Nominated Undertaker will minimise the quantity of excavated materials that are disposed of to landfill. This may include providing surplus materials for use in other local construction projects.'*
- 15.3.3 Opportunities for the off-site re-use of surplus excavated material will therefore be identified and utilised 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.
- 15.3.4 Excavated material from NWBC will be transported by rail where reasonably practicable to do so. If rail transport is not reasonably practicable material will be transported by road.

16. Water Resources and Flood Risk

16.1 General

16.1.1 General control measures relating to water resources and flood risk are provided in Section 16 of the CoCP.

16.2 Sensitive receptors

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

- Local aquifers:
Alluvium (Secondary A aquifer); Head (Secondary undifferentiated aquifer); Glaciofluvial deposits (Secondary A aquifer); River terrace deposits (Secondary A aquifer); and Mercia Mudstone Group – Mudstone (Secondary B aquifer).
- There are no superficial groundwater source protection zones (SPZs) located within the North Warwickshire Borough Area.
- Surface water features:
River Blythe, including tributaries and drains; River Cole, tributaries (including Coleshill Brook) and drains; River Tame, tributaries and drains; Birmingham and Fazeley Canal; Langley Brook, tributaries and drain feeder; Tributary to Middleton Pool; and Gallows Brook, including drain feeder and ponds located within and outside of the land required for the construction of the scheme.
- Water dependent habitats:
Coleshill Pool SSSI; Wheeley Moor Farm Meadows Local Wildlife Site (LWS); Coleshill Hall Farm LWS; Coleshill Park Belt LWS; Coleshill Sewage Works Grassland LWS; Marsh Lane Grassland and Marsh LWS; Water Orton Triangle LWS; Hams Hall Woodlands (LWS); Sych Wood; Dunton Wood (LWS); Lea Marston Old Quarry (LWS); Lea Marston Lake (LWS); Middleton Hall and Middleton Pool SSSI; North Wood (LWS); Roger's Coppice; Mill Plantation and Lower Mill Plantation and surrounding fishing lakes at Cuttle Mill Fishery; Middleton Hall Farm Quarry; and Coneybury Wood (LWS) and ancient replanted woodland.
- Abstractions – public / private and licensed / unlicensed:
Licensed abstractions from Birmingham and Fazeley Canal; Langley Brook; Moxhull Brook; The Belfry Lake 5; and Tributary of Cuttle Mill Brook.

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

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

- River Blythe and tributaries;
- River Cole and tributaries;
- River Tame and tributaries;
- Langley Brook and tributaries; and
- Gallows Brook and tributaries.

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

- Coleshill Farm;
- Cuttle Mill;
- Langley Brook Sewage Treatment Works; and
- Coleshill Sewage Treatment Works, which are at risk from river flooding.

16.2.5 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.

16.2.6 Surface water flood records held by local authority / lead local water authority. The Contractor will have due regard to the following sensitive local water resource receptors.

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

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

16.3 Local control measures

16.3.1 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 or surface water from sewers in the surrounding area.

16.3.2 As outlined in the CoCP, BPM will be used (e.g., through the use of silt traps and appropriate attenuation, if required) prior to the discharge of water to watercourses, groundwater or surface water sewers, subject to obtaining the required permits or consents. This could apply to run off from wheel washing facilities or from general

construction activities. As noted in Section 5.12 of this document, a pollution incident control management system will incorporate procedures for alerting relevant water supply companies and reducing impacts to public supply SPZs and local private abstractions in this area.

- 16.3.3 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.
- 16.3.4 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.
- 16.3.5 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.

If required, appropriate guidance will be adhered to, including the Piling and Preventative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution Prevention. Groundwater and surface water monitoring plans will be prepared, where piling could result in below ground contamination.

- 16.3.6 Temporary excavated material stockpiles, construction compounds and site offices will be located outside of areas at risk of flooding where reasonably practicable, to avoid affecting the level of risk of flooding. Where construction compounds cannot be located outside of flood risk areas, there will be a site-specific flood risk management plan prepared prior to construction to manage the potential risks. These plans will take account of the flood risk assessments produced for the main ES and include any proposed risk management or mitigation measures, if required.
- 16.3.7 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.
- 16.3.8 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

reassessed 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.

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

Appendix A: Glossary of terms

| Abbreviation or term | Full phrase |
|---|---|
| CFA | Community Forum Area |
| CoCP | Code of Construction Practice |
| Contractor | The Contractor on a construction site responsible for planning, managing and coordinating themselves and/or the works and all other contractors working on their site, or any other contractor directly employed by the Nominated Undertaker to undertake key construction works on site. |
| CPC | Safe Urban Driving Certificate of Professional Competence |
| DRI | Demolition Recovery Index |
| EMR | Environmental Minimum Requirements set out environmental and sustainability commitments to be complied with by HS2 and its contractors. These form part of the High Speed Rail (London –West Midlands) Act 2017 and are legally binding |
| EMS | Environmental Management System |
| ES | Environmental Statement |
| Existing slab removal and crushing | Pre-existing concrete slab present across the site will be broken, crushed, and turned into fresh concrete to be used on site. |
| 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 proposed route connecting London - West Midlands. |
| IAQM | Institute of Air Quality Management |
| Installation of concrete batching plant | Some concrete batching plants will be installed along the route to supply the sublots with concrete. This will remain operational for the duration of the works. |
| Installation of steel tripods | Steel tripod structures will be assembled on site to enable viaducts to pass over other assets for instance. |

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| IP | Information Paper |
| LCAs | Landscape character areas |
| LEMP | Local Environmental Management Plan |
| LNR | Local Nature Reserve |
| LSWSI | Location Specific Written Scheme of Investigation |
| 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. |
| NWBC | North Warwickshire Borough Council |
| PFRA | Preliminary Flood Risk Assessment |
| PRoW | Public rights of way |
| PWMS | Precautionary Working Method Statement |
| RRVs | Road Rail Vehicles |
| Reasonably Practicable | The term "so far as is reasonably practicable" means that the degree of risk in a particular situation can be balanced against the time, trouble, cost and physical difficulty of taking measures to avoid the risk |
| RTMP | Route-wide Traffic Management Plan |
| Scheme | The scheme to which this CoCP relates is the high-speed railway between London - West Midlands. This is a high-speed railway between London - West Midlands with a connection via the West Coast Main Line at conventional speeds to the Northwest and Scotland and to the Channel Tunnel via HS1. It includes four high speed rail stations at London Euston, Old Oak Common (West London), Birmingham Airport (Birmingham Interchange) and Birmingham (Curzon Street). |
| Section 61 | Section 61 of the Control of Pollution Act 1974 (which sets out procedures seeking and obtaining local authority consent to measures for the control of noise and vibration on construction sites). |
| SSMP | Site Specific Management Plan |
| SES | Supplementary Environmental Statement |
| SFRA | Strategic Flood Risk Assessment |

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| SLI | Site of Local Importance |
| SMI | Site of Metropolitan Importance |
| SPZ | Source Protection Zone |
| SRP | Soil Resources Plan |
| TfL | Transport for London |
| 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 B: Non-exhaustive list of community groups in NWBC

It is likely engagement with the following groups may be undertaken during construction including, but not limited to:

- Local Member of Parliament;
- Highways England;
- Natural England;
- Environment Agency;
- Landowners/occupiers directly affected by the scheme;
- The Warwickshire, Solihull and Coventry Local Access Forum;
- North Warwickshire Borough Council;
- Warwickshire County Council;
- Coleshill Parish Council;
- Water Orton Parish Council;
- Curdworth Parish Council;
- Lea Marston Parish Council;
- Wishaw Parish Council;
- Kingsbury and District Parish Council;
- Great and Little Packington Parish Council;
- Middleton Parish Council;
- Wishaw and Moxhull Parish Council;
- The Ramblers (Local Group);
- Old Saltleians Rugby Club;
- Water Orton Primary School;
- Curdworth Primary School;
- Sustrans;
- Broomey Croft Children's Farm;
- Kingsbury Water Park;
- Pool House Farm Fishery;
- Little Acorns Day Nursery;
- Kingsbury and District Stop HS2 Action Group;
- Water Orton Action Group;
- Water Orton Primary School;
- The Treehouse of Water Orton Ltd;
- Coleshill High Speed Rail 2 Action Group;
- BMW Hams Hall Motoren GMBH;
- DHL; Grimstock Country House Hotel;
- Reindeer Park Lodge;
- Lea Marston Hotel (RSM Leisure Ltd);

- Lea Marston Hotel: Marston Lakes Golf Course;
- Marston Farm Hotel: Courtyard Restaurant;
- Horseshoes (Elaine Foulkes);
- The Belfry;
- Cuttle Mill Fishery;
- Dunton Stables;
- Patrick Dillon – Dunton Hall;
- Little Acorns Day Nursery;
- Ash End House Children’s Farm;
- Middleton Action Group;
- Middleton Equestrian Centre;
- Middleton Hall;
- RSPB Middleton Lakes;
- Kingsbury School (secondary school);
- Warwickshire Wildlife Trust;
- Canal and River Trust;
- National Farmers Union;
- Hams Hall Bid Improvement District;
- Love Coleshill;
- Coleshill Civic Society;
- St Edwards RC Primary School;
- High Meadow Infant School;
- Coleshill CoE Primary School;
- Coleshill School; and
- Sainsbury’s.

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

Appendix C: Glossary of Construction Activity Terminology

| Construction Activity | Full Explanation |
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| Removal of invasive species | Invasive plant species such as Japanese knotweed and Himalayan Balsam will be removed where required and disposed of according to technical standards. |
| Remediation works | Areas of ground contamination will be removed, and material 'cleaned' on site via a bespoke remediation strategy before being reinstated. This will minimise the risk of contamination compromising deep foundations that will be installed. Remediation works will involve drilling boreholes to monitor groundwater quality and testing the quality of materials prior to reinstatement. |
| Earthworks and piling platform preparation | Due to a disparity in height of site pre-existing land will be removed, moved by wagons, and reinstated across site to ensure an even surface level. Material of an appropriate specification will then be installed in areas where deep foundation works will be undertaken. |
| Dewatering | Groundwater encountered during deep foundation works (for example piling) will be pumped out of the excavation to ensure a dry working area can be maintained. |
| Finishing works and landscaping | After the completion of the civil structures the works area will be landscaped, and key details of the final design will be installed. |
| Non-intrusive ground investigation | Scanning of the ground throughout the works to monitor underground services and utilities. |
| Utilities diversion, protection & removal | Utilities will be diverted protect and removed throughout the works to enable HS2 to be constructed. |
| Piling platform preparation | Pre-existing land is removed and reinstated with material of an appropriate specification to ensure deep foundation works can be undertaken. |
| Piling | A method of cylindrical deep foundations used to support the structures we are constructing. These structures will be supported by concrete piles which have been drilled metres into the ground. |
| Sheet piling | A method of piling which involves driving flat steel plates into the ground to reduce groundwater ingress into an area when excavating into the water table. Sheet piles will be installed where deep excavations are required and removed once the works are complete. |
| Pier construction | Concrete piers will hold up the deck of viaducts and overbridges. These will be cast on site by pouring concrete into formwork which have been fitted out with steel reinforcement. |