Local Environmental Management Plan
Aylesbury Vale District Council

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1 Introduction

1.1.1 This Local Environmental Management plan (LEMP) sets out site specific control measures to be adopted by HS2 Contractors working within the Aylesbury Vale District Council (AVDC).

1.1.2 This LEMP builds upon but does not repeat, the HS2 general environmental requirements set out in the Control of Construction Practice (CoCP) (available online at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/593592/Code_of_Construction_Practice.pdf).

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

1.1.4 For ease of reference the LEMP mirrors the topic headings in the CoCP.

1.1.5 Information of relevance to the formation and development of this LEMP (as shown in figure 1) is contained within this document, or links are provided to where it can be assessed. This includes:

- Information from traffic, environmental surveys and ground investigation works. This could either be seasonal ecological surveys, tree surveys, air quality monitoring, noise monitoring, ground settlement or the results of ground investigations detailing levels of contamination (where present) and the nature of the ground;

- Feedback on pertinent information from on-going engagement; and

- Results of petitions of the Parliamentary process which have resulted in amendments to the mitigation measures contained within the CoCP.

![Figure 1. Key workstreams that will provide additional information for the LEMPs](image-url)
1.1.6 This LEMP has been prepared taking into account findings of the Environmental Statement (ES), Supplementary Environment Statement (SES), The Greatmoor Railway Sidings Transport and Work Act Order and Additional Provision 2 ES (AP2 ES) and the SES2 and AP3 ES where relevant. It has evolved during the Parliamentary process and engagement with the Local Authority and other stakeholders, such as members of the National Environment Forum\(^1\), which have informed its development. This LEMP may be subject to further refinement, amendment and expansion as necessary as the project design progresses.

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

1.1.8 The Nominated Undertaker (HS2 Ltd)\(^2\) and/or its Contractors (refer to Section 4 below) will engage with the local communities. This will take the form of engagement events which will be carried out to introduce and brief the communities on local environmental information, management and mitigation as detailed within this document.

1.1.9 The HS2 Environmental Memorandum identifies key worksites along the route of HS2 Phase One that are environmentally sensitive in terms of nature conservation, terrestrial and aquatic ecology, water resources, geomorphology, recreation and amenity, landscape, public open space and agricultural land. The criteria for inclusion are ‘worksites where a key significant impact (that has been agreed with the National Environment Forum members) is generated in any of the environmental topics’ as mentioned above. Within Aylesbury District, Bernwood Forest is the only site identified as key environmentally sensitive area. The reasons for inclusion are Bechstein’s Bats, international asset of importance in nature conservation, and landscape.

1.1.10 The Nominated Undertaker will prepare site-specific management plans for these identified environmentally sensitive worksites (ESW), focusing on mitigation, compensation and monitoring requirements, with opportunities for enhancement in relation to the identified environmental topics as outlined within the Environmental Memorandum. Refer to Appendix 3.

1.1.11 The controls within this LEMP, as with those in the CoCP, are in line with HS2’s Safe at Heart Health & Safety (H&S) brand. Safe at Heart seeks to ensure that health and safety are at the heart of everything that we do including in the design and operation of the scheme. This aim stretches beyond the scheme itself, through instruments such as this LEMP, and into the communities along the scheme to ensure that we protect their safety and wellbeing.

1.1.12 HS2 documents referenced in this LEMP can be found on the www.gov.uk website.

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\(^1\)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 this LEMP.
1.2 Area and scope

1.2.1 Plans showing more details of the Scheme, as revised in AP5, an overview of the local authority area covered by this LEMP, are presented in the Environmental Statement (ES) maps (CFA10 to CFA13 Volume 2 Map Books ES Ref 3.2.2.10 to 3.2.2.13), CT-05-001 to CT-06-001;

- CFA10 – CT-05-034b (SES3 and AP4 ES), CT-05-035 (SES3 and AP4 ES), CT-05-036 (SES and AP2 ES), CT-05-037 (SES4 and AP5 ES), CT-05-038 (SES4 and AP5 ES), CT-05-038-R1 (SES AP2 ES), CT-05-039 (SES3 and AP4 ES), CT-05-040a (SES3 and AP4 ES);
- CFA11 – CT-05-040b (SES3 and AP4 ES), CT-05-041 (SES3 and AP4 ES), CT-05-041-L1 (SES4 and AP5 ES), CT-05-042 (SES and AP2 ES), CT-05-043 (AP1 ES), CT-05-044 (SES3 and AP4 ES), CT-05-045 (Main ES), CT-05-046 (AP1 ES), CT-05-047a (Main ES);
- CFA12 – CT-05-047b (Main ES), CT-05-048 (Main ES), CT-05-048-L1 (Main ES), CT-05-049 (Main ES), CT-05-050 (SES3 and AP4 ES), CT-05-050 L1 (SES3 and AP4 ES), CT-05-051 (SES3 and AP4 ES), CT-05-051-R1 (SES and AP2 ES), CT-05-051-R2 (Main ES), CT-05-051-R3 (SES4 and AP5 ES), CT-05-051-R4 (Main ES), CT-05-052 (SES and AP2 ES), CT-05-052-L1 (SES and AP2 ES), CT-05-052-L2 (Main ES), CT-05-052-L3 (SES4 and AP5 ES), CT-05-052-L4 (AP1 ES), CT-05-053 (SES and AP2 ES), CT-05-053-L1 (SES and AP2 ES), CT-05-053-R1 (Main ES);
- CFA13 - CT-05-054 (SES3 and AP4 ES), CT-05-054-L1 (SES3 and AP4 ES), CT-05-055 (SES3 and AP4 ES), CT-05-055-R1 (SES3 and AP4 ES), CT-05-055-R2 (SES and AP2 ES), CT-05-056 (SES3 and AP4 ES), CT-05-056-L1 (SES and AP2 ES), CT-05-056-R1 (SES3 and AP4 ES), CT-05-057 (SES3 and AP4 ES), CT-05-057-L1 (AP1 ES), CT-05-058 (SES and AP2 ES), CT-05-058-L1 (SES and AP2 ES), CT-05-059 (SES and AP2 ES), CT-05-060a (SES3 and AP4 ES); and
- CFA14 - CT-05-060b (SES3 and AP4 ES), CT-05-061 (SES3 and AP4 ES), CT-05-062 (SES and AP2 ES), CT-05-062-L1 (SES and AP2 ES), CT-05-063 (SES and AP2 ES), CT-05-063-L1 (SES and AP2 ES), CT-05-064 (AP1 ES), CT-05-064-L1 (Main ES), CT-05-065 (SES and AP2 ES), CT-05-066 (SES and AP2 ES), CT-05-066-L1 (SES and AP2 ES), CT-05-066-R1 (CT-05-067), CT-05-068a (Main ES).

1.2.2 Construction worksites and areas required for construction works are shown within the CT-05 maps.

1.2.3 In addition to the above further scope is outlined in the Greatmoor Railway Sidings Transport and Work Act Order. [https://www.gov.uk/government/publications/hs2-greatmoor-railway-sidings-transport-and-works-act-order](https://www.gov.uk/government/publications/hs2-greatmoor-railway-sidings-transport-and-works-act-order)

1.2.4 The Enabling Works Contractors (EWC) are carrying out a range of survey and investigation works which commenced in early 2017. The EWC will also be carrying out some construction work including the provision of early ecological mitigation sites.
1.2.5 Between July 2017 and autumn 2018, the Main Works Civils Contractors (MWCC) will be developing the design for the scheme, with a target for construction starting from early 2019.

1.2.6 It is anticipated that the following work activities are to take place during the construction period within AVDC boundary:

- advance works, including: site investigations further to those already undertaken;
- enabling works, including: utilities works in the wider area; highway and public right of way (PRoW) diversions; building demolitions; site clearance, habitat removal and creation; environmental mitigation measures;
- Earthworks to create cuttings and embankments along the route. Construction of structures including bridges, viaducts and culverts.
- Works to conventional railway track, signalling and other railway systems;
- High speed railway installation works, and systems fit-out, including: establishment of construction compounds; infrastructure installation, traction power supplies, overhead line equipment and communications features; connections to utilities; removal of construction compounds; and
- system testing and commissioning.

2  Purpose of the Local Environmental Management Plan

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

2.1.2 The Nominated Undertaker and its Contractors will develop the detailed Environmental Management Plans, taking into account this LEMP and the Environmental Minimum Requirements. The detailed Environmental Management Plans will remain confidential due to contractual agreements. However, certain plans will be discussed with the relevant environmental bodies. Management plans for the environmentally sensitive worksites will be submitted for information with relevant Schedule 17, or where appropriate heritage, applications.
3 Policy and environmental management principles

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

4 Implementation

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

4.1.2 On 16 November 2016 contracts were awarded for three Enabling Works Contractors (EWC) working on behalf of HS2 Ltd across Phase 1 of the project. The EWC covering the AVDC area is Fusion, a joint venture between Morgan Sindall Infrastructure Services, BAM Nuttall Ltd and Ferrovial Agroman.

4.1.3 On 17 July 2017 contracts were awarded for HS2’s Main Works Civils Contractors (MWCC). The MWCC for the AVDC area is Eiffage Kier, a joint venture made of Eiffage and Kier.

5 General requirements

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

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

5.1.3 HS2 and the Contractors will be running a series of engagement events and activities that will cover the upcoming programme of works and associated environmental controls where appropriate.

5.2 Community relations

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

5.2.2 Successful management of the project will involve understanding communities and their needs, actively engaging, listening and responding. The arrangements for this are set out in the HS2 Community Engagement Framework. Liaison with the local community will take place to consistently provide timely, clear tailored information on
the construction programme and 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.

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

5.2.4 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 National Grid and Western Power Distribution.

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

Advanced notice of works

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

Working hours

Consent

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

Core working hours

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

5.2.9 A period of up to one hour before and up to one hour after core working hours will be required for start-up and close down activities as detailed within the CoCP. To maximise the productivity within the core working hours, the one hour start up and close down periods will include activities such as deliveries, workforce arrival/departure, unloading, maintenance and general preparation works etc. During this period plant and machinery that is likely to cause disturbance to local residents will not be allowed to operate. This period will not be an extension of the core working hours. Such an extension will be agreed through Section 61 consenting process with AVDC. Emergencies (not repairs and maintenance) may be undertaken outside core hours.
Certain work activities at specific locations within AVDC area will need to take place outside of the core working hours for safety and engineering purposes. These work activities (which may include construction associated with Infrastructure works and Rail works, including Possessions) will be covered by the Section 61 process and are likely to include:

- Ground investigation works;
- Archaeological excavation and recording;
- South Heath cutting (partially within Aylesbury Vale District);
- Wendover Dean viaduct and adjacent earthworks; Small Dean viaduct and adjacent earthworks;
- Stoke Mandeville south embankment and Aylesbury south cutting;
- Princes Risborough to Aylesbury overbridge;
- Aylesbury South embankment and Aylesbury north cutting;
- Thame Valley viaduct and adjacent earthworks;
- Bicester Road embankment;
- Waddesdon south and north cuttings;
- Quainton South and Doddershall embankments and adjacent cuttings;
- Grendon Underwood embankment and Woodlands cutting;
- Calvert cutting and Aylesbury link realignment;
- Twyford viaduct and adjacent earthworks;
- Godington east and west viaducts and adjacent earthworks;
- Chetwode cutting and Bartshorn embankment;
- rail deliveries into Calvert railhead main compound;
- Small Dean viaduct;
- Turweston viaduct;
- realignment of the Princes Risborough to Aylesbury Line;
- realignment of the Aylesbury Link railway line; and
- realignment of the Bicester to Bletchley Line.

**Construction site layout and good housekeeping**

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

5.4.1 All construction sites will be lit in accordance with the requirements of the CoCP as detailed within Section 5.4 and approval of site lighting in Schedule 17 Part 1 to the HS2 Act 2017 (known as the Act).

5.4.2 Site lighting will be designed to minimise light pollution to surrounding buildings, ecological receptors, structures used by protected species, local residents, railway operations, passing motorists and other sensitive land uses.

5.4.3 It is recognised that for works related to the Infrastructure Maintenance Depot at Calvert, HS2 will submit plans and specifications to Aylesbury Vale District Council for approval of artificial lighting under Schedule 17 of the Act.

5.5 **Worksite security**

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

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

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

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

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

5.6 **Hoardings, fencing and screening**

5.6.1 The site perimeter will generally be fenced with 2.4m high solid hoardings that will be appropriately decorated, in line with measures described within Section 5.6.1 of the CoCP, if appropriate.

5.6.2 Hoardings up to 3.6m high may on occasions, be used to control construction noise. At locations where existing fencing may need to be removed, temporary wire mesh fencing or other suitable alternatives will be used. Specific hoarding heights in AVDC will be included in this LEMP as and when the hoarding designs are finalised.
5.6.3 Where there are earthworks along the track, such as cuttings and embankments, temporary fencing will be erected along the site boundaries. The type of fence will be dependent upon the nature of use of the adjacent land, as well as environmental, design and safety considerations.

5.6.4 The temporary workers' on-site accommodation in the Wendover, Waddesdon and Twyford areas (within the main compounds for touring caravans or modular accommodation units) will be fenced (hoarding where appropriate) and well maintained. Screening will be subject to approval in accordance with the requirements for the construction of screens in Schedule 17 Part 1 to the Act.

5.7 Unexploded ordnance

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

5.8 Electromagnetic interference

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

5.9 Temporary living accommodation

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

5.10 Occupational healthcare

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

5.11 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 Contractor will also consider measures and processes to be implemented in the event of environmental non-conformances.

5.12.3 There are Source Protection Zones (SPZ) associated with the public abstraction in the Aylesbury Vale District Council area, including SPZ 2 and 3.

5.12.4 The Contractors will need to pay particular attention to pollution incident control during the following construction activities:

- diversion of Chalkshire Stream along west side of Stoke Mandeville south embankment at Nash Lee Orchard;
realignment and culvert of the Stoke Brook and tributaries along Stoke Mandeville south embankment;

realignment and extension to an existing culvert, carrying the Stoke Brook under the Princes Risborough to Aylesbury Line;

culvert of an unnamed drain near Hall End (SWC-CFA11-20);

culvert and channel works to Sedrup Ditch and tributary at Aylesbury embankment;

culverts and channel diversions of Hartwell Ditch at Oxford Road embankment and Footpath SBH/32 overbridge;

culverts of Lower Hartwell Ditch and drain north of Lower Hartwell Ditch at Oxford Road embankment;

Thame Valley viaduct and pier construction at River Thame and unnamed tributary south of Bear Brook;

realignment and culvert of an unnamed drain south of Putlowes;

realignment of the tributary of Fleet Marston Brook (field drain from Coney Hill and Fleet Marston Spinney) near Upper Cranwell Farm;

culvert of tributary of Fleet Marston Brook near Upper Cranwell Farm at Bicester Road embankment;

culverts and realignment of Fleet Marston Brook at Quainton south embankment;

five culverts and realignment of the headwaters of the Tetchwick Brook at Quainton south embankment and Station Road overbridge;

three culverts (including work on an existing culvert) of an unnamed drain at Doddershall embankment near Lower South Farm;

five culverts and diversions of Doddershall Brook and tributaries north-east of Doddershall House;

alterations to existing culvert of River Ray at Grendon Underwood embankment (Adam's Underbridge);

alterations to existing culverted tributary of River Ray at Finemere Wood;

alterations to existing culvert and diversion of an unnamed drain at Greatmoor Farm;

two culverts and diversions of the Muxwell Brook and unnamed drains (secondary channels) at Grendon Underwood embankment south of Sheephouse Wood;

culvert of a tributary to the M23 drain originating in Calvert Jubilee Nature Reserve LWS lake;
- realignment and culvert of Padbury Brook and its tributaries near Twyford and Godington;
- realignment of an unnamed drain (tributary of the Padbury Brook) at Barton Hartshorn;
- viaduct and pier construction at the Great Ouse, Westbury; and
- realignment of the Great Ouse at Turweston.

**Local control measures**

5.12.5 The Contractors’ Pollution Incident Control and Emergency Preparedness Plan(s) will need to include the following pollution prevention and control mechanisms:

- static plant will be used with secondary containment measures such as plant nappies to retain any leakage of fuel or oil and reduce the risk of surface water or groundwater pollution;
- spill kits will be provided where appropriate, such as at the four compounds, and the 24 satellite compounds to reduce the risk of surface water or groundwater pollution, particularly in vulnerable areas;
- the use of oil interceptors at site offices and work compounds;
- appropriate measures such as use of bunds of non-erodible material or silt or sediment fences adjacent to watercourses, such as Padbury Brook and the Great River Ouse;
- implementing a surface water or groundwater monitoring plan, particularly in relation to works which may affect aquifers, for example, excavations and piling; and
- any work that might have an impact on groundwater quality will need formal approval by the Environment Agency via the Schedule 3 Part 5 in the Act.

5.12.6 The contractor’s pollution incident control and emergency preparedness plan(s) will need to have due regard to local context, such as the fact that the whole area is a nitrate vulnerable zone which is an area where nitrate pollution is a potential problem.

**5.13 Fire prevention and control**

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

**5.14 Extreme weather events**

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

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

5.16 **Interface management between adjacent construction areas**

5.16.1 The Nominated Undertaker will oversee the interface between 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**

6.1.1 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 1,240ha of agricultural land will lie within the construction boundary in Aylesbury Vale District Council. Over 30% of this land is of the best and most versatile quality in Grade 3a, with the remainder being moderate quality land in Subgrade 3b. Approximately 525ha will be required permanently for the Scheme, with 714ha restored to agriculture.

6.2.2 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.

6.2.3 Some land uses situated adjacent to the construction boundary may be considered sensitive receptors, particularly in respect of farm infrastructure and crops. This includes interruptions to drainage systems, livestock water supplies and irrigation systems, the potential for dust deposition on crops, particularly field vegetables; interruptions to farm and field accesses; and the maintenance of appropriate stock-proof fencing. This also applies to approximately 714ha of land within the construction boundary in Aylesbury Vale District Council that is to be restored to agriculture. Nitrate rich soil may need to be stored on an impervious membrane.

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 ES for the reuse of soils on the scheme.

6.3.2 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.
6.3.3 In areas where compounds are to be created, it is envisaged that the area will be stripped of topsoil (and subsoil where required). Temporary material stockpiles will be clearly recorded and the topsoil and subsoil will be reinstated.

6.3.4 In respect of storage areas for soil and excavated materials, and within the wider construction site, the presence and spread of invasive, non-native species (plants and animals) and noxious weeds will be controlled through the adoption of an appropriate management regime. This will identify and effectively treat areas which might also threaten adjoining agricultural areas.

6.3.5 Appropriate construction, handling, treatment and disposal procedures will be implemented in relation to these species. Route-wide measures will also be implemented to promote bio-security and minimise the risk that invasive non-native species and diseases are spread as a consequence of the project. Further details are provided in Section 6 of the CoCP.

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

6.3.7 Following consultation with individual farmers, arrangements are being made with the farmer and documented in Farmers and Growers’ packs. Details on the scope of these packs is included in the HS2 Guide for Farmers and Growers and can be seen at this link: https://www.gov.uk/government/publications/hs2-guide-for-farmers-and-growers

7 **Air quality**

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

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

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 are considered in

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1 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
terms of dust soiling on people and property; human health effects of dust and air pollutant emissions; and effects of dust deposition on vegetation.

7.2.3 The locations of these receptors have been classified as ‘low’, ‘medium’ and ‘high’ risk using the Institute of Air Quality Management (IAQM) methodology⁶, in relation to emissions of dust from construction and demolition activities. Sensitive receptors are located within 20m of the site boundary and of dust generating activities along certain sections of the route. In Aylesbury Vale District Council, these can include residential properties on Ellesborough Road, Bacome Lane, Nash Lee Lane, Hartley Farm, The Laurels, properties on Old Risborough Road, Whitethorn Farmhouse, Park Villa, Putlowes, Fleet Marston Cottages, Long Acre, properties on Meadoway, Wayside Farm, Crossroads Farm, Upper South Farm, Woodlands Farm, Brackley Lane, School Hill, Rosehill Farm, Sunflower Farm, The Hermitage, Manthorn Farm, Lake Farm, Stone Court Farm, Pear Tree House, School End and Turweston Glebe. In addition, Bacome Hill Site of Special Scientific Interest (SSSI) and Sheephouse Wood SSSI have been identified as ecological receptors. The mitigation measures as set out in the CoCP will be employed to allow active management of the construction works.

7.2.4 Receptors potentially affected by emissions from anticipated construction traffic include receptors along Bicester Road and A418 Oxford Road, the Oaks/Hartwell Cottages, Hatters End, Hall End, The Georgian Dolls House, Pear Tree Cottage, Winding Brook, Perry Hill Cottage, Perry Hill Cottages, Cheshire Cottages, 8 School Hill, 60 West Street, The Bungalow and Gawcott Fields. Chilterns Beechwoods Special Area of Conservation (SAC), Ham Home-cum-Hamgreen Woods SSSI and Long Herdon Meadow SSSI have been identified as ecological receptors.

7.2.5 There are receptors located near roads that will be subject to realignment including 145 Station Road, Wayside Farm and Woodlands Farm Cottages.

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 sufficiently effective within areas in and around those listed in Section 7.2.2, which can include; ensuring drop heights from excavators to vehicles involved in the transport of excavated material are kept to the reasonably practicable minimum; the provision of dust suppression measures to be carried out in all areas of the site that are likely to generate dust; measures to keep roads and accesses and vehicles clean; covering materials, deliveries or loads entering and leaving the construction site; buildings or structures to be demolished will be sprayed with water or screened as necessary, prior to and during demolition; and, the enclosure, shielding or provision of filters on plant likely to generate excessive quantities of dust beyond the site boundaries.

7.3.2 Dust suppression measures and works screening will be subject to approval in accordance with Schedule 17 of the Act. Further measures are detailed within Section 7 of the CoCP.

⁶ Guidance on the assessment of dust from construction and demolition: Institute of Air Quality Management, February 2014
7.3.3 HS2 has set emission requirements and targets for the engines of contractor cars, vans, and heavy road vehicles. These have been developed for the whole route and are categorised as follows: London Low Emission Zone, Clean Air Zone and Rest of Route.

7.3.4 For AVDC the relevant category of vehicle emission standard is the ‘Rest of Route’. Within the ‘Rest of Route’ category, there are requirements for heavy road vehicles to be powered by EURO VI (or cleaner) engines (as far as reasonably practicable; 100% from 2020) and for cars and vans to be Euro 6 diesel and Euro 4 petrol. 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 AVDC, the relevant category of NRMM emission standard is Rest of Country. Within the Rest of Country the requirement is for NRMM to be powered by EU stage IIIB engines from 2017 (and EU stage IV from 2020).

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

7.4 Monitoring Procedures

7.4.1 An inspection 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 AVDC, the monitoring procedures may include continuous automatic monitoring of airborne dust, including the setting a relevant site action level for dust (defined as a dust measurement threshold above which investigation will be required). The monitoring being undertaken by HS2 supplements existing air quality monitoring which is part of national and local authority surveys. Monitoring of NOx or nitrogen deposition is not necessary in this area as the relevant CFAs state that there are no impacts originating from the proposed works.

7.4.2 The monitoring programme, including locations for dust monitoring is in the process of being agreed. Monthly reports of monitoring data from HS2 air quality surveys will be made publicly available throughout construction on the HS2 website at this address: https://www.gov.uk/government/collections/monitoring-the-environmental-effects-of-hs2

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

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2 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.

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

8.1.1 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 archaeological and built heritage assets in AVDC. 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 of the Act concern how legislation in respect of listed buildings and scheduled monuments respectively apply to the Phase One works. Schedule 20 to the Act provides a regime for the removal of human remains and related funerary monuments.

8.2 Sensitive receptors

8.2.1 Details of all designated and non-designated heritage assets within 500m of the land required, temporarily or permanently, for the construction of the Scheme are listed in Volume 5 of the ES (Appendices CH-002-010, CH-002-11, CH-002-12, CH-002-13 and CH-002-014 and Maps CH-01-031 to CH-01-046 (Volume 5, Cultural Heritage Map Book).

8.2.2 Under Schedule 18 of the Act, the following sensitive receptors have been identified within the AVDC:

- Whaddon Hill Farmhouse Grade II listed;
- Park Lodge Grade II listed;
- Obelisk south of Hartwell House Grade II listed;
- Pair of statues south of Hartwell House Grade II;
- Entrance arch and gates adjoining Park Lodge Grade II listed;
- The Hermitage Grade II listed;
- Sunflower Farmhouse Grade II listed;
- Rosehill Farmhouse;
- Outbuildings to west of Rosehill Farmhouse forming north and west sides of countryard Grade II; and
• Hartwell Park, a Grade II* Registered Park and Garden (RPG), including one Grade I listed building (Hartwell House), four Grade II* listed buildings and 16 Grade II listed buildings, forming part of the conservation area at Hartwell.

8.2.3 In addition, non-designated assets including sites such as ruin of St Mary’s Church at Stoke Mandeville, the location of a medieval church, its graveyard and probable remains of a medieval manorial centre will mills, moated site and associated village remains.

8.2.4 If new assets are identified then the Contractor shall develop Project Plans and Written Schemes of Investigation to consider those assets, if the investigation of those new assets would contribute to answering the Specific Objectives in the Historic Environment Research and Discovery Strategy (HERDS). The County Council have a two week consultation period to review project plans, and will be consulted in the development of those plans by the Contractor.

8.3 Local control measures

8.3.1 Where practicable, construction methodologies will be required to reduce the impacts on heritage assets. The CoCP sets out the provisions that will be adopted to control those effects, including the use of appropriate equipment and methods to limit ground disturbance and settlement followed by monitoring, protection and remediation. A programme of settlement monitoring and the implementation of avoidance measures where appropriate will be undertaken by the Contractor. Detailed provisions with regard to settlement and listed buildings are outlined in the Settlement Policy / HS2 Information Paper: C3 Ground Settlement.

8.3.2 Suitable locations will be identified for advance planting, to reduce impacts on the setting of assets.

8.3.3 Where practicable, below ground assets will be preserved in situ beneath mitigation earthworks through the adoption of appropriate design measures.

8.3.4 Where practicable, construction methodologies will reduce the impacts on buried and above ground remains.

8.3.5 The programme of archaeological and built heritage works will be undertaken by a specialist Contractor appointed by the Nominated Undertaker prior to and during, the construction period in accordance with the provisions of the Location-Specific Written Scheme of Investigation for archaeology and built heritage.

8.3.6 Those Listed Buildings to be demolished, moved or modified are named in table 1 of Schedule 18 to the Act and the requirements set out for Heritage Agreements to be made with the Local Authority and Historic England.

8.3.7 In addition, those listed buildings which require works to maintain or restore their character, or for the affixing of monitoring apparatus are named in Table 2 of Schedule 18 to the Act.

8.3.8 For the buildings listed in Table 2 the Heritage Agreement would set out the process by which protective works will be approved and the specific arrangements for each
building. These Heritage Agreements will ensure that appropriate mitigation measures are in place and that any works undertaken are appropriate to the special architectural or historic interest of the listed building and its significance as a heritage asset. The Nominated Undertaker will liaise with the local authority and Historic England during the preparation of the methodology for the works.

8.3.9 Schedule 20 'Burial Grounds' to the High Speed Rail (London – West Midlands) Act provides a regime for the removal of human remains and related funerary monuments. A programme of archaeological works will be prepared to investigate, analyse, report and archive these assets. All human remains affected by HS2 works will be treated with all due dignity, respect and care. The direct impact on human remains, burial grounds and monuments at St Mary's Church will be treated in accordance with Schedule 19 to the Act. This includes specific procedures to be followed for the removal of the burial ground at St Mary’s Church at Stoke Mandeville, such as the requirement to determine the extent of archaeological investigation with Historic England, Buckinghamshire County Council and, where applicable, the appropriate religious authority.

8.3.10 The Nominated Undertaker will develop a ‘Burial Grounds, Human Remains and Monuments Procedure’ to implement the legal requirement of the Act.

8.4 Monitoring

8.4.1 Risk assessments, appropriate structural and/or condition surveys and vibration monitoring will be undertaken at locations of archaeological or built heritage interest adjacent to construction sites, prior to, during and following construction works, as detailed within Section 8.4 of the CoCP.

9 Ecology

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

9.2 Sensitive receptors

9.2.1 The following locations which lie within or are adjacent to the Scheme in AVDC are the designated for nature conservation. These locations are shown within the Volume 5 map books of the ES (3.5.1.5.13 and 3.5.1.5.14). These include:

- Wendover Rifle Range Biological Notification Site (BNS), the boundary of the site comprises woodland and its southern edge is within the land required for construction (Ch52+700 to Ch52+800);

- Bacombe and Coombe Hills SSSI, 25m south-west of land required for construction at its nearest point (Ch53+800 to Ch55+000);

- Bacombe Hill Local Nature Reserve (LNR), the northern part of the Bacombe Hills SSSI is also designated as a LNR, which is therefore also 25m from the land required for construction (Ch54+000 to Ch54+500);

- Ellesborough and Kimble Warrens SSSI, the same 50m long section of woodland
as Chilterns Beechswoods SAC is also designated as a SSSI and will be adjacent to the proposed construction traffic route (Ch54+600 to Ch56+000);

- Chilterns Beechswoods SAC, comprising nine separate blocks of woodland. The western tip of one of these blocks, a 50m long section of woodland that is designated as Ellesborough and Kimble Warrens SSSI, is adjacent to the A4010 Little Kimble Hill/Aylesbury Road, which will be used by construction traffic (Ch54+600 to Ch56+000);

- grassland at Nash Lee BNS, which is partially within the land required for construction (Ch57+100 to Ch57+700);

- Aylesbury Sewage Works Local Wildlife Site (LWS), approximately 60m from land that is required for construction (Ch64+400 to Ch65+000);

- River Thame BNS, next to the Aylesbury Sewage Works LWS and approximately 140m north-east of land required for the construction (Ch64+900);

- Waddesdon Park BNS, part of the site’s northern boundary is adjacent to the A41 that is affected by the construction of the A41 Bicester Road overbridge (Ch67+500 to Ch70+500);

- Sunny Hill Farm Pastures LWS, adjacent to land required for construction of an access route to the north of the Aylesbury Link railway line (Ch68+800 to Ch69+000);

- Waddesdon Station Complex LWS, partly within the land required for construction (CH69+000 to CH69+500);

- Waddesdon Common LWS, partly within the land required for construction (CH69+000 to CH70+500);

- Blackgrove meadows BNS, adjacent to a drain that will be modified during the construction of the Scheme (Ch69+000 to Ch70+500);

- Ham Home-cum-Hamgreen Woods SSSI, approximately 2km from land required for the construction of the Scheme but approximately 100m of the site’s boundary is adjacent to the A41 Bicester Road, which will be used by construction traffic (Ch73+500 to Ch74+000);

- Grendon and Doddershall Woods SSSI, located approximately 325m south of the land required for construction (Ch74+200 to Ch75+900);

- Grendon and Doddershall Meadows LWS, which is crossed by the Scheme (Ch74+200 to Ch75+900);

- Finemere Wood SSSI, the northern and southern parts of the SSSI are directly adjacent to areas of the Scheme that will be used for ecological compensation and close to utilities (overhead power lines) that are within the land required for construction (Ch74+300 to Ch75+500);

- Finemere Wood LNR, the western edge of the site is within an area required for
habitat management for bats (Ch74+300 to Ch75+500);

- an unnamed BNS comprising a track leading to the Aylesbury Link railway line, partly within the land required for construction (Ch75+300);

- Greatsea and Romer Wood LWS, adjacent to land required for ecological mitigation (Ch75+700 to Ch76+500);

- Sheephouse Wood SSSI, the extent of land required for the construction of the Scheme is directly adjacent to the western edge of the SSSI and areas that will be used for ecological compensation are adjacent to the wood's northern and southern boundaries (Ch76+500 to Ch77+600);

- Decoypond Wood LWS, the western edge of the site is within land required for the construction of the Scheme and areas for ecological mitigation adjoin the eastern and northern boundaries (Ch77+800 to Ch78+300);

- Calvert Railway Station LWS, within land required for construction (Ch78+600 to Ch79+000);

- Calvert Jubilee Nature Reserve LWS, the eastern and northern edges of the site are within the land required for construction (Ch79+000 to Ch80+200);

- Redland Bridge BNS, within the land required for construction (Ch80+000);

- Calvert Brick Pits LWS, the northern edge of the site, which is also called Grebe Lake, is within the land required for construction (Ch79+300 to Ch80+100);

- Padbury Brook Three Bridge Mill BNS, a small section at the western end of the BNS lies within land required for construction (Ch81+400);

- Railway Cutting North of Twyford BNS, partially within land required for construction (Ch82+500 to Ch83+000);

- Chetwode Cutting BNS (3.3ha), most of which is within land required for construction (Ch85+200 to Ch85+700);

- Barton Hartshorn Railway Wood LWS, whose western edge of the site is within land required for construction (Ch87+000 to Ch87+300);

- Turweston Manor Grassland LWS, the southern part of the site lies within the extent of the land required for construction (Ch95+400 to Ch95+600); and

- Muxwell Brook and Akeman Street Disused Railway, not within the land required for construction but it is an important commuting route for Bechstein bats (Ch76+000 to Ch76+600).

9.2.2 In addition, these are sensitive habitat receptors outside of designated sites are identified in the Volume 5 map books of the main ES. These include:

- an area of ancient semi-natural broadleaved woodland, Rushmoor Wood (Ch49+700 to Ch49+900);

- an area of ancient semi-natural broadleaved woodland, Jones' Hill Wood
(Ch50+300 to Ch50+400);

- an un-named wood between Jones' Hill Wood and Rushmoor Wood (Ch50+000);

- several linear strips of lowland mixed deciduous woodland at Hartwell House (Ch62+300 to Ch62+700);

- several small isolated patches of plantation broadleaved woodland throughout the Aylesbury Park Golf Club (Ch62+300 to Ch64+500);

- fragments of ancient woodland adjacent to the south of Calvert (Ch78+000);

- lowland mixed deciduous woodland present around the margins of Calvert Brick Pits LWS and Calvert Jubilee Nature Reserve LWS (Ch79+200 to Ch80+100), in a single stand south-east of Steeple Claydon (Ch79+700) and either side of the Scheme south-east of Calvert (Ch78+500);

- woodland along the Great Central Main Line near Chetwode (Ch85+500 to Ch86+500), at Manthorn Farm in Chetwode (Ch85+700) and at Manor Farm in Barton Hartshorn (Ch87+200);

- various young broadleaved plantations, located north and east of Calvert Jubilee Nature Reserve LWS and north of Barton Hill Farm (Ch80+200 to Ch87+500);

- six small plantation broadleaved woodlands east and south-east of Turweston (Ch93+700 to Ch94+500);

- areas of semi-improved neutral grassland north of Wendover Dean, north-west of Wendover, on the verges of Chesham Lane, at Stoke House Farm, Whitethorn Farm, land north of Hartwell House, Aylesbury Park Golf Club, Putlowes Farm, near Oak Tree Farm and west of Westbury;

- large area of semi-improved grassland at Finemere Wood LNR (Ch74+500 to Ch75+500);

- small areas of disturbed but species rich marshy grassland along parts of the Muxwell Brook;

- semi-improved grassland near Oak Tree Farm similar to MG5 Cynosurus cristatus-Centaurea nigra grassland;

- traditional orchards north of Nash Lee Road, at Road Barn Farm, at Stoke House, near Woodlands Farm, Rose Hill Farm in Steeple Claydon and Rosehill Farm in Chetwode;

- mature scrub at Aylesbury Park Golf Club (Ch62+300 to Ch64+500);

- areas of scrub, mainly along the Aylesbury Link railway line and River Ray corridor, at Portway Farm (Ch80+300), the Hermitage near Chetwode and along Padbury Brook in Twyford;
a mosaic of hawthorn scrub and grassland along the disused Great Central Main Line railway near Church View Farm and south of the Railway Cutting North of Twyford BNS (Ch82+300);

dense scrub along Great Central Main Line disused railway cutting between Twyford and Newton Purcell (Ch82+800 to Ch86+800);

extensive arable and cultivated land and areas of open grassland with scattered trees (parkland), including at Aylesbury Park Golf Club and at Hartwell House (Ch62+300 to Ch64+500);

two arable field margins, which are managed for conservation purposes, to the south of Preston Bissett and to the north of Calvert (Ch80+000 to Ch84+500);

hedgerows occurring throughout the area (see Volume 5 maps for specific locations);

ponds occurring throughout the area, with the majority between Lower Hartwell and Putlowes Farm, near Woodlands Farm and concentrated near Calvert and Chetwode (see Volume 5 maps for specific locations);

Stoke Brook (see Volume 5 maps for specific locations);

Bear Brook, Sedrup Ditch, Hartwell Ditch, Lower Hartwell Ditch, the Fleet Marston Brook and tributaries, a large drain referred to as the Mega Ditch and several drainage ditches which have been heavily modified (straightened or over-deepened);

River Thame (see Volume 5 maps for specific locations);

River Ray (see Volume 5 maps for specific locations);

Fleet Marston Brook (see Volume 5 maps for specific locations);

Padbury Brook and its tributaries (Ch82+300); and

River Great Ouse, crossed by the scheme on the border with South Northamptonshire (Ch92+600).

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

- Bats, including roosts and foraging and commuting routes;
- breeding birds including barn owls;
- bird assemblages;
- great crested newts;
- otter;
- fish;
- adders;
• common reptiles;
• badgers;
• water vole;
• terrestrial invertebrates including nationally scarce beetles;
• aquatic invertebrates;
• aquatic macroinvertebrates;
• tubular water-dropwort;
• species wild cabbage;
• marsh pea;
• true fox sedge; and
• marsh stitchwort.

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

9.2.5 Natural England has granted the HS2 organisational Great Crested Newt and badger licences across Phase 1 in April 2017. Contractors will be required to check whether other 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. Of note are the specific limitations applying to work between Quainton and Calvert due to the presence of an important colony of Bechstein’s bats.

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

9.3 Local control measures

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

<table>
<thead>
<tr>
<th>Receptor</th>
<th>Issue</th>
<th>Standard control measure/s</th>
</tr>
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<tbody>
<tr>
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<tr>
<td>Designated Sites</td>
<td>The Scheme affects SSSI, LNR and non-statutory wildlife sites.</td>
<td>Measures to minimise habitat loss should be included in planning of construction works, such as avoiding siting temporary material stockpiles, construction materials and vehicle parking within designated sites.</td>
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<td>Potentially hazardous materials should also be located away from designated sites and stored correctly.</td>
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<td></td>
<td>Specific measures for control of surface water and air and water-borne pollution should also take account of the proximity of these designated sites.</td>
</tr>
<tr>
<td>Ancient Woodland</td>
<td>The Scheme will result in the loss of ancient woodland.</td>
<td>Measures to minimise habitat loss should be included in planning of construction works.</td>
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<td></td>
<td></td>
<td>Translocation of ancient woodland soils and vegetation will be undertaken where appropriate, following the design specification set out in the relevant Ecology Site Management Plans.</td>
</tr>
<tr>
<td>Bats</td>
<td>All UK bat species and their roosts (even if bats are not present) are fully protected under both UK and European legislation.</td>
<td>Adhere to requirements of licences and, where relevant, Ecology Site Management Plans.</td>
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<tr>
<td></td>
<td>The Scheme will result in the loss of confirmed bat roosts in trees and buildings.</td>
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<tr>
<td></td>
<td>The Scheme will result in the loss of trees and buildings identified as having moderate or high potential to support roosting bats, but no evidence of their use has been recorded to date through survey work.</td>
<td>Adopt precautionary approach. Follow appropriate Working Method Statement for demolition of buildings and felling of trees.</td>
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</tbody>
</table>
| Retained bat roosts are present in close proximity to the Scheme. Caution is required to ensure that these roosts are not disturbed during works. | Where practicable, undertake activities causing disturbance during seasonal periods when bats are likely to be absent.  
Ensure lighting is directed away from known roosts.  
Minimise night time working in close proximity to retained roosts.  
Where practicable, temporary structures will be erected to screen the entrances/exits of retained roosts from construction areas. |
|---|---|
| The Scheme will result in the loss of and disruption to bat foraging areas and commuting routes. | Where practicable, undertake activities causing loss or disruption during seasonal periods when bats are likely to be less active.  
Retain as much of the key habitat for as long as possible and establish new areas as quickly as possible to reduce the effects.  
Ensure lighting is directed away from foraging areas and commuting routes.  
Minimise night time working in close proximity to foraging areas and commuting routes. |
| Breeding birds | Habitat clearance should be conducted outside of the bird nesting season (March to August inclusive) where practicable.  
If habitat clearance is carried out during the bird nesting season then an appropriate Working Method Statement shall be completed in advance of clearance works commencing. |
| The nests and eggs of all bird species are legally protected against being damaged or taken. Some species are specially protected against disturbance whilst nesting.  
The Scheme will result in the loss of nesting bird habitat, including vegetation, buildings and structures. |  
Great crested newts and their habitats are fully protected under both UK and European legislation.  
The Scheme will result in the loss of water bodies and terrestrial habitat used by great crested newts.  
Adhere to requirements of HS2 great crested newt organisational licence, method statements, and Ecology Site Management Plans. |
<table>
<thead>
<tr>
<th>Common amphibians</th>
<th>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.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drain down of ponds should be conducted outside of the main breeding period for amphibians (March to August) where practicable.</td>
<td></td>
</tr>
<tr>
<td>If drain down of ponds is carried out during the main breeding period then an appropriate Working Method Statement shall be completed in advance of drain down works commencing.</td>
<td></td>
</tr>
</tbody>
</table>

| Common reptiles | Common species of reptile (grass snake, adder, common lizard and slow worm) are protected from intentional killing or injury.  
Common reptiles are widespread, and the Scheme will result in the loss of confirmed and potential reptile habitat. |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Where works have the potential to kill or injure reptiles, but there is suitable habitat immediately adjacent to the work site that could support a viable population (with enhancements where necessary) the Habitat Manipulation and Displacement approach should be followed. A Working Method Statement should be produced in advance of works commencing.  
Where there is no suitable habitat immediately adjacent to the work site, the Reptile Translocation approach should be followed. A Working Method Statement should be produced in advance of works commencing. This will include details of the approach, any exclusion fencing required, and details of the receptor site. |

| Badger | Badgers and their setts are protected under the Protection of Badger Act 1992.  
Badgers are widespread, and the Scheme will result in the loss of badger habitat, including setts. |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Adhere to the requirements of the HS2 badger organisational licence, method statements, and Ecology Site Management Plans.  
Avoid badger setts to reduce disturbance where they do not need to be closed.  
Badgers are a mobile species and can create new setts in a short period of time. Contractors to be aware of the potential for badger setts to be present within or adjacent to work sites – works to be stopped if potential setts are identified and an ecologist contacted for advice. |
<table>
<thead>
<tr>
<th>Wildlife Type</th>
<th>Description</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazel dormouse</td>
<td>Hazel dormice and their habitats are fully protected under both UK and European legislation. The Scheme will result in the loss of habitats that are suitable for hazel dormouse, although this species has not been recorded along the Scheme to date.</td>
<td>Where relevant adhere to requirements of licences and Ecology Site Management Plans.</td>
</tr>
<tr>
<td>Otter</td>
<td>Otters are fully protected under both UK and European legislation. All major watercourses crossed by the Scheme have otters present or are potentially suitable to support them. It is not expected that there will be any fragmentation of otter movement routes, however, there is the potential for disturbance during construction along some parts of the Scheme.</td>
<td>Adhere to requirements of licences and, where relevant, Ecology Site Management Plans. Ensure that route of safe passage for otters is maintained throughout construction at crossing points. Use fencing as required to prevent otters being forced over existing road crossings. Minimise light spill onto watercourses.</td>
</tr>
<tr>
<td>Water vole</td>
<td>Water voles are fully protected under UK legislation. The Scheme will result in the loss of confirmed and potential water vole habitat.</td>
<td>An appropriate Working Method Statement should be produced in advance of works commencing, where relevant. Adhere to requirements of translocation licence, where relevant. Contractors to be aware of the potential for water voles to be present within or adjacent to work sites – works to be stopped if water vole evidence is identified and an ecologist contacted for advice.</td>
</tr>
<tr>
<td>Aquatic wildlife</td>
<td>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.</td>
<td>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. Moving fish will be undertaken in accordance with the HS2 organisational fish permit.</td>
</tr>
</tbody>
</table>
### Invasive plants

There is a risk of work sites and adjacent land supporting invasive non-native species (INNS), as defined in Schedule 9 of the Wildlife and Countryside Act 1981 (as amended), in particular Japanese knotweed. INNS have been already recorded along some parts of the Scheme through previous survey work. All land required for the works and immediately adjacent land (where practicable) shall be surveyed for the presence of INNS, with a focus on high-risk species. A Biosecurity Management Plan shall be produced in advance of works commencing, where required.

### General

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

#### 9.3.2 Further information on the control of ecological impacts is provided in HS2 Information Paper E2: Ecological Impact, Section 9 of the CoCP, in Technical Note: Ecological principles of mitigation are set out in Volume 5 of the SES2 and AP3 ES (Scope and methodology report addendum (CT-001-000/2)).

#### 9.4 Monitoring

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

### 10 Ground settlement

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

#### 10.1.2 Requirements for monitoring will be confirmed by the settlement report prepared during the detailed design stage. Where determined as necessary, monitoring will be undertaken on selected adjacent buildings, structures and the conventional railway tracks. Baseline readings will be taken prior to the commencement of excavation.

#### 10.1.3 The monitoring strategy, methodology and programme, including the choice and location of monitoring equipment, will be discussed and agreed with the local authorities and land/building owners prior to commencement of construction.
10.1.4 Where significant building movement is predicted to be caused by excavation induced ground movements, ground treatment/improvement techniques might be required to ensure that if ground movement occurs, it stays within agreed and acceptable limits thereby limiting the impacts on buildings.

10.1.5 Monitoring may be required where existing sensitive buildings/structures/utilities are in close proximity to the planned excavation works. An assessment of the sensitivity of each building/structure/utility in close proximity to the excavation works will be carried out at the detailed design stage. This will then inform the design/specification of the monitoring system for that building/structure/utility and will also inform the design of any movement mitigation works if these are deemed necessary by the designer.

10.1.6 Prior to the commencement of construction, structural surveys and condition/defect surveys will be commissioned where structures are at likely risk of potentially damaging settlements.

11 Land quality

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

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

11.2 Potential contamination sources and sensitive receptors

11.2.1 The following land with potentially contaminative existing or historical uses has been identified as a possible contaminative risk to HS2 works (and can be seen in Volume 5 mapbook of the main ES):

- Existing Marylebone to Aylesbury Line;
- Existing Princes Risborough to Aylesbury Line;
- Existing Aylesbury Link railway line;
- Disused railway spurs to the north-east of Oak Tree Farm and east of Upper South Farm;
- Historical railway lines;
• Barton Hartshorn Airfield (former RAF Finmere);
• Turweston Aerodrome (formerly RAF Turweston);
• Two petrol stations on London Road and at the southern end of Wendover;
• Historical Hartwell clay, brick and tile works;
• Historical clay pits at Calvert Landfill;
• Historical brickworks immediately to the north-west of Calvert Landfill no. 4 and 5 pits;
• Historical sewage works near Lower Hartwell;
• Sewage works east of Twyford;
• Former Waddesdon Sewage Treatment Works at Glebe Farm;
• Inert historical landfill at Bacombe Lane (south of Wendover);
• Historical Hartwell Landfill;
• Planning permission for the landfilling of the former clay pits (Calvert Landfill pit 6) associated with the planning permission for Greatmoor Energy from Waste facility;
• Planning permission for the excavation and landfilling of Calvert Landfill pits 7 and 8 to the east and south of pit 6;
• Calvert Landfill no. 4 and 5 pits;
• Calvert Pit 1 Historical Landfill;
• Historical Aylesbury Borough Council Refuse Tip;
• Historical Buckingham Rural District Council Refuse Tip; and
• Potential historically infilled ponds.

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

• people, including residents in existing properties, local employees (e.g. at farms, industrial facilities, Calvert Landfill or the existing railway) and construction workers;
• controlled waters, including groundwaters in The Chalk, Portland Stone Formation, the White Limestone, Taynton and Blisworth Limestone Formations (Principal aquifers) and various Secondary A aquifers;
• the Stoke Brook, Bear Brook, River Thame and tributaries, the River Ray and tributaries, Muxwell Brook, Grebe Lake and Calvert Jubilee lake, Padbury Brook and its tributaries, the River Great Ouse and other minor watercourses and ponds within 1km of the sources of contamination;
• ecological receptors of Bacombe Hill SSSI, Sheephouse Wood SSSI and Tingewick
Meadows SSSI;

- the built environment, including buildings, property and underground structures and services; and
- the natural environment.

11.3 \textbf{Local control measures}

11.3.1 Ground Investigations are to being undertaken to confirm areas of potential contamination within the Scheme. Following development of a conceptual site model, a risk assessment and a remedial strategy will be prepared, as needed. Consultation with Aylesbury Vale District Council and the Environment Agency will take place during the formulation of the remedial strategy, which will include measures to be taken if unexpected contamination is encountered as outlined in Section 11 of the CoCP.

11.3.2 Contaminated soils or groundwater excavated from the site are to be separated from other materials and treated, as necessary. Where reasonably practicable, material will be reused within the Scheme, where it is suitable for use. Treatment techniques could include stabilisation methods, soil washing, appropriately permitted bio-remediation to remove oil contaminants and disposal off site. Contaminated soil disposed off-site will be taken to a soil treatment facility, another construction site (for licensed treatment, as necessary, and reuse) or an appropriately permitted landfill site.

11.3.3 Excavation through the inert historical landfill at Bacombe Lane, historical Hartwell Landfill, Calvert Landfill no.4 and 5 pits, Calvert Pit 1 Historical Landfill, historical Aylesbury Borough Council Refuse Tip, historical Buckingham Rural District Council Refuse Tip in Aylesbury Vale District Council 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.

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

11.4 \textbf{Minerals}

11.4.1 The Scheme does not cross any Mineral Safeguarding Areas in the Aylesbury Vale District Council area.

11.4.2 Mitigation of potential impact on these mineral resources can include prior extraction of the resource for use within the project or elsewhere. Extraction may be limited to areas of environmental mitigation earthworks within the Scheme adjacent to rather than beneath the trackbed, which will require good founding conditions. A plan will be discussed in advance of the construction works with the landowner and/or mineral owner, the mineral planning department at Buckinghamshire County Council and any other interested parties to assist in achieving an effective management of minerals
within the location of the affected Mineral Safeguarding Areas as well as Preferred Areas and Areas of Search.

12 Landscape and visual

12.1.1 General control measures relating to land quality are provided in Section 12 of the CoCP.

12.2 Sensitive receptors

12.2.1 With reference to the set-up and location of temporary works, the Contractor will have due regard to limiting impacts of the character of the following landscape character areas (LCAs) (ES 3.5.1.7.2):

- Chilterns Area of Outstanding Natural Beauty (AONB);
- The Lee Undulating Valley Slopes LCA;
- Wendover Gap LCA;
- Settlement (Wendover) LCA;
- Chiltern Scarp (Wendover West) LCA;
- Chiltern Scarp (Coombe Hill) LCA;
- Wendover Foothills (West) LCA;
- Southern Vale LCA;
- Stoke Mandeville Vale LCA;
- Haddenham Vale LCA;
- Hartwell House and Golf Course LCA;
- Fleet Marston Vale LCA;
- Westcott Clay lands LCA;
- Quainton Hill LCA;
- Kingswood Wooded Farmland LCA;
- Finemere Hill LCA;
- Claydon Bowl LCA;
- Twyford Vale LCA;
- Preston Bissett Plateau Edge LCA;
- The Great Ouse Valley Farmlands LCA;
- Shelswell and Turweston Wooded Estatelands and Farmland Plateau LCA; and
12.2.2 The Contractor will also have due regard to limiting visual intrusion on the following visual receptors:

- residents in the area, particularly Wendover, Dunsmore, Kingsash, Stoke Mandeville, Aylesbury, Berryfields, Hartwell, Calvert, Steeple Claydon, Twyford and Chetwode, as well as at smaller dispersed settlements throughout the area and farmsteads throughout the study area and groupings of properties in the vale landscape between Wendover and Halton and at Fleet Marston;

- recreational users on public rights of way (PRoW) throughout the study area, including the South Buckinghamshire Way, the Chiltern Link, the Chiltern Way, the Icknield Way Trail, Ridgeway National Trail, the Aylesbury Ring, the North Buckinghamshire Way, the Midshires Way, the Swan's Way, the Thame Valley Walk, the Bernwood Jubilee Way and the Cross Bucks Way; and

- people travelling through the area along numerous 'scenic' rural roads within the study and on main roads, including School Hill, Main Street, West Street, from public highways around Chetwode, Quainton Road, Station Road and Edgcott Road.

12.2.3 The Contractors will be made aware of the location of the following sensitive sites:

- Jones' Hill Wood (loss of ancient woodland);

- in the area of the green tunnel and portal and the Ellesborough Road and B4009 realignment sites (loss of hedgerows);

- in the area of the Stoke Grove autotransformer station, the B4009 Nash Lee Road, the maintenance loop and the A4010 Stoke Mandeville bypass (loss of hedgerows);

- Sheephouse Wood (loss of ancient woodland adjacent to the wood);

- in the area of the Infrastructure Maintenance Depot (IMD) and temporary railhead south of Steeple Claydon, along the line east of Calvert and at the waste transfer sidings near Decoypond Wood (loss of the existing strong hedgerow pattern);

- south of Shepherd’s Furze Farm (sustainable placement);

- north and east of Twyford (loss of the existing strong hedgerow pattern);

- the conservation area at Chetwode (Chetwode cutting); and

- Manthorn Farm and the dismantled railway line between Barton Hill Farm and Newton Purcell Loss severance of hedgerow strong hedgerow pattern).

12.2.4 The Contractor shall also discuss the possibility of advance planting off-site with landowners, Aylesbury Vale District Council to further screen the locations listed above.
12.3 Local control measures

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

- maximising the retention and protection of existing trees and vegetation where possible;
- use of well-maintained hoardings and fencing;
- designing lighting to avoid unnecessary intrusion onto adjacent buildings and other land uses;
- replacement of any trees intended to be retained which may be unintentionally felled or die as a consequence of construction works;
- appropriate implementation, establishment and maintenance of planting and seeding works and implementation of landscape management measures, to continue through the construction period as landscape works are completed;
- temporary bunds to be positioned to screen views to the route construction;
- involvement in the specific location of construction compound layouts and site access in relation to existing vegetation to reduce visual impacts where practicable; and
- the specific location of temporary material stockpiles to reduce visual impacts.

12.4 Trees

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

12.4.2 Where practicable, the Contractor will carry out surveys and agree the details of tree retention and protection measures, in accordance with BS5837:2012 Trees in relation to design, demolition and construction - Recommendations, with Aylesbury Vale District Council, in advance of any works in the vicinity of trees.

12.5 Site Buildings for Office and Welfare

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

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

13.2 Sensitive receptors

13.2.1 Noise and vibration construction assessment locations, at sensitive residential and non-residential properties, are identified within Noise and Vibration Volume 5 - map book (ref. ES. 3.5.4).

13.2.2 The avoidance and mitigation measures in this area will avoid airborne construction noise adverse effects on the majority of residential receptors and communities.

13.2.3 Noise insulation is being offered for qualifying buildings as defined in the noise insulation and temporary rehousing policy within HS2 Information Paper E23. Noise insulation or temporary rehousing will mitigate residents being significantly affected by levels of construction noise inside their dwellings.

13.2.4 Qualification for noise insulation and temporary re-housing will be identified. Qualifying buildings are being identified in the AVDC area early enough so that noise insulation can be installed, or temporary rehousing provided, before the start of the works predicted to exceed noise insulation or temporary rehousing criteria.

13.2.5 The following residential buildings have been reported in the ES as likely to qualify for noise insulation measures. Further detailed assessment would be required to confirm this:

- three residential buildings on Bacombe Lane; and
- approximately 10 residential buildings on Ellesborough Road.

13.2.6 Residential sensitive receptors at which the ES has reported adverse impacts from construction noise and/or vibration are mainly located at residential communities at:

- approximately five dwellings on Bacombe Lane; and
- 20 dwellings on Ellesborough Road.

13.2.7 Significant residual effects from construction traffic have been identified at the following residential and non-residential properties:

- approximately 40 dwellings located immediately adjacent to Grendon Road/Buckingham Road where they pass through Edgcott;
- approximately 10 dwellings located close to Perry Hill (south of School Hill);
- the buildings at Great Moor Sailing Club due to construction traffic on Perry Hill (north of School Hill) where it passes Grebe Lake;
- approximately 15 dwellings located immediately adjacent to School Hill (west of Perry Hill) to the west of Calvert;
• approximately 10 dwellings located immediately adjacent to School End where it passes to the north of Chetwode;

• St Leonard's Church due to construction traffic on The Broadway in Grendon Underwood; and

• Edgcott Village Hall due to construction traffic on Grendon Road/Buckingham Road where it passes through Edgcott.

13.2.8 Significant residual effects at non-residential properties have been identified at:

• Wendover House School / Chiltern Way Federation, Wendover Campus, Wendover;

• St Mary’s Church, Wendover;

• Community Hall, Witchell Road, Wendover;

• Freemantle Court care home; and

• Church of the Assumption of the Blessed Virgin Mary, Church Street, Twyford.

13.3 Local control measures

13.3.1 Site specific best practicable means measures to control noise and vibration will be discussed and agreed with AVDC and local stakeholders, and reflected in revisions to this document. Furthermore, site specific measures will be identified by the Contractor on a site-by-site and activity-by-activity basis and agreed with AVDC through the Section 61 process. As identified in the ES, examples of best practicable means measures that may be employed by the Contractor to control noise and vibration include:

• 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 to the Act;

• arranging the layout of compounds to reduce noise impacts where construction compounds are in close proximity to noise sensitive receptors. This may include placing any stacked portacabins between noisy works and sensitive receptors;

• taller screening as described in the CoCP has been assumed along the edge of the construction site boundaries adjacent to Old Risborough Road, the residential communities to the south-west of Wendover, Ellesborough Road, Bacombe Lane, along B4009 Nash Lee Road, Moat Farm, properties on the A418 Oxford Road adjacent to the works (Park Villa, Hartwell Cottage and the Oaks), Hartwell House, the Putlowes and at Calvert and Chetwode. Temporary screening has also been assumed along the edge of the works associated with realigning the Princes Risborough to Aylesbury Line adjacent residential property on the south-western edge of Aylesbury (in the vicinity of Westfield and Batt Furlong) and Booker Park School; and
- 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.

13.3.2 The following residential buildings are forecast to experience noise levels higher than the noise insulation trigger levels as defined in the CoCP (Section 13) and are identified in the ES as qualifying for a noise insulation package as detailed within the Noise Insulation and Temporary Rehousing Policy;
- three residential buildings on Bacombe Lane; and
- approximately 10 residential buildings on Ellesborough Road.

13.3.3 Local control measures will be periodically reviewed, including following any material changes in the proposed construction method.

13.4 Monitoring

13.4.1 The Nominated Undertaker requires its Contractors’ to undertake and report such monitoring, including real time noise and vibration monitoring, as is necessary to ensure and demonstrate compliance with all noise and vibration commitments and the requirements of the CoCP. Monthly monitoring reports 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.

13.4.2 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 AVDC. In addition, monthly noise monitoring reports will be made publicly available throughout construction. The monthly reports will include information such as measurement methodology and monitoring locations. The reports will be available on the HS2 website: https://www.gov.uk/government/collections/monitoring-the-environmental-effects-of-hs2

13.4.3 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

14.1.1 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 (PWo) affected by the Scheme as necessary. These measures are guided by Section 14 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 minimised by its Contractors where reasonably practicable:
• A Route-wide Traffic Management Plan (RTMP) setting out generic traffic management measures to be implemented during the construction of the project;

• Local Traffic Management Plans (LTMPs) will set out specific traffic management measures for each work site within particular areas along the route. Information on how the local impacts of construction will be mitigated, in particular those associated with materials delivery and redistribution, offices and workers’ accommodation with be included within the LTMP or on a site-specific basis;

• 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.

• HS2 will require its contractors to undertake such monitoring as is necessary to ensure compliance with the requirements of the CoCP, and this will include the maintenance of records of traffic management measures installed.

14.1.3 Information relating to construction traffic is also provided in Information papers:

• D11: Maintaining access to residential and commercial property during construction;

• E13: Management of traffic during construction; and

• E14: Highways and traffic during construction – legislative provisions.

• E30: Vehicle flow management and safety requirements during construction.

14.2 Local control measures

Sensitive Receptors

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

14.2.2 In AVDC the key sensitive receptors that will be affected by the Scheme are communities within Wendover, Stoke Mandeville, Aylesbury, Waddesdon, Quainton, Grendon Underwood, Steeple Claydon and Calvert.

Site access

14.2.3 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 to the Act.
14.2.4 Routes for construction traffic will be subject to approval of the relevant planning authority in accordance with the Schedule 17 to the Act when large construction vehicle movements exceed 24 single movements (12 two way movements) per day to and/or from a site.

14.2.5 Any permanent highway works outside the limits of deviation as outlined in the Act will be subject to normal Highways legislation and Highway Authority powers.

14.3 Works to the Highway and Access Measures

14.3.1 Temporary road closures and diversions of the following roads will likely be required:

- temporary closure and realignment of Bowood Lane will be required with alternative route via the A413 London Road, Rocky Lane/Chesham Lane and King's Lane, for a period of nine months to one year;
- permanent realignment of Rocky Lane, 50m to the west, under the railway in an underbridge;
- temporary realignment of approximately 140m of the A413 London Road for a period of nine months to one year;
- temporary closure of Small Dean Lane, diversion via A413 London Road and Dunsmore Road for a period of six to nine months;
- temporary closure of Bacombe Lane, realigned via a temporary link road from Ellesborough Road for a period of one year;
- an alternative temporary route for Ellesborough Road realigned via a temporary link road to the north of the current alignment, for a period of one year and nine months to two years;
- permanent realignment of B4009 Nash Lee Road, 50m to the north across new offline B4009 Nash Lee Road overbridge;
- permanent realignment of Nash Lee Lane junction with B4009 Nash Lee Road, 200m to the east of original alignment;
- stopping up of A4010 Risborough Road and diversion via A4010 Stoke Mandeville bypass and B4443 Lower Road;
- stopping up of Old Risborough Road and diversion via A4010 Risborough Road, A4010 Stoke Mandeville bypass and B4443 Lower Road;
- stopping up of Marsh Lane either side of the Scheme, with existing road retained in part to maintain access to the existing properties, and diversion via A4010 Stoke Mandeville bypass and B4443 Lower Road from the west;
- permanent realignment of A418 Oxford Road during construction of an overbridge for a period of nine months to one year;
- permanent diversion the A41 Bicester Road, passing westwards across the new A41 Bicester Road over bridge adjacent to existing Blackgrove Road;
• permanent closure of a length of Blackgrove Road to the west of the route;
• permanent reinstatement of Needles Farm accommodation access, approximately 50m to the west, across the new Needles Farm accommodation overbridge;
• permanent reinstatement of Station Road, approximately 450m to the west, across the new Station Road overbridge;
• permanent reinstatement of Edgcott Road, 50m to the east, across new Edgcott Road overbridge;
• temporary closure of School Hill, which will be re-routed via Addison Road, West Street and Perry Hill for a period of between one year and six months and two years;
• permanent realignment of Addison Road/Pond Lane during construction of overbridge;
• permanent diversion of Perry hill to new Charndon Lodge underbridge to the west to pass under East West Railway and over HS2 via Perry Hill overbridge;
• temporary closure of West Street during which there will be diversions via Perry Hill or School Hill; a temporary closure of School End which will be re-routed via the A4421, for a period of between one year and one year and six months;
• a temporary realignment of A422 Brackley Road for a period of approximately a year to one and a half years; and
• a temporary road closure of Turweston Public Road, diversion via field boundary to the north for period of between ten months to one year.

14.3.2 Alternative routes for the following PRoW’s will be required, namely:

• a temporary alternative route for Footpath TLE/2, to the south for a period of approximately six to nine months;
• a temporary alternative route for Footpath TLE/3, to the south for a period of approximately nine months to one year;
• temporary alternative route for Footpath TLE/5, to the north via WEN/36 for a period of six to nine months;
• a temporary alternative route for Footpath WEN/36, to the south for a period of one year and six months to two years;
• a temporary alternative route for Footpath WEN/39, to the south-east for a period of one year and six months to two years;
• Bridleway (unknown reference) along the old link road between Small Dean Lane and A413 London Road will be permanently stopped up through a traffic regulation order that will allow access to non-motorised users only;
• a temporary alternative route for Footpath WEN/57, via WEN/14, WEN/13/B and
WEN/13/C for a period of six to nine months;

- a temporary alternative route for Bridleway WEN/57, via WEN/14, WEN/14, WEN/27(BW) and WEN/13(BW) for a period of six to nine months;

- Bridleway WEN/14 will be permanently diverted along the reinstated Bacombe Lane across the Wendover green tunnel;

- a temporary alternative route for Footpath WEN/13A, to the south for a period of one year;

- a temporary diversion of the Ridgeway trail along the existing Ellesborough Road footpath to a temporary link road before connecting back to existing footpath WEN/15A for a period of between twenty months and two years;

- a temporary alternative route for public Footpath WEN/6, to the south via Ellesborough Road for a period of two years and three months;

- a temporary alternative route for public Footpath WEN/6, to the south via Ellesborough Road for a period of two years and three months;

- a temporary alternative route for public Footpath WEN/11, via Ellesborough Road for a period of two years and three months;

- a temporary alternative route for public Footpath WEN/55, to the south for a period of two years and three months;

- a temporary alternative route for Footpath ELL/25, via the existing Nash Lee Road for a period of approximately one year to one year and six months;

- Footpath SMA/5 will remain open on its existing alignment until the new Risborough Road underpass is constructed and will then be permanently diverted onto new alignment;

- a temporary alternative route for Footpath ELL/20, for a period of up to nine months;

- a temporary alternative route for Footpath ELL/2, to the east for a period of approximately one year and six months to two years;

- a temporary closure of Footpaths SMA/5 and SMA/5A, at its start and end points where it joins Risborough Road and at ELL/18/1. Footpath users diverted along Risborough Road for a period of six to nine months;

- permanent diversion of Footpaths SMA/5 and SMA/5A under new Risborough Road underpass;

- a temporary alternative route for Footpath ELL/8, to the west for a period of approximately one year and six months to two years;

- a temporary alternative route for Footpath SMA/8, to the west for period of up to nine months;

- a temporary alternative route for Footpath SMA/9, to the west for a period of
up to nine months;

- a permanent diversion of Marsh Lane footpath to Footpath SMA/9 accommodation overbridge via SMA/15A and ELL/1/1;

- a temporary alternative route for Footpath SMA/11, to the east for a period of approximately one year six months to two years;

- a temporary alternative route for Footpath ELL/20, to the east for a period of up to nine months;

- a temporary alternative route for Footpath ELL/2, to the east for a period of approximately one year and six months to two years;

- a temporary alternative route for Footpath ELL/8, to the west for a period of approximately one year and six months to two years;

- a temporary alternative route for Footpath SMA/8, to the west for period of up to nine months;

- a temporary alternative route for Footpath SMA/9, to the west for a period of up to nine months;

- a temporary alternative route for Footpath SMA/11, to the east for a period of approximately one year six months to two years;

- a temporary closure of Footpath SMA/16 will be required, for a period of approximately one year and six months;

- temporary alternative route for Footpath SBH/19, to the east for a period of up to nine months;

- a temporary alternative route for Footpath SBH/27, to the west for a period of up to nine months;

- a temporary alternative route for Footpath SBH/34, to the east for a period of up to nine months;

- a temporary alternative route for Footpath SBH/32, to the west for a period of up to nine months;

- an alternative route for Footpath SBH/2 will be required, to the west for a period of up to nine months;

- temporary alternative route for Footpath FMA/2, to the west for a period of approximately six months;

- a temporary alternative route for Footpath WAD/5/112, to the north for a period of up to one year and six months;

- a temporary alternative route for Footpath WAD/5/2, to the north for a period of approximately one year and six months;

- a temporary alternative route for Footpath WAD/4, to the north-west for a
period of approximately six to nine months;

- a temporary alternative route for Footpath WAD/4A, to the west for a period of approximately six to nine months;

- a temporary alternative route for Footpath WAD/3, to the south for a period of six to nine months;

- permanent diversion of Footpath QUA/31 via new Station Road overbridge;

- a temporary closure of Bridleway QUA/28A during construction, for a period of around six to nine months;

- a temporary closure of Bridleway QUA/36 during construction, for a period of approximately nine to 12 months;

- a temporary closure of Bridleway GUN/25 during construction, for a period of approximately six months;

- a temporary closure of Bridleway GUN/28 during construction, for a period of approximately six months;

- temporary diversion of School Hill footpath via Footpaths SCL/12/1, SCL/13/2, SCL/14/2 and SCL/18/ for a period of eighteen months to two years;

- a temporary alternative route for Footpath SCL/7, via SCL/8/215 and Addison Road for a period of between nine months and one year;

- a temporary alternative route for Footpath SCL/8, via SCL/8/2 and Addison Road for a period of between nine months and one year;

- a temporary alternative route for Footpath SCL/9, via SCL/8/2 and Addison Road for a period of between nine months and one;

- a temporary alternative route for Footpath TWY/4 around the Bicester to Bletchley rail line satellite compound for a period of between nine months and one year;

- a temporary alternative route for Footpath SCL/6 to the west for a period of one year;

- temporary diversion of West Street footpath via Footpaths TWY/19/3 and TWY/18/2 for a period of 1 year to eighteen months;

- a temporary alternative route for Footpath TWY/18, to the east for a period of between three to six months;

- a temporary alternative route for Footpath TWY/19, to the east for a period of between three to six months;

- a permanent diversion of Footpaths PBI/6/3 and PBI/6/2 across Footpath PBI/5 accommodation overbridge;

- a temporary alternative route for Footpath PBI/5A to the south, for a period of
between nine months and one year;

- a temporary alternative route for Footpath PBI/9 to the east for a period of one year and six months;

- a temporary alternative route for Footpath CHW/225 to the east for a period of between three to six months;

- temporary diversion of Bridleway CHW/24 to the west of the original alignment for period of eighteen months;

- permanent diversion of CHW/18 to The Green overbridge;

- permanent diversion of CHW/11 to School End overbridge;

- temporary diversion of Footpath 308/31/10 to 308/3/20 or east of existing around construction works stockpile for period of nine months to one year;

- a temporary alternative route for Footpath CHW/225/4 to the east for a period of between three to six months;

- a temporary alternative route for Footpath CHW/24, to the west for a period of one year and six months;

- a temporary alternative route for Footpath SCL/13 to the east for a period of 12-18 months;

- a temporary alternative route for Bridleway SCL/18 to the west for a period of 12-18 months;

- a temporary alternative route for Footpath BHA/3/1 to the east for a period of nine to twelve months;

- a temporary alternative route for Footpath TUW/3, to the north for a period of approximately one year;

- a temporary alternative route for Bridleway TUW/4, to the west for a period of approximately one year;

- a temporary alternative route for Footpath TUW/5, to the west for a period of approximately one year;

- a temporary alternative route for Bridleway TUW/9, to the north for a period of approximately one year; and

- a temporary diversion of Bridleway TUW/4 along the western side of the proposed route along Turweston road temporary diversion for a period of ten to eleven months.

14.3.3 The following temporary private access diversions will be required:

- to Whaddon Hill Farm will be required during the upgrading of the access track and construction of Bridleway SBH/2 overbridge;

- to Lower Blackgrove Farm and Lower Blackgrove Farm cottages during
construction of the A41 Bicester Road realignment;

- a temporary closure of The Green access road to Manthorn Farm and diversion via School End for period of approximately nine months to one year; and

- to Waddesdon waste treatment works during construction of Footpath WAD/3 accommodation underbridge.

14.3.4 Civil engineering works to construct the Scheme will necessitate temporary track possessions:

- on Princes Risborough to Aylesbury Line and Marylebone to Aylesbury Line which will affect some users of passenger services stopping at Wendover;

- on Princes Risborough to Aylesbury Line in the area that will affect some users of passenger services stopping at Stoke Mandeville, Aylesbury and Aylesbury Vale Parkway;

- in CFA12 that will affect some users of passenger services stopping at Quainton Road during special events at Buckinghamshire Railway Centre; and

- in the area around Calvert due to the re-alignment of various lines including the Bicester to Bletchley Line and Aylesbury Link railway line.

14.3.5 The possessions will be short-term and generally take place during mid-week nights or weekends.

14.3.6 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 RTMP, LTMP, the requirements of the provisions of the Act, assurances and undertakings, site specific drawings and site specific traffic requirements and conditions.

15 Waste and materials

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

Testing and classification of materials

15.2.1 The 'basic characterisation' of excavated material will be determined by the Contractor to ascertain the potential for reuse, recycling, recovery or disposal to inert, non-hazardous or hazardous landfill.

15.2.2 A Materials Management Plan will be developed in accordance with the Definition of Waste: Development Industry Code of Practice 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 Contractor in line with the Environment Agency's guidance. This includes:

- Waste Sampling and Testing for Disposal; and

Transport of waste and materials

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

16 Water resources and flood risk

16.1.1 General control measures relating to water resources and flood risk are provided in Section 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: Including the Chalk, Upper and Lower Greensand, Purbeck Group (composed of formations designated as unproductive strata or Secondary aquifers), Great Oolite Group (composed of formations designated...
as Principal and Secondary aquifers) and any other formations or deposits classified as being Principal or Secondary Aquifers or containing groundwater that is connected to Primary or Secondary Aquifers or other sensitive receptors, such as; Diamicton (unproductive strata); Alluvium (Secondary A aquifer); Head (Secondary undifferentiated aquifer) Head Deposits (Secondary A aquifer); Glaciofluvial deposits (Secondary A aquifer); River Terrace Deposits (Secondary A aquifer); Whitby Mudstone Formation (unproductive strata); Ancholme Group (composed of formations designated as unproductive strata or Secondary aquifers); Selbourne Group (composed of formations designated as unproductive strata); and Wealden Group (Secondary A aquifer);

- Three groundwater abstractions for public water supply (PWS) with groundwater Source Protection Zones (SPZ) located within the study area;
- Seven licensed groundwater abstractions and two reported unlicensed groundwater abstractions present within the study area;
- Surface water features: drain at Church Lane, Wendover; Grand Union Canal (Wendover Arm); Castle Park Stream; Wendover Brook; Stoke Brook; Chalkshire Stream; Stoke Brook and tributaries; Sedrup Ditch; Hartwell Ditch; Lower Hartwell Ditch and drain; tributary of River Thame south of Bear Brook; River Thame; Bear Brook; tributary of Fleet; Marston Brook (field drain from Coney Hill and Fleet Marston Spinney); drain from Upper and Lower Cranwell Farms (tributary of Fleet Marston Brook); tributary of Fleet Marston Brook (near Lower Blackgrove Farm north of the route); headwater of Fleet Marston Brook; headwaters of the Tetchwick Brook and tributaries; River Ray; tributary of the River Ray (Finemere Wood); unnamed lake (Finemere Wood); Muxwell Brook; unnamed lakes at landfill site south-west of Sheephouse Wood; Internal Drainage Board (IDB) drains M24 and M23 south and south-west of Steeple Claydon at Calvert Infrastructure Maintenance Depot (IMD) and tributaries; Calvert Jubilee Nature Reserve LWS; Grebe Lake; IDB drains S75 and S76; Padbury Brook and tributaries; River Great Ouse and numerous small ponds and unnamed drains within 1km radius of the Scheme; and
- Water dependent habitats: Weston Turville Reservoir SSSI; Finemere Wood SSSI; Grendon and Doddershall Woods SSSI; Sheephouse Wood SSSI; Grendon and Doddershall Meadows LWS; Calvert Jubilee Nature Reserve LWS; Calvert Brick Pits LWS; Barton Hartshorn Railway Wood LWS; Calvert Railway Station LWS; Decoypool Wood LWS; Field A Cowley Farm LWS and Turweston Manor Grassland LWS.

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 and therefore at risk of river flooding:

- Stoke Brook;
• Bear Brook;
• Sedrup Ditch;
• Lower Hartwell Ditches;
• River Thame;
• Fleet Marston Brook;
• River Ray;
• Muxwell Brook;
• IDB Ditch M24;
• Padbury Brook; and
• River Great Ouse.

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

• access roads to Woodlands Farm, Upper Greatmoor Farm and Lower Greatmoor Farm are crossed by flood zones;
• residential properties The Paddock, Brook Farm and Moat Farm in the vicinity of Stoke Brook; the village of Fairford Leys in the vicinity of Bear Brook; Three Bridge Mill and Twyford Mill in the vicinity of Padbury Brook; and the village of Westbury in the vicinity of the River Great Ouse;
• Aylesbury Park Golf Club, located in the vicinity of Lower Hartwell Ditches; and
• areas at risk of surface water flooding, as shown on the Environment Agency’s Flood Maps for Surface Water. These are mostly associated with watercourses or dry valleys.

16.2.5 There are two satellite construction compounds within this area that are located in areas at risk from river flooding including the Thame Valley viaduct satellite compound and Westbury viaduct satellite compound.

16.3 Potential sources of contamination

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

16.4 Local control measures

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

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

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

16.4.4 A programme of groundwater and surface water monitoring will be undertaken prior to, during and following completion of the construction works. This will include at risk WFD elements as identified in the ES route wide WFD assessment. This is required to enable further scheme design and for the protection of public water supply and other abstractions with a legal right to abstract water. The monitoring programme scope and duration will be developed and agreed with the Environment Agency in consultation with water bodies. A management strategy will also be agreed with the Environment Agency in consultation with water bodies that will cover any physical mitigation required for the protection of public water supply.

16.4.5 If dewatering from excavations is required, it will be carried out in consultation with the Environment Agency and will take into consideration risks posed to water quality or quantity and not adversely affect those who have a protected right to abstract water.

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

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

16.4.8 Drainage from the works will be attenuated and discharged to watercourses or sewers under agreement at a controlled rate and where required, with approval of the Environment Agency and where appropriate, the drainage authority in accordance with Schedule 33 Part 5 to the Act.

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

16.4.10 Additional information, such as how the Scheme complies with the Water Framework Directive, as well as further provisions for engagement with stakeholders, monitoring

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3Environment Agency (2001), Piling and Preventative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution Prevention
and protection of local water resources are outlined in HS2 Information Paper E1: Control of Environmental Impacts and HS2 Information Paper E4: Water resources and flood risk.
### Appendix 1: Glossary of Terms

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tbody>
<tr>
<td>AP</td>
<td>Additional Provision</td>
</tr>
<tr>
<td>AVDC</td>
<td>Aylesbury Vale District Council</td>
</tr>
<tr>
<td>CFA</td>
<td>Community Forum Area</td>
</tr>
<tr>
<td>CoCP</td>
<td>Code of Construction Practice</td>
</tr>
<tr>
<td>Contractor</td>
<td>The Contractor on a construction site is responsible for planning, managing and co-ordinating themselves and/or the works and all other Subcontractors working on their site, or any other Contractor directly employed by the Nominated Undertaker to undertake key construction works on site.</td>
</tr>
<tr>
<td>CoPA</td>
<td>Control of Pollution Act 1974</td>
</tr>
<tr>
<td>ES</td>
<td>Environmental Statement</td>
</tr>
<tr>
<td>HGVs</td>
<td>Heavy Goods vehicles</td>
</tr>
<tr>
<td>HS2</td>
<td>High Speed 2</td>
</tr>
<tr>
<td>HS2 Ltd</td>
<td>High Speed Two Limited - is a company wholly owned by the Department for Transport, established in 2009 to develop plans for a new high speed network and present a route connecting London - West Midlands.</td>
</tr>
<tr>
<td>IAQM</td>
<td>Institute of Air Quality Management</td>
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<tr>
<td>IP</td>
<td>Information Paper</td>
</tr>
<tr>
<td>LCAs</td>
<td>Landscape character areas</td>
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<tr>
<td>LEMP</td>
<td>Local Environmental Management Plan</td>
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<tr>
<td>LTMP</td>
<td>Local Traffic Management Plan</td>
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<tr>
<td>Nominated Undertaker</td>
<td>The body or bodies appointed to implement the powers of the HS2 Act 2017 to construct and maintain the railway.</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Description</td>
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<tr>
<td>PRoW</td>
<td>Public rights of way</td>
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<tr>
<td>RRVs</td>
<td>Road Rail Vehicles. A vehicle which can operate both on rail tracks and road, often used for railway maintenance.</td>
</tr>
<tr>
<td>RTMP</td>
<td>Route-wide Traffic Management Plan</td>
</tr>
<tr>
<td>SBI</td>
<td>Site of Biological Importance</td>
</tr>
<tr>
<td>Scheme</td>
<td>The Scheme to which this CoCP relates is the high-speed railway between London - West Midlands. This is a high speed railway between London - West Midlands with a connection via the West Coast Main Line at conventional speeds to the North West and Scotland and to the Channel Tunnel via HS1. It includes four high speed rail stations at London Euston, Old Oak Common (West London), Birmingham Airport (Birmingham Interchange) and Birmingham (Curzon Street).</td>
</tr>
<tr>
<td>Section 61</td>
<td>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).</td>
</tr>
<tr>
<td>SES</td>
<td>Supplementary Environmental Statement</td>
</tr>
<tr>
<td>SFRA</td>
<td>Strategic Flood Risk Assessment</td>
</tr>
<tr>
<td>SLI</td>
<td>Site of Local Importance</td>
</tr>
<tr>
<td>SMI</td>
<td>Site of Metropolitan Importance</td>
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<tr>
<td>SPZ</td>
<td>Source Protection Zone</td>
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<tr>
<td>SRP</td>
<td>Soil Resources Plan</td>
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<tr>
<td>SSMP</td>
<td>Site Specific Management Plan</td>
</tr>
<tr>
<td>TMP</td>
<td>Traffic Management Plan</td>
</tr>
</tbody>
</table>
Appendix 2: Non-exhaustive list of Community Groups in Aylesbury Vale

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

<table>
<thead>
<tr>
<th>Political / Councils</th>
<th>HS2 Community Groups</th>
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</thead>
<tbody>
<tr>
<td>MP for Aylesbury</td>
<td>Stoke Mandeville Action Group</td>
</tr>
<tr>
<td>MP for Buckingham</td>
<td>Wendover HS2</td>
</tr>
<tr>
<td>Buckinghamshire County Council</td>
<td>Twyford Stop HS2</td>
</tr>
<tr>
<td>Aylesbury Vale District Council</td>
<td>Chiltern Ridges HS2 Action Group (CRAG)</td>
</tr>
<tr>
<td>Aylesbury Town Council</td>
<td></td>
</tr>
<tr>
<td>Barton Hartshorn Parish Council</td>
<td>Risborough Area Residents Assoc</td>
</tr>
<tr>
<td>Calvert Green PC</td>
<td>Aylesbury Old Town Residents Assoc</td>
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<tr>
<td>Charndon PC</td>
<td></td>
</tr>
<tr>
<td>Chetwode PC</td>
<td>Chiltern Way Federation School</td>
</tr>
<tr>
<td>Coldharbour PC</td>
<td>John Hampden School (Wendover Infant)</td>
</tr>
<tr>
<td>East Claydon PC</td>
<td>Wendover Church of England (CE) Junior School</td>
</tr>
<tr>
<td>Ellesborough PC</td>
<td>John Colet School (Wendover)</td>
</tr>
<tr>
<td>Fleet Marston PC</td>
<td>Stoke Mandeville Combined School</td>
</tr>
<tr>
<td>Great and Little Kimble cum Marsh PC</td>
<td>Sir Henry Floyd Grammar School (Aylesbury)</td>
</tr>
<tr>
<td>Grendon Underwood PC</td>
<td>Mandeville School (Aylesbury)</td>
</tr>
<tr>
<td>Lea PC</td>
<td>Halton Combined Primary School</td>
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<tr>
<td>Preston Bissett PC</td>
<td>Lee Common CofE School</td>
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<tr>
<td>Quainton PC</td>
<td>Booker Park School (Aylesbury)</td>
</tr>
<tr>
<td>Steeple Claydon PC</td>
<td>Waddesdon Church of England School</td>
</tr>
<tr>
<td>Stoke Mandeville PC</td>
<td>Quainton CofE Combined School</td>
</tr>
<tr>
<td>Stone with Bishopstorn and Hartwell PC</td>
<td>Twyford CofE Primary School</td>
</tr>
<tr>
<td>Turweston PC</td>
<td>Steeple Claydon School</td>
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<tr>
<td>Twyford PC</td>
<td>Beachborough School (Westbury , Private)</td>
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<tr>
<td>Waddesdon PC</td>
<td>Aylesbury College</td>
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<tr>
<td>Wendover PC</td>
<td>Bucks New University</td>
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<tr>
<td>Westbury PC</td>
<td>U3A - University of the Third Age</td>
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<tr>
<td>Places of Worship</td>
<td>Businesses (incl groups &amp; Org)</td>
</tr>
<tr>
<td>------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>St Mary’s Church, Wendover</td>
<td>Wendover Chamber of Trade</td>
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<tr>
<td>Fleet Marston Church</td>
<td>Aylesbury Chamber of Commerce</td>
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<tr>
<td>Chetwode Church</td>
<td>FCC Waste Services</td>
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<tr>
<td>Twyford Church</td>
<td>Animal Anticks</td>
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<tr>
<td>St Mary’s the Virgin, Stoke Mandeville</td>
<td>Bucks Railways Centre</td>
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<tr>
<td>Aylesbury Mosque</td>
<td>Bucks Goat Centre (range of businesses)</td>
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<td>Holy Cross and St Mary Church (Quainton)</td>
<td>Whitethornfields Mediclinic</td>
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<td><strong>Other Sensitive Receptors</strong></td>
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<tr>
<td>Stoke Mandeville Hospital</td>
<td>Hartwell House Hotel &amp; Restaurant</td>
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<tr>
<td>The Leonard Pulham Nursing Home</td>
<td>The Weatherhead Group Ltd</td>
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<tr>
<td>Cherry Tree House</td>
<td>Tingewick Pottery at Chetwode Ltd</td>
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<tr>
<td>Fremantle Court</td>
<td>Wendover Financial Ltd</td>
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<td>Chiltern Court Care Home</td>
<td>Frances Cutler Soft Furnishings</td>
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<td><strong>Sport and Recreations</strong></td>
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<tr>
<td>Aylesbury Park Golf Club Limited</td>
<td>Antiques at Wendover</td>
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<tr>
<td>Great Moor Sailing Club</td>
<td>The Barn Courtyard</td>
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<tr>
<td>Wendover Cricket Club</td>
<td>Andrew Gardner</td>
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<tr>
<td>Wendover Air Rifle Club</td>
<td>Christopher Pallet</td>
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<tr>
<td>Ballabeg Stables</td>
<td>Scruples of Wendover</td>
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<tr>
<td>Whitfield Racecourse (S.Northants)</td>
<td>Springfield Farming Ltd</td>
</tr>
<tr>
<td>Get Wendover Cycling</td>
<td>Chiltern Brewery</td>
</tr>
<tr>
<td>Aylesbury Cycling Club</td>
<td>The Flower Gallery, Wendover</td>
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<td>Bucks MTB (mountain bikes)</td>
<td>The Berryfields Consortium</td>
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<tr>
<td>Twyford Cricket Club</td>
<td>The Lea Parish Community Shop Organisation</td>
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<tr>
<td>Ramblers Association (Bucks, MK &amp; West Middlesex)</td>
<td>Network Rail</td>
</tr>
<tr>
<td>Berks Bucks &amp; Oxon Wildlife Trust</td>
<td>East West Rail</td>
</tr>
<tr>
<td>Ernest Cook Trust</td>
<td>Chiltern Railways</td>
</tr>
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Appendix 3: Key Environmentally Sensitive Site Management Plan for Bernwood Forest
1EW03-Enabling Works Central
Bernwood Forest Key
Environmentally Sensitive Worksite
Management Plan

Document no.: 1EW03-FUS-EV-PLN-C002-005239

<table>
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<tr>
<th>Revision</th>
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<th>Checked by</th>
<th>Approved by</th>
<th>Date approved</th>
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<td>13.05.2019</td>
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A report prepared for High Speed Two (HS2) Limited:
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   1.2 Bernwood Forest in the Context of HS2
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2 Overview of upcoming works within Bernwood Forest
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Drawing reference PH1-FUS-GI-MAP-C0oo-000002-Co2 Bernwood Forest In Relation To Phase One Route

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Table 2 Key species drivers for the SSSI designation of each aforementioned woodland
1 Introduction

1.1 Background

1.1.1 The HS2 Environmental Memorandum (https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/593596/Environmental_Memorandum.pdf) identifies key worksites along the Phase One route that are environmentally sensitive. These sites are considered particularly environmentally sensitive in relation to the following environmental topics: nature conservation, terrestrial ecology, water resources, geomorphology, recreation and amenity, landscape, public open space, and agricultural land. The criteria for their selection is set out in the HS2 Environmental Memorandum.

1.1.2 The key environmentally sensitive worksites across Phase One of HS2, from south to north, are:

- Colne Valley;
- Chilterns Area of Outstanding Natural Beauty (AONB);
- Bernwood Forest;
- Radstone and Helmdon Disused Railway; and,
- Berkswell Marsh.

1.1.3 The management plans for these key environmentally sensitive worksites are being prepared and published prior to the commencement of works which may affect them. The preparation and publication of these plans is, therefore, determined by the Phase One construction programme. These plans will be developed as HS2 Contractors develop their designs and programme. The main works contractor will update this version of the management plan in December 2018 before their works are due to begin.

1.1.4 This management plan is for the Bernwood Forest.

1.2 Bernwood Forest in the Context of HS2

1.2.1 The Bernwood Forest area stretches from Edgcott Road north west of Quainton, to the intersection with the Bicester to Bletchley railway line. The length of the HS2 route which passes through the forest is approximately 8km in length. The woodland area that makes up this area of Bernwood Forest totals approximately 24.5ha. The woodland areas that are considered within this management plan include;

- Decoypond wood;
- Sheephause wood;
- Romer wood;
- Greatsea wood;
- Finemere wood;
- Hewins wood;
- Home wood;
- Balmore wood;
1.2.2 All of the forested areas listed above consist of ancient woodlands, however, four of these are also classified as Sites of Special Scientific Interest (SSSI) (Finemere Wood, Sheephouse Wood, Grendon and Doddershall Woods). All of the above mentioned woodlands are located within 3km of HS2 Phase One centre line.

1.2.3 Four of the SSSIs listed above (Finemere Wood, Grendon and Doddershall Woods, Sheephouse wood) also provide important habitat for the nationally important Bechstein’s bat (Myotis bechsteinii), which is considered very rare and near threatened at European level. It is the presence of this very rare bat species that has resulted in the Bernwood forest being classified as an environmentally sensitive worksite. Within the Bernwood Forest this bat species is at the northern most limit of its range and is considered of national value. Other key foraging areas for Bechstein bats are located at Balmore wood, Runts wood, Home wood, Gretease wood and Romer wood. Other woodland bat species within these SSSIs include breeding roosts of Brandt’s, Natterer’s, brown long-eared, Daubenton’s and whiskered bats.

1.2.4 Bat surveys undertaken in the Bernwood forest have identified flight lines and roosts of those bat species listed above. Table 1 summarises the location of flight lines and roosts per bat species.

<table>
<thead>
<tr>
<th>Species</th>
<th>Flight line location</th>
<th>Roost location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bechstein</td>
<td>Grendon wood</td>
<td>Grendon and Doddershall wood</td>
</tr>
<tr>
<td></td>
<td>Finemere wood</td>
<td>Finemere wood</td>
</tr>
<tr>
<td></td>
<td>Sheephouse wood</td>
<td>Sheephouse wood</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Romer wood</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hewins wood</td>
</tr>
<tr>
<td>Brandt’s</td>
<td>Sheephouse wood</td>
<td>Sheephouse wood</td>
</tr>
<tr>
<td></td>
<td>Finemere wood</td>
<td>Finemere wood</td>
</tr>
<tr>
<td></td>
<td>Romer wood</td>
<td>Romer wood</td>
</tr>
<tr>
<td>Natterer’s</td>
<td>Sheephouse wood</td>
<td>Sheephouse wood</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Finemere wood</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Grendon and Doddershall</td>
</tr>
<tr>
<td>Brown long-eared</td>
<td>Grendon and Doddershall wood</td>
<td>Decoypond wood</td>
</tr>
<tr>
<td></td>
<td>Sheephouse wood</td>
<td>Sheephouse wood</td>
</tr>
<tr>
<td></td>
<td>Finemere wood</td>
<td>Finemere wood</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Great sea wood</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hewins wood</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Doddershall wood</td>
</tr>
<tr>
<td>Daubentons’</td>
<td>Alyesbury Link railway</td>
<td>Sheephouse wood</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Finemere wood</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Grendon and Doddershall</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Doddershall wood</td>
</tr>
<tr>
<td>Whiskered</td>
<td>Doddershall wood</td>
<td>Sheephouse wood</td>
</tr>
</tbody>
</table>
1.2.5 Each of the woodlands within Bernwood Forest also support a diverse mix of ecological features some of which are responsible for their special designation, including; native plant species, butterflies, wet woodland rides, ancient woodland, protected bird species, ancient semi natural woodland and bats. Table 2 details the woodland and the qualifying species for its designation.

Table 2  Key species drivers for the SSSI designation of each aforementioned woodland

<table>
<thead>
<tr>
<th>Species</th>
<th>Flight line location</th>
<th>Roost location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finemere wood</td>
<td></td>
<td>Finemere wood</td>
</tr>
<tr>
<td>Sheephouse wood</td>
<td></td>
<td>Doddershall wood</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Home wood</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Great sea wood</td>
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</table>

Fauna Species

<table>
<thead>
<tr>
<th>Species</th>
<th>Woodland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ancient Woodland</td>
<td>Sheephouse Wood</td>
</tr>
<tr>
<td>Purple emperor butterfly</td>
<td>Grendon and Doddershall wood</td>
</tr>
<tr>
<td>Black hairstreak butterfly</td>
<td>Sheephouse wood</td>
</tr>
<tr>
<td>Breeding bird species including woodpecker</td>
<td>Sheephouse wood</td>
</tr>
<tr>
<td>Woodcock</td>
<td>Sheephouse wood</td>
</tr>
<tr>
<td>Nightingale</td>
<td>Grendon and Doddershall wood</td>
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Flora Species

<table>
<thead>
<tr>
<th>Species</th>
<th>Woodland</th>
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<tbody>
<tr>
<td>Grassland habitats;</td>
<td>Decoy pond and Grendon and Doddershall</td>
</tr>
<tr>
<td>Shrubs;</td>
<td></td>
</tr>
<tr>
<td>Sneezewort and fen bedstraw;</td>
<td></td>
</tr>
<tr>
<td>Woodedge;</td>
<td></td>
</tr>
<tr>
<td>Bluebell;</td>
<td></td>
</tr>
<tr>
<td>Primrose;</td>
<td></td>
</tr>
<tr>
<td>Wood millet;</td>
<td></td>
</tr>
</tbody>
</table>

1.2.6 The Bernwood Forest falls within the scope of the Phase One Environmental Statement (ES) Community Forum Area (CFA) Boundaries: CFA12\(^1\) and CFA 13\(^{2}\) within the Phase One High

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1.2.7 The location of the Bernwood Forest in relation to the Phase One route is shown on drawing reference PH1-FUS-GI-MAP-C000-000002-P02.

1.2.8 The Bernwood Forest falls within Buckinghamshire County Council, Aylesbury Vale District Council (AVDC), Calvert Green Parish Council and Charndon Parish Council.

1.2.9 The Bernwood Forest is identified in the HS2 Environmental Memorandum as being a key environmentally sensitive worksite in relation to the following environmental topic areas: Nature conservation, terrestrial ecology and Landscape. The key drivers in the identification of the area as an ESW however is the presence of the Bechstein bat species, as well as landscape sensitivity.

1.3 Purpose of the Management Plan

1.3.1 The purpose of this management plan is to:

- Identify future works potentially affecting Bernwood Forest from Contractors and third parties in relation to HS2;
- Focus on mitigation, compensation and monitoring requirements and opportunities for enhancement in relation to specific environmental topics;
- Identify synergies between different stakeholder organisations in terms of opportunities.

1.3.2 This management plan has been prepared to satisfy the commitments set out within the HS2 Environmental Memorandum and to support the Aylesbury Vale District Council Local Environmental Management Plan (LEMP). The management plan is part of a suite of documents which identify environmental issues, controls and opportunities in relation to the Bernwood Forest including:

- The Environmental Minimum Requirements\(^3\) which contains the CoCP and the HS2 Environmental Memorandum;
- Schedule 17 controls under the High Speed Rail (London – West Midlands) Act 2017\(^4\) (the Act). KESWMP’s will support Schedule 17 submissions and Town and Country Planning Applications within Bernwood Forest and where appropriate, heritage applications under Schedule 18, 19 and 20;
- HS2 Design Policy (see Information Paper D1: Design Policy)\(^5\);
- Ecology Site Management Plans (ESMP). The site-specific ESMP provide the

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\(^3\) Environmental Minimum Requirements as set out within the High Speed Rail (London – West Midlands) Act 2017 - https://www.gov.uk/government/publications/environmental-minimum-requirements

\(^4\) High Speed Rail (London – West Midlands) Act 2017 provides legislative power to HS2 Ltd. to construct the Phase One of the high speed railway between London and West Midlands. https://services.parliament.uk/bills/2016-17/highspeedraillondonwestmidlands.html

\(^5\) https://www.gov.uk/government/publications/hs2-information-papers-construction
maintenance and management requirements for ecological mitigation sites;

- Landscape Maintenance, Management, Monitoring Plans (LMMMP). Site-specific LMMMPs provide the maintenance, management and requirements for landscape planting sites;

- Protective provisions. The Act also contains provisions which give protection to bodies affected by the scheme. These include: highway authorities, utility undertakers, the Environment Agency, the Canal and Rivers Trust, and harbour and airport authorities. Typically these provisions enable HS2 Contractors to undertake works affecting their infrastructure but require approval of the details to be obtained. Paragraph 12 of Schedule 31, Part 1 of the Act requires the nominated undertaker not to deposit soil or material, or store any plant, or erect scaffolding or other structures, in or over a highway without the consent of the highway authority;

- Legally binding consenting and licensing process. Hs2 Limited will be submitting a bat licence application to Natural England to carry out works that impact bats within the forest and consents will be arranged via the HS2 consenting system;

- The Environmental Management Systems implemented by HS2 Contractors (as defined in the CoCP) including contract level and site level environmental management plans. Environmental Management Plans (EMP) will be produced by subcontractors per individual site and therefore boundaries and locations of site level EMPs will differ accordingly. The EMPs will subsequently be reviewed and accepted by Fusion and HS2.

1.3.3 Greatmoor Siding falls within the Bernwood Forest area so this management plan accounts for additional impacts and mitigation highlighted within the TWAO ES. Specific control measures set out in the Greatmoor Siding TWAO planning conditions and recommendations are also included.

1.4 Process of developing the management plan

1.4.1 On 16 November 2016 contracts were awarded to three Enabling Works Contractors (EWC) working across Phase One of HS2. The EWC contracts run until November 2020 with an option for HS2 to extend these for a further two years.

1.4.2 Fusion are the EWC for Area Central. Area Central covers an area of the Phase One route from east of Harvil Road in the London Borough of Hillingdon to Southam in Warwickshire and is split into three sectors (C1, C2 and C3).

1.4.3 Fusion have produced this management plan on behalf of HS2. Fusion is a joint venture between Morgan Sindall Infrastructure Services, BAM Nuttall Ltd and Ferrovial Agroman.

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1.4.4 On 17 July 2017 contracts were awarded for HS2’s Main Works Civils Contractors (MWCC). The MWCC covering the Bernwood Area in Sector C2 are EK. EK are a joint venture between Eiffage and Kier.

1.4.5 HS2 Contractors are working collaboratively, along with relevant third parties such as utilities companies, in relation to works within Bernwood Forest.

1.4.6 The EWC have been carrying out a range of survey and investigation works, which commenced in early 2017 and have continued through into 2019. The EWC have carried out some work including the provision of early ecological mitigation sites. In the coming months Fusion will undertake protected species translocation, ancient woodland compensation planting and translocation of ancient woodland soils, fencing, access works and minor utilities diversion. Opportunities to improve and enhance Bernwood Forest will be identified throughout the enabling works design processes.

1.4.7 There are 10 advanced planting sites currently being designed within the Bernwood Forest area that will be constructed ahead of main works. These will compromise woodlands, grassland, hedgerows and bat flight paths. The EWC will also construct a network of woodland and hedgerow planting sites across the Bernwood area.

1.4.8 This management plan currently focuses on enabling works planned between spring 2019 and winter 2019. The MWC will update this management plan in December 2018 before their works are due to begin.

1.4.9 This management plan is intended to be reviewed and updated prior to main construction works taking place within Bernwood Forest and will be updated in autumn of 2019. Updates of publication will be in line with publication of the LEMP. Further updates of this document will be carried out on a 6 monthly basis.

1.5 Consultation

1.5.1 National Environment Forum (NEF) members and relevant planning authorities will be consulted on the KESWMP following requirements within the HS2 Environmental Memorandum.

1.5.2 Copies of the updated plan will be made available for consultees electronically. Comments from the consultees will be collated for consideration of further updates and amendments.

1.5.3 Following the Environmental Memorandum commitments, the management plan will be submitted with relevant Schedule 17 submissions to local planning authorities and, where appropriate, heritage applications.

1.5.4 HS2 Contractors will work closely with Natural England, Woodland Trust, Environment Agency, Aylesbury Vale District Council, FCC Ltd, Claydon Estate, National Trust, East West Rail Alliance and Network Rail communicating and consulting as appropriate on works within the area.
1.5.5 HS2 and its Contractors are in discussion with the Forestry Commission on the issue of soil translocation, ash dieback and biosecurity and will be preparing Statutory Plant Health Notices (Movement) for soil translocations where relevant.

2 Overview of upcoming works within Bernwood Forest

2.1 General

2.1.1 HS2 has been carrying out ecological surveys within the Bernwood Forest since 2012. Fusion have continued these ecological surveys within the vicinity of the Bernwood Forest since early 2017 and will continue throughout the duration of works to be completed in the area as detailed below.

2.1.2 The HS2 Phase One ES included proposals to relocate a railway siding that operates Calvert landfill site and Greatmoor Energy from Waste (EfW) facility at Calvert. The siding relocation was originally set to be at the east side of the Aylesbury Link railway line and the proposed HS2 alignment, north of Decoypond Wood. FCC Waste Services UK ltd (operator of Calvert landfill site and EfW), Buckinghamshire County Council (BCC), Aylesbury Vale District Council (AVDC), Calvert Green Parish Council, Charndon Parish Council and local residents petitioned against HS2 Ltd during the House of Commons Select Committee on the original siding location. Following the recommendations from the Select Committee, HS2 Ltd has applied for a Transport and Works Act Order (TWAO) to relocate the siding to the south of Sheephouse Wood. From hereafter the new siding location is referred as Greatmoor Siding.

2.2 Enabling works

2.2.1 Enabling works will take place between 2018 and 2019, at the locations listed below and comprise the following scope of works:

- planting of mitigation (bat foraging areas and flightlines) including woodland habitat creation along the River Ray, tree screening and grassland habitat creation at Woodlands Farm, woodland creation adjacent to Hewin’s Wood Bridleway between Finemere Wood, Romer and Greatsea Wood, and Sheephouse Wood;

- planting of mitigation (bat foraging areas and flightlines) including woodland habitat creation between Sheephouse Wood and Decoypond Wood and between Decoypond Wood and School Hill green overbridge;

- Habitat creation and tree planting at Decoypond wood, seeding and planting at Hewins farm and ancient woodland translocation and tree planting at the River Ray; and

- School Hill Under Track Crossing (UTX), utility railway crossing, commencing in autumn/ winter 2019.
2.2.2 Additional survey works will also be carried out prior to advanced planting, ancient woodland translocation and vegetation clearance during main works. Below is a list of the type of surveys to be carried out and the location:

- Great Crested Newt surveys at Quainton south embankment, Doddershall; embankment Grendon Underwood embankment, Calvert IMD;
- Bats surveys within the Bernwood area including surrounding woodlands to inform the Bernwood bat licence;
- National Vegetation Classification (NVC), tree, disease and pest surveys are to be undertaken at Finemere Wood, Decoypond wood, and Sheephouse wood. These surveys are required to ensure that the soil and trees types to be translocated are compatible between the donor and receptor sites. They are also required to ensure that the soils/trees are uncontaminated;
- Soil surveys are to take place at Sheephouse wood and Decoypond wood, Finemere Wood; and
- Archaeological surveys are currently ongoing covering a variety of sites and heritage assets within the forested areas of Bernwood. Ground penetrating surveys have been carried out in order to determine if trial trenching is required and other subsequent investigations are required. Ground penetrating surveys have identified the potential for archaeological assets at Decoypond wood and trial trenching is planned later in 2018.

2.2.3 National Grid will be carrying out diversion works of an overhead line adjacent to the Bernwood Forest area at approximate chainage 74,000. These works will not directly affect any of the wooded areas.

Main works

2.2.4 Main works are due to begin in 2019 and will continue for approximately five years. Main works will consist of vegetation clearance, site preparation works, earthworks and the construction of various structures; the following assets are planned near and within the Bernwood Forest area:

- Edgcott Road Overbridge
- Woodlands Culvert
- Adam's Accommodation Underbridge
- Grendon Underwood Embankment
- Finemere Wood Culvert Extension
- Bridleway QUA/36 Accommodation Green Overbridge
- Greatmoor No. 2 Culvert
- Greatmoor No. 1 Culvert
- Bridleway GUN/28 Accommodation Green Overbridge
- Footpath CAG/2 Underbridge
- Muxwell Brook Culvert
- Greatmoor No. 3 Culvert
- Sheephouse Wood South Culvert
- Sheephouse Wood Mitigation Structure
- Greatmoor No. 4 Culvert
- Sheephouse Wood North Culvert
- Calvert Cutting
- Footpath SCL/13 Green Overbridge
- Aylesbury Link Realignment
- Waste Transfer Siding Access
- Calvert Green Overbridge
- Calvert Sidings Accommodation Overbridge
- School Hill Green Overbridge
- Footpath SCL/8 Overbridge

2.2.5 There are five green overbridges in the Bernwood Forest area, all of which are Type 1 due to the presence of Bechstein’s bat. The green overbridges are proposed to help maintain the ‘Favourable Conservation Status’ (FCS) of this species as well as other species of conservation value within Bernwood Forest (see section 1.2 above for further details on these species). The green overbridges will help maintain connectivity between the different woodland areas, enhancing habitat connectivity while also helping avoid direct collision of bat species during the operation of HS2.

2.2.6 Greatmoor siding and associated civil and drainage works are also within the Bernwood Forest area and will be constructed along with other civil assets.

2.2.7 As the structures and earthworks are currently in early scheme design stage, further design and construction information will be provided in the next update of this management plan. However, the environmental and ecological constraints of this area are well known and opportunities to improve and enhance Bernwood Forest will be identified and considered throughout the design processes.
2.3 Impacts, mitigation and enhancement opportunities

Nature Conversation, Terrestrial Ecology

2.3.1 Without mitigation or compensation the construction of the HS2 railway would have significant permanent adverse effects that are significant to a variety of ecological receptors up to a national level. Effects would range from the destruction/fragmentation of a variety of habitat types and direct/indirect effects on fauna species including; bats, Great Crested Newts and butterflies. Below outlines the mitigation and compensation measures proposed from the HS2 Phase 1 Environmental Statement:

- Within the Bernwood area elements of five separate ancient woodlands will be translocated. Translocation of ancient woodland soils to areas adjacent to proposed woodland creation areas between Finemere and Sheephose Woods. The loss of ancient woodland has the potential to impact on bat populations where roosts have been identified. The loss of the ancient woodland will be compensated through a range of measures. Ancient woodland soil with its associated seed bank will be salvaged and translocated to an approximately 5.7ha receptor site that will be adjacent to northern and eastern edges of the site that will link it to Sheephose Wood SSSI. This will increase connectivity for bats between the woodlands. To secure the long term viability of the receptor translocation sites HS2 will implement management plans that are due to last for 50 years.

- To further reduce the fragmentation of the mosaic of ancient woodland a program of new planting will also be carried out. This will not only help compensate for the loss of trees associated with the HS2 route but also provide connectivity across the area and help guide bats to green bridges constructed by the MWC. Tree planting will be undertaken by hand to reduce the use of machinery and potential disturbance to bats within the neighbouring forests. Planting will also occur during daylight hours which will reduce the need for tower lighting which could cause further disturbance.

- The planting will be undertaken from autumn 2019 through to the start of spring 2020 as this will avoid the bat maternity season and also coincides with bat hibernation period, further reducing the potential for disturbance.

- Increasing the connectivity of the existing woodland and hedgerow features will enhance existing linear vegetative features used by bats for foraging routes and flight lines. This will enable bat flight routes to be manipulated, encouraging the bats to be directed away from the HS2 route whilst main works activities are taking place. These planting sites will be will be a key factor in in ensuring that the green bridges to be constructed by the MWC will become part of the surrounding landscape and are integrated into the mosaic of existing woodlands and hedgerows of the area. It is expected that the green bridges will be positioned so the existing flight lines across the HS2 route are maintained.

- In total 29 km of new hedges will be planted and the species composition of the new hedgerow will be tailored to match that of those in the surrounding area. Hedgerow
removal will be carried out during main works by the MWC. An update will be provided in the next update of this document outlining where hedgerow will be lost.

- Within the area of the Great Moor sidings railway the EWC will carry out a planting regime to encourage bat species away from the HS2 route and the existing railway line and towards the existing ancient woodland at Finemere wood and Great Sea wood. An ancient woodland receptor site is also being designed to compensate for the loss of ancient woodland at Decoypond wood.

- A network of planted areas on either side of the proposed railway will guide bats to crossing points and link existing woodlands. This includes linear planting to link Sheephouse Wood, Decoypond Wood and Calvert Jubilee Nature Reserve LWS, as well as links between ancient woodlands to the north-east of the proposed railway. For Bechstein’s bats as well other species, the proposed mitigation described above will mitigate the fragmentation of hedges and treelines that currently link woodland either side of the proposed railway north of the Edgcott Road to School Hill Road and thus enable the bats to reach habitat required for breeding and foraging.

- The loss of colonies of black hairstreak butterfly will be mitigated for by planting blackthorn on the green bridges detailed earlier and in the habitat creation areas described above in relation to mitigation of habitat fragmentation for bats.

- Compensatory habitat to address impacts on great crested newt metapopulations at Calvert Jubilee LWS and Calvert Brick Pits LWS, and those potentially affected to the south of School Hill and near Rose Hill Farm south of Steeple Claydon will be provided within approximately 4.4ha of linear planting linking Decoypond Wood and Sheephouse Wood.

- Habitat loss from Grendon and Doddershall Meadows LWS will be mitigated by restoration of damp neutral grassland on areas affected during construction and creation of drier grassland on the landscape earthwork. Approximately 30ha of additional species-rich grassland will be created on adjacent fields. These fields have similar topography and are likely to have similar soils to the LWS. Therefore, they are likely to be suitable for replicating the damp species-rich neutral grassland for which the site is designated. They will also be used as a receptor site for grassland that will be translocated from the LWS. Due to the extent of habitat creation and measures to ensure the establishment there will be no significant effect on the conservation status of lowland meadow.

In addition to the mitigation proposal listed above, an early habitat creation site at Woodlands Farm has already been implemented by the EWC. This early habitat creation site is to enable protected species translocation programmed for spring/summer 2019.

Mitigation measures to address the potential killing, injury and disturbance of badgers will include the provision of badger proof fencing and replacement setts where necessary. New planting within the ecological mitigation areas will benefit badgers present in those areas by improving foraging habitat and providing new opportunities for sett creation.
2.3.4 HS2 have obtained route wide licence for badger (License number WML-OR24) and Great Crested Newt (License number WML-OR25) which outlined a series of conditions/activities that can be carried out, which will minimise impacts on these species provided the correct procedures are followed.

2.3.5 A bat licence has been prepared by Fusion to permit licensable works within the Bernwood area. The bat licence was accepted and issued by Natural England on 12/04/2019.

2.3.6 Ecology Site Management Plans (ESMP) will be developed which will outline the specific monitoring requirements for individual habitat creation and mitigation planting sites.

2.3.7 Opportunities for enhancement will be identified during detailed design and through discussion with consultees including Natural England, Woodland Trust and AVDC.

**Landscape and Visual**

2.3.8 General mitigation measures have been outlined within the Aylesbury Vale District LEMP and as a result are not discussed further within this document.

2.3.9 As mentioned above, a series of woodland and hedgerow planting will take place in autumn/winter 2019 to allow for habitat connectivity and create additional bats flight lines along some of the ancient woodlands and LWS. This will enhance and improve landscape amenity value for pedestrians that utilise these nearby public right of ways.

2.3.10 The various green bridges proposed along Hs2 aim to blend in the new infrastructure with the surrounding landscape which in terms should improve visual amenity for the local community and pedestrian alike.

2.3.11 As a result of the new Greatmoor Sidings location, additional planting has been proposed adjacent to existing Hs2 mitigation planting. This will create a vast wooded area and in time will reduce visual impact to nearby receptors.

2.3.12 Not all landscape and visual effects can be practicably mitigated due to the visibility of construction activity and the sensitivity of surrounding receptors. Therefore, no other mitigation measures are considered practicable during construction.

2.3.13 Landscape planting will be monitored in accordance with Landscape, Maintenance, Management and Monitoring Plans which will be produced at detailed design stage for landscape mitigation planting sites by Fusion.

2.3.14 Opportunities for enhancement will be identified during detailed design and through discussion with consultees including Natural England, Woodland Trust and AVDC. Opportunities for improvement may include removal of selected trees and vegetation masses to create glades, enhance woodland ride edges and the woodland edge. All works are aimed at improving habitat diversity and increasing variation in the woodland structural layers.
3 Summary

3.1.1 This management plan addresses the impacts associated with Bernwood Forest. The nature conservation, terrestrial ecology and landscape impacts have been assessed and opportunities for enhancement within Bernwood Forest will be identified throughout design stages.

3.1.2 The KESWMP will be reviewed and revised as appropriate and on a six monthly basis by HS2 and its Contractors.
Appendix 4: Key Environmentally Sensitive Site Management Plan for Chiltern AONB
1EW03 - Enabling Works Central Chilterns Area of Outstanding Natural Beauty – Key Environmentally Sensitive Worksite Management Plan

Document no.: 1EW03-FUS-EV-PLN-C000-002013

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1 Introduction

1.1 Background

1.1.1 The HS2 Environmental Memorandum (https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/593596/Environmental_Memorandum.pdf) identifies key worksites along the Phase One route that are environmentally sensitive. These sites are considered particularly environmentally sensitive in relation to the following environmental topics: nature conservation, terrestrial and aquatic ecology, water resources, geomorphology, recreation and amenity, landscape, public open space, and agricultural land. The criteria for their selection is set out in the HS2 Environmental Memorandum.

1.1.2 The key environmentally sensitive worksites across Phase One of HS2, from south to north, are:

- Colne Valley;
- Chilterns Area of Outstanding Natural Beauty (AONB);
- Bernwood Forest;
- Radstone and Helmdon Disused Railway; and,
- Berkswell Marsh.

1.1.3 The management plans for these key environmentally sensitive worksites are being prepared and published prior to the commencement of works which may affect them. The preparation and publication of these plans is, therefore, determined by the Phase One construction programme. These plans will be developed as HS2 Contractors develop their designs and programme.

1.1.4 This management plan is for the Chilterns AONB.

1.2 The Chilterns AONB in the Context of HS2

1.2.1 The Chilterns AONB stretches from the River Thames in Oxfordshire to Hitchin in Hertfordshire, covering approximately 833 km in area. The AONB is nationally protected and was designated in 1965, under the National Parks and Access to the Countryside Act 1949, for its outstanding natural beauty. All relevant authorities must have regard to the purpose of conserving and enhancing its natural beauty when performing their functions, as required under Countryside and Rights of Way Act 2000.

1.2.2 The Phase One HS2 route is in tunnel through the Chilterns AONB from Chalfont St Giles to South Heath; the HS2 route then passes overland through the AONB from South Heath to just north of Wendover. A map of the Chiltern AONB in relation to the Phase One route is shown on drawing reference: PH1-HS2-GI-MAP-C000-000001.
1.2.3 The Chilterns AONB falls within the scope of three Environmental Statement (ES) Community Forum Area (CFA) Boundaries: CFA 8 Chalfonts and Amersham; CFA 9 Central Chilterns and CFA 10 Dunsmore, Wendover and Halton. These documents provide detail of the assessment of the route, outline of the work and sensitive receptors.

1.2.4 The Chilterns AONB falls within Chiltern District Council, Wycombe District Council and Aylesbury Vale District Council areas. It is identified in the HS2 Environmental Memorandum as being a key environmentally sensitive worksite in relation to the following key environmental topic areas:

- Nature conservation and terrestrial and aquatic ecology;
- Water resources and flood risk;
- Recreation and amenity impacts and public open space;
- Landscape and visual; and,
- Agricultural land.

1.3 Purpose of the Management Plan

1.3.1 The purpose of this management plan is to:

- Identify future works potentially affecting the Chilterns AONB from Contractors and third parties in relation to HS2;
- Focus on mitigation, compensation and monitoring requirements and opportunities for enhancement in relation to specific environmental topics;
- Identify synergies between different stakeholder organisations in terms of opportunities.

1.3.2 This management plan has been prepared to satisfy the commitments set out within the HS2 Environmental Memorandum and to support the Local Environmental Management Plan (LEMP) for Chilterns and Wycombe District Council area and Aylesbury Vale District Council area. The management plan is part of a suite of documents which identify environmental issues, controls and opportunities in relation to the Chilterns AONB including:

- The Environmental Minimum Requirements which contains the CoCP and the HS2 Environmental Memorandum;
- Schedule 17 controls under the HS2 Act 2017 (the Act). KESWMP’s will support Schedule 17 submissions and Town and Country Planning Applications within the Chilterns AONB and where appropriate, heritage applications under Schedule 18, 19 and 20;
- HS2 design policy. This management plan supports the Detailed Design Principles developed by the Chilterns AONB review group as set out in the HS2 Chilterns Integration and Enhancement Plan, Part 1 (November 2017);
Ecology Site Management Plans (ESMP). The site-specific ESMP provide the maintenance and management requirements for ecological mitigation sites; two of which are proposed within the AONB: Park Hill, Bury Farm and Chalfont St Peter (located 500m from the AONB boundary);

Protective provisions. The Act also contains provisions which give protection to bodies affected by the scheme. These include: highway authorities, utility undertakers, the Environment Agency, the Canal and Rivers Trust, and harbour and airport authorities. Typically these provisions enable HS2 Contractors to undertake works affecting their infrastructure but require approval of the details to be obtained. Paragraph 12 of Schedule 31, Part 1 of the Act requires the nominated undertaker not to deposit soil or material, or store any plant, or erect scaffolding or other structures, in or over a highway without the consent of the highway authority;

Legally binding consenting and licensing process. HS2 Limited will be submitting licenses and consents in accordance with the Schedules of the Act; and,

The Environmental Management Systems implemented by HS2 Contractors (as defined in the CoCP) including contract level and site level environmental management plans.

1.3.3 There is a commitment in the document The Chilterns AONB Management Plan 2014-2019: A Framework for Action (http://www.chilternsaonb.org/conservation-board/management-plan.html) to: conserve and enhance the natural beauty; increase understanding and enjoyment of the area; foster social and economic well-being; preserve the natural beauty; and increase visitors’ understanding and enjoyment of the landscape. HS2 and its Contractors support these principles and aim to seek opportunities for shared delivery.

1.4 Process of developing the management plan

1.4.1 On 16 November 2016 contracts were awarded to three Enabling Works Contractors (EWC) working across Phase One of HS2. The EWC contracts run until November 2020 with an option for HS2 to extend these for a further two years. Fusion are the EWC for Area Central. Area Central covers an area of the Phase One route from east of Harvil Road in the London Borough of Hillingdon to Southam in Warwickshire and is split into three sectors (C1, C2 and C3). The approximate boundaries of the Area Central sectors relevant to the AONB are shown on drawing reference: PH1-HS2-GI-MAP-C000-000001

1.4.2 Fusion have produced this management plan on behalf of HS2 Ltd. Fusion is a joint venture between Morgan Sindall Infrastructure Services, BAM Nuttall Ltd and Ferrovial Agroman.

1.4.3 The EWC are carrying out a range of survey and investigation works which commenced in early 2017. The EWC will also be carrying out some construction work including the provision of early ecological mitigation sites. Fusion have produced this plan as they are the first Contractor to carry out works within the vicinity of the Chilterns AONB.
1.4.4 On 17 July 2017 contracts were awarded for HS2’s Main Works Civils Contractors (MWCC). The MWCC covering the Chiltern AONB area are EK (for sectors C2 and C3) and ALIGN (for sector C1). EK is a joint venture made of Eiffage and Kier. ALIGN is a joint venture between Sir Robert McAlpine, Bouygues TP, and Volker Fitzpatrick. The MWCC are currently developing the scheme design and the programme for the main civils construction works.

1.4.5 EK started ground investigation within the Chiltern AONB 2018. The earliest start date on site for ALIGN in the Chilterns AONB will most likely be at the Chalfont St Giles vent shaft site, currently anticipated for 2020. ALIGN are undertaking ground investigation works throughout the summer of 2018 and this includes sites through the AONB on the line of the Chiltern Tunnel. This will include pump tests at the proposed shaft locations in 2020. The GI is supported by a temporary compound at the Chalfont St. Peter shaft location. This is outside of the AONB designation. It is anticipated that EK will take the lead on updating this management plan in 2019 as they will be implementing the majority of above ground construction works affecting the AONB.

1.4.6 HS2 Contractors are working collaboratively, along with relevant third parties such as utilities companies, in relation to works within the Chiltern AONB, such as National Grid.

1.4.7 As the MWCC are still developing their design and construction programme this management plan currently focuses on works being undertaken by Fusion within the AONB which includes surveying, surface and groundwater monitoring, creation of ecological mitigation sites and tree planting, as well as utilities diversions and minor road works. It is also expected that the majority of opportunities within the AONB will be identified by the MWCC through the design process. Therefore, the opportunities identified at this stage are limited.

1.4.8 This management plan is intended to be reviewed prior to any construction works taking place within the AONB, whenever there is a significant change to works proposed in line with the revision of the LEMPS or on a six monthly basis, whichever is soonest. Updates of publication will be in line with publication of the LEMP. This document is revised on a six-monthly basis. This document is currently managed by Fusion and is expected to be handed over to the MWCC’s, ALIGN and EK in late 2019.

1.5 Consultation

1.5.1 National Environment Forum (NEF) members and relevant planning authorities will be consulted on the KESWMP following requirements within the HS2 Environmental Memorandum. In addition, the Chiltern AONB Review Group and the Chilterns Conservation Board will be consulted on this plan.

1.5.2 Copies of the updated plan will be made available for consultees by e-mail following revision. Comments from the consultees will be collated for consideration of further updates and amendments. Comments and discussions from attendance by HS2 and its Contractors at the Chiltern AONB Review Group Panel will also be taken into account for updates and amendments.
Following the Environmental Memorandum commitments, the management plan will be submitted with relevant Schedule 17 submissions to local planning authorities and, where appropriate, heritage applications.

1.5.4 HS2 Contractors will work closely with the Chilterns AONB Review Group, communicating and consulting as appropriate on works within the area. The Review Group provides recommendations on design and mitigation proposals for their section of the HS2 route. Regular representation at the AONB Review Group by the HS2 Contractor leading on production and updates of the KESMP is beneficial to all parties to identify areas of concern, possible mitigation and compensation planting or alternatives that can be incorporated into design.

2 Overview of upcoming works within the Chilterns AONB

2.1 General

2.1.1 Fusion have been carrying out a range of survey and investigation works within the vicinity of the Chiltern AONB which commenced in early 2017 and 2018 and will continue throughout 2019. Works include:

2.1.2 Environmental surveys such as ecological surveys, groundwater monitoring and surveys to support hydrological modelling. There will also be surveys to identify invasive species, such as Japanese knotweed, to support plans for future treatment and control; and,

- Engineering surveys, including soil surveys;
- Construction of ecological mitigation sites;
- Design and construction of advanced planting sites;
- Haul road and minor road works;
- Utility diversions; and,
- Archaeological investigations.

2.2 Enabling works

2.2.1 The first construction works by the EWC in the AONB was the creation of the Bury Farm ecological mitigation site, at South Heath, in mid-2018. The Bury Farm ecological mitigation site will provide suitable habitat for great crested newts and reptiles as well as compensation to replace loss of grassland and woodland in the AONB. Bury Farm ecological mitigation site is the results of an undertaking and assurance and is not shown on ES plans. The site contains woodland, scrub and hedgerow planting and will include artificial bat roosts. The site forms...
part of the creation of a mosaic of grassland and wetland habitat to the west of the new high-speed railway to compensate for similar habitat lost.

2.2.2 Park Hill ecological mitigation site, at South Heath, is also in the AONB and construction was completed in May 2018. The site has similar objectives as Bury Farm ecological mitigation site though this site will also include a bat barn to mitigate for the loss of a bat roost at Park Hill Manor House. The new roost will be constructed and completed prior to the commencement of the demolition works. The location of the Park Hill ecological habitat creation site is shown in Supplementary Environmental Statement (SES) and Additional Provision (AP) 4 maps (CFA9 Volume 2 Map Books CT-06 033).

2.2.3 Chalfont St Peter mitigation site is located 500m from the AONB and information on this can be found within the Environmental Statement (CFA8 Volume 2 Map Books CT-06 024). Construction of the mitigation site was completed in mid-2018. There is ongoing maintenance works which includes grass cutting and pond maintenance which is due to be completed in 2020.

2.2.4 Planting of both Park Farm, Bury Farm and Chalfont St Peter ecological mitigation sites will contribute to HS2 aim of “no net loss” in relation to biodiversity.

2.2.5 Advance landscape planting by EWC is currently anticipated to start in late 2020. The designs for these planting sites have not been finalised; they will take account of the Detailed Design Principles developed by the Chilterns AONB review group as set out in the HS2 Chilterns Integration and Enhancement Plan, Part 1 (November 2017). In the Chiltern AONB the proposed advanced landscape planting sites are:

- Jones Hill Wood – planting outside Wendover Dean to allow for compensation for loss of ancient woodland and connectivity between fragmented woodland. The Jones Hill Wood planting site will also act as an ancient woodland soils receptor site from the ancient woodland to be affected by MWCC works at Jones Hill Wood.

- The MWCC will undertake work on the following in regard to advance planting;
  - Leather Lane – planting along the lane adjacent to the embankments of proposed overbridges to integrate the linear alignment into the landscape;
  - Leather Lane – planting adjacent to the Park Hill ecological mitigation site to diminish the impacts of the re-aligned Leather Lane

- Work on advance planting is due to start in 2020.

2.2.6 A utility connection at South Heath was completed in February 2019. An additional utility diversion (400kV diversion) is due commence in September 2019. This work will be carried out by NGET at the following locations; north and south of Wendover and Great Missenden. The work is planned for approximately 12 months. The work involved will include the construction of temporary towers, the installation of new towers and commissioning the line. The temporary and existing towers will then be removed at diversion location.
2.2.7 Ecological mitigation, vegetation clearance and archaeological investigation work is undertaken prior to utility diversion works.

2.2.8 The MWCC will commence utility diversion along the Chiltern AONB in January/February 2020. Further information on these diversion works will be included in the next revision.

2.2.9 Fusion will be widening Bottom House Farm Lane; this is currently at scheme design, with construction anticipated to start in late 2019. Surveys to support the design commenced in May 2018. Fusion will be constructing a the haul road which will connect with the A413.

2.2.10 Archaeological investigations including geophysical (non-intrusive) surveys and trial trenching commenced in early 2018 at a number of sites in the AONB. Geophysical surveys were completed February 2019 of the site along the AONB.

2.2.11 Trial trenching has been ongoing within the AONB along the HS2 route as of mid-2018. The trial involves excavating shallow shallows trenches to unearth any historical findings. The trench sizes are estimated 30m long, 2m wide ~0.3m deep. Any historical findings discovered by the archaeology team are then reported to Fusion and HS2.

2.2.12 Fusion are currently liaising with the MWCC EK, to define the scope of works for the trial trenching to be undertaken at the Grim’s Ditch site. The scope of work is to excavate 3 No. large, stepped trenches. The three trenches will be located across the earthwork remains of the monument itself. The plan is currently under review with HS2, Buckingham County Council and Historic England.

2.2.13 No main vegetation clearance has commenced in the Chiltern AONB at present. However, it is anticipated that AW5 and AWE2 will begin vegetation clearance in 2020. Under the AW5 work package, EWC will carry out erection of security fencing, vegetation clearance, and species translocations in the area prior to MWCC carrying out construction.

2.2.14 There have been no in-combination impacts or multiple consenting process impacts identified from the EWC scope of work prior to MWCC mobilising on site. There have been no other development projects identified which are considered to lead to in-combination impacts on the Chiltern AONB with the proposed HS2 works.

2.2.15 There are other survey works anticipated to be carried out by the EWC for which the details and programme are currently being developed:

- Translocation of protected species into the ecological habitat creation sites at Park Hill, Bury Farm and Chalfont St Peter; and,
- Assessment of hedgerow translocation and carrying out habitat translocation.

2.2.16 The following sections focus on the purpose of this KESWMP in relation to the technical topics identified in section 1.2.
2.3 **Ground investigation**

2.3.1 ALIGN have produced Environmental Management Plans to manage any potential effects arising during GI. Risk assessments are being undertaken for heritage and noise and pre-commencement ecological surveys are being conducted. Proposals for boreholes and pump testing are being discussed with Affinity Water and the Environment Agency.

2.4 **Third Party Works (Utilities)**

2.4.1 There are 118 utility works recognised within the Chiltern AONB. All of which will be undertaken by a utility contractor or by MWCC. The works include examples such as communication connections, sewer connections, low pressure mains and high-pressure gas mains. The work has been identified in various locations ranging from fields and footpaths to access tracks and roads.

2.5 **Topic areas**

**Nature Conversation, Terrestrial and Aquatic Ecology\Mitigation, Compensation and Monitoring Requirements**

2.5.1 The Park Hill and Bury Farm ecological mitigation sites are mitigation for the loss of habitat due to the construction of HS2. The ecological mitigation sites have been designed with the intention of maximising the potential quality of the available habitat on each site. Both sites have a bespoke maintenance, management and monitoring requirements to achieve the ecological objectives of that site.

2.5.2 Standard construction control measures specific to the locality have been outlined in Table 1 of the Chiltern and Wycombe Local Environmental Management Plan (Document Ref: 1EW03-FUS-EV-PLN-000-002626) and Table 1 of the Aylesbury Vale Local Environmental Management Plan (Document Ref: 1EW03-FUS-EV-PLN-C000-002627) and support the ecological mitigation as specified in the Environmental Statement (ES). Fusion will use method statements and construction management plans to ensure the environmental effects associated with construction are identified, planned for and managed in addition to those identified in the consents and licenses. Fusion and HS2 assure that these controls are being implemented through regular site visits, inspections and audits.

2.5.3 Whilst there have been protected species identified near the ecology mitigation sites there are no identified adverse impacts on them due to the scale and timing of the EWC construction works.

2.5.4 New packages of work will be reviewed and assessed for any impacts on the nature conservation, terrestrial or aquatic ecology and appropriate mitigation and compensation requirements implemented. The translocation of protected species will be carried out in accordance with the respective licenses and method statements produced by Fusion.
2.5.5 Monitoring requirements for protected and other species, and habitats, are determined through the licence application processes and through the ESMP for ecological mitigation sites. Monitoring of mitigation measures is required in the EMR’s (para 6.5). Fusion will comply with HS2 Limited’s route-wide licence for great crested newts and Badgers and will implement the class licence for bats where relevant. The early ecological mitigation sites are being created as receptors for protected species such as great crested newt as required under the HS2 route-wide licence.

2.5.6 The site-specific ESMP will be consistent with the requirements of the Environmental Minimum Requirements Annex 4: Environmental Memorandum on management and monitoring (section 4.8). Section 4.8.6 states:

2.5.7 “Monitoring of the ecology mitigation and compensation measures is necessary to measure the extent to which the ecological objectives of the proposals are being met. The approach to monitoring will vary depending upon which management option is adopted for a particular area of habitat and will be agreed on a site-specific basis. Broad generic indications of the likely durations of monitoring, maintenance and management during the establishment period for those habitats affected by the project are set out in HS2 Information Paper E26: Indicative Periods for the Management and Monitoring of Habitats.” Opportunities for Enhancement

2.5.8 At the current time, opportunities for enhancement within the AONB in conjunction with EWC works are being sought. Opportunities for enhancement will be identified during design and through discussion with consultees including the AONB Review Group and local authorities.

2.5.9 The Chiltern AONB review group have 2 projects which are due to start summer 2019. The first project is in relation to is a landscape and Biodiversity project looking at landscape improvements along the line being delivered by Chilterns Conservation Board. The work be ongoing for the next 5 years.

2.5.10 The second project the AONB review group are starting is improvements to the Ridgeway to improve accessibility and also open it up to new riding users by new paths and rights of way. This project is being led by the Ridgeway Partnership.

Water Resources and Flood Risk

Mitigation and Compensation

2.5.11 Following CoCP measures, there are no anticipated impacts within the AONB on water resources and flood risk from the early EWC works.

2.5.12 All design within the flood plain will incorporate a flood risk assessment. The Flood Risk Zone is defined by areas located in areas of flood risk (Flood Zone 2 or Flood Zone 3) or greater than 1ha in area and where required in support of a consent and/or approval application. For HS2 works the Environment Agency grant the consent and the Local Authority are consulted.

2.5.13 The Park Hill and Bury Farm ecological mitigation sites to be constructed within the AONB are in Flood Zone 1 (fluvial flooding). The siting of the ponds has been designed outside the flood
zone to prevent incursion by flood waters increasing the likelihood of introducing non-desirable species.

2.5.14 The advanced landscape planting sites and other EWC and third party works sites will be fully assessed for flood risk as part of the scheme design stage.

Monitoring Requirements

2.5.15 Monitoring requirements will be agreed as part of scheme design dependant on the locality and severity of the flood risk in discussion with HS2 Limited, the Environment Agency and the Local Authority as appropriate. The consenting process will ensure appropriate monitoring is agreed and implemented.

2.5.16 Monitoring of the sites for flood incursion will be undertaken as part of the ongoing monitoring of all the sites.

Opportunities for Enhancement

2.5.17 Enhancement opportunities have been considered within the design and construction process and includes such opportunities as additional swales for the habitat mitigation sites and placement of reptile banks and hibernacula outside the floodplain or areas at risk.

2.5.18 Opportunities for further enhancement will be identified through consultation with consultees including the AONB Review Group and Lead Local Authorities Forum (LLAF) will continue to identify opportunities to reduce areas traditionally known to flood throughout the project.

Recreation and Amenity Impacts and Public Open Space

Mitigation & Compensation

2.5.19 Main works civils construction of HS2 within the AONB will result loss of woodland, ancient woodland, grassland and impacts on landscape views. These impacts will be considered in more detail when the KESWMP is updated in relation to the MWCC design and programme. The works proposed by the EWC are not anticipated to cause significant effects within the AONB.

2.5.20 Woodland and ancient woodland loss will be minimised through the exploration of alternative options. There will be no woodland removed until it has been confirmed there are no design alternatives that are acceptable. Areas of amenity lost permanently through the scheme are being mitigated through design supported by the EWC, the MWCC in time and through HS2 Limited’s support of the AONB Additional Projects being developed by the AONB Panel.

2.5.21 Public Rights of Way will be affected by the construction of HS2. The EWC and MWCC will work with the community and interest groups to mitigate for these disruptions through the provision of additional routes where possible linking sections of curtailed path and by enhancing PRoW with additional planting also if possible. The EWC is not stopping up any PRoW so this will be explored by the MWCC. The Ridgeway National Trail and regionally promoted routes will be affected by the MWCC. It is understood, for example, that the route of the Ridgeway will need
to be realigned to coincide with the Ellesborough Road diversion, consideration will be needed as to how this will be managed to minimise impacts on users of this National Trail.

**Opportunities for Enhancement**

2.5.22 Comments received from the AONB Review Group, Local Authorities, Parish councils, community groups and interest groups during design and any opportunities identified for enhancement will be explored with the AONB Panel, HS2 and local authorities.

2.5.23 Interested parties can propose enhancement opportunities to the EWC and the MWCC who will endeavour to work with these parties to develop and deliver the enhancements if practicable. All contractors are committed to providing community investment and the provision of PRoW and recreation and amenity improvements will be enthusiastically received to incorporate into the Contractor’s suggestions.

**Landscape and Visual Mitigation**

2.5.24 Sensitive landscape and visual receptors are outlined in the relevant LEMP and ES. Screening planting has been included within the Proposed Scheme design and is planned for sensitive landscape locations. The advance landscape plan is designed to provide early screening to local residents, businesses and for public amenity value in advance of the MWCC works. Further consultation will be undertaken as the advance landscape planting develops.

2.5.25 The AONB Review Group is working alongside HS2 and communicating with Fusion on additional integration and enhancement measures to reduce the landscape and visual effects of the scheme within the AONB and its setting. The plans being developed by the AONB Review Group are in their early design phase but are welcomed by Fusion and will be taken on board with future Work Packages. None have been identified and shared with Fusion to date.

**Monitoring Requirements**

2.5.26 The advanced landscape planting will be monitored in accordance with Landscape, Maintenance, Management and Monitoring Plans which will be produced at detailed design stage for these sites by Fusion.

**Opportunities for Enhancement**

2.5.27 Further opportunities for enhancement will also be highlighted and developed during design, especially when designing permanent infrastructure. The views of the AONB Review Group will be included as appropriate and consultation will be local authorities and other interested parties. Suggestions received from any party will be considered and discussed between the EWC or MWCC (or both) and HS2 for the practicality and impacts and adopted or incorporated wherever feasible. For example, the opportunity to open up part of a woodland mitigation site was agreed by the EWC in another area but until the consent of the landowners has been agreed the idea will not be implemented.
Agriculture
Mitigation and Compensation

2.5.28 Minimising the loss of any agricultural land, particularly the Best and Most Versatile agricultural land, i.e. grades 1, 2, 3a, as well as mitigation and compensation for loss of Best and Most Versatile agricultural land will be principally within the MWCC scope.

2.5.29 The EWC work programme is not affecting high quality agricultural land; small junction improvements, habitat mitigation sites – generally sited on grazing land in the AONB. The areas of agricultural land to be lost or adversely affected are outlined in the relevant LEMPs and ES as are local control measures. The proposed scoping matrix accompanying additional revisions of this KESWMP will identify cross topic opportunities and mitigation requirements in more detail.

Monitoring Requirements

2.5.30 A Soil Resources Plan (SRP) will be prepared by the HS2 Contractors on sites where topsoil and subsoil are being stripped and returned to agriculture, these areas have not been fully identified to date as the majority of the EWC works are associated with environmental mitigation measures in the form of advance tree planting and early ecology mitigation site creation or will be restored by the MWCC post construction.

2.5.31 The SRP will identify the type and volume of soils affected and the reuse potential within the footprint of the works or suitable donor site for land restoration. For agricultural land the SRP will include a target specification for restoration.

Opportunities for Enhancement

2.5.32 Further opportunities for enhancement will also be highlighted and developed during design, especially when designing permanent infrastructure. The views of the AONB Review Group will be included as appropriate and consultation will be local authorities and other interested parties.

2.6 Summary

2.6.1 This document addresses the impacts associated with the Chilterns AONB, particularly through the activities of the HS2 Enabling Works Contractor. The recreation, nature conservation and terrestrial and aquatic ecology, water resources and flood risk and landscape and visual impacts have been assessed and opportunities for enhancement within the AONB area will be identified in future.

2.6.2 In-combination adverse impacts and the need for multiple consenting requirements during the EWC scope of works have been avoided within the AONB through planning and communication with other EWC Contractors and third parties. The EWC works are not identified as adversely affecting the sensitive landscape of the AONB. Each consent has been reviewed, together with and the Environmental Statement and HS2 undertakings and assurances but with widely spaced and disparate requirements the holistic nature of the consenting requirements is being
assessed and will be addressed through the incorporation of a scoping matrix integrating topics and cross cutting themes and opportunities.

2.6.3 The KESWMP will be reviewed and revised as appropriate and on a six-monthly basis by HS2 and its Contractors.