



**EKFB**

Working in  
partnership with

**HS2**

# Local Environmental Management Plan for West Northamptonshire

**P1C-HS2-EV-PLN-C000-000009 P01**

Security classification: **OFFICIAL**

**Handling Instructions:** None

# Contents

<b>1</b>	<b>Introduction</b>	<b>1</b>
1.2.	Area and scope	4
<b>2</b>	<b>Purpose of the Local Environmental Management Plan</b>	<b>7</b>
<b>3</b>	<b>Policy and environmental management principles</b>	<b>7</b>
<b>4</b>	<b>Implementation</b>	<b>8</b>
<b>5</b>	<b>General requirements</b>	<b>8</b>
5.2.	Community relations	8
5.3.	Working hours	10
5.4.	Construction Site Layout and Good Housekeeping	10
5.5.	Site lighting	11
5.6.	Worksite security	11
5.7.	Hoardings, fencing and screening	11
5.8.	Unexploded ordnance	12
5.9.	Electromagnetic interference	12
5.10.	Temporary living accommodation	13
5.11.	Occupational healthcare	13
5.12.	Clearance and re-instatement of sites on completion	13
5.13.	Pollution incident control and emergency preparedness	13
5.14.	Local control measures	13
5.15.	Fire prevention and control	14
5.16.	Extreme weather events	14
5.17.	Carbon management plans	14
5.18.	Interface management between adjacent construction areas	14
<b>6</b>	<b>Agriculture, forestry and soils</b>	<b>15</b>
6.2.	Sensitive receptors	15
6.3	Local control measures	15
<b>7</b>	<b>Air quality</b>	<b>16</b>
7.2	Sensitive receptors	16
7.3.	Local control measures	17
7.4	Monitoring Procedures	18
<b>8</b>	<b>Cultural heritage</b>	<b>19</b>
8.2.	Sensitive receptors	19
8.3.	Local control measures	21
8.4.	Monitoring	22
<b>9</b>	<b>Ecology</b>	<b>22</b>
9.2.	Sensitive receptors	22

9.3. Local control measures	25
9.4. Monitoring	31
<b>10 Ground settlement</b>	<b>32</b>
<b>11 Land quality</b>	<b>33</b>
11.2. Potential contamination sources and sensitive receptors	33
11.3. Local control measures	34
11.4. Minerals	35
<b>12 Landscape and visual</b>	<b>35</b>
12.2. Sensitive receptors	35
12.3. Local control measures	36
12.4. Trees	36
12.5. Site Buildings for Office and Welfare	37
<b>13 Noise and vibration</b>	<b>37</b>
13.2. Sensitive receptors	37
13.3. Local control measures	38
13.4. Monitoring	39
<b>14 Traffic and transport</b>	<b>40</b>
14.2. Local control measures	41
14.3. Works to the Highway and Access Measures	41
14.4. Monitoring procedures	43
<b>15 Waste and materials</b>	<b>43</b>
15.2. Local control measures	43
<b>16 Water resources and flood risk</b>	<b>45</b>
16.2. Sensitive receptors	45
16.3. Potential sources of contamination	46
16.4. Local control measures	46
<b>Appendix 1: Glossary of Terms</b>	<b>49</b>
<b>Appendix 2: Non-exhaustive list of Local Interest and Community Groups in West Northamptonshire District</b>	<b>51</b>
<b>Appendix 3: Radstone and Helmdon Disused Railway Key Environmentally Sensitive Worksite Management Plan</b>	

### List of Figures

Figure 1: Key workstreams that will provide additional information for the LEMPs	1
Figure 2: Location of Radstone to Helmdon Disused Railway SSSI	3
Figure 3: West Northamptonshire Area context map	5

### **List of Tables**

Table 1; Directly affected sites within WNC area	<b>3</b>
Table 2: Properties in Schedule 18 Table 2	<b>21</b>
Table 3: Standard ecological issues and control measures relevant to this area	<b>25</b>

# 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 West Northamptonshire Council (WNC) area.

1.1.2 This LEMP builds upon but does not repeat the HS2 general environmental requirements set out in the Code of Construction Practice (CoCP) (available online at: <https://www.gov.uk/government/publications/environmental-minimum-requirements>).

1.1.3 This LEMP contains control measures and standards to be implemented within the WNC area. 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 accessed. This includes:

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



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

- 1.1.6 This LEMP has been prepared taking into account findings of the Environmental Statement (ES), Additional provision 1 (AP1) and Supplementary Environment Statement (SES) and AP2 through to SES4 and AP5 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<sup>1</sup>, 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)<sup>2</sup> and/or its Contractors will continue to engage with the local stakeholders. This will take the form of engagement events which will be carried out to introduce and brief the communities on local environmental information, management and mitigation as detailed within this document.
- 1.1.9 The HS2 Environmental Memorandum identifies key worksites along the route of HS2 Phase One that are environmentally sensitive in terms of nature conservation, terrestrial and aquatic ecology, water resources, geomorphology, recreation and amenity, landscape, public open space and agricultural land. The criteria for inclusion are 'worksites where a key significant impact (that has been agreed with the HS2 National Environment Forum members) is generated in any of the environmental topics' as mentioned above. The Radstone and Helmdon Disused Railway Site of Scientific Interest (SSSI) has been identified as a Key Environmentally Sensitive Worksite. The location of the site is shown in Figure 2.

---

<sup>1</sup> 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.

<sup>2</sup> HS2 Ltd is the Nominated Undertaker. The two terms are used interchangeably throughout this LEMP.

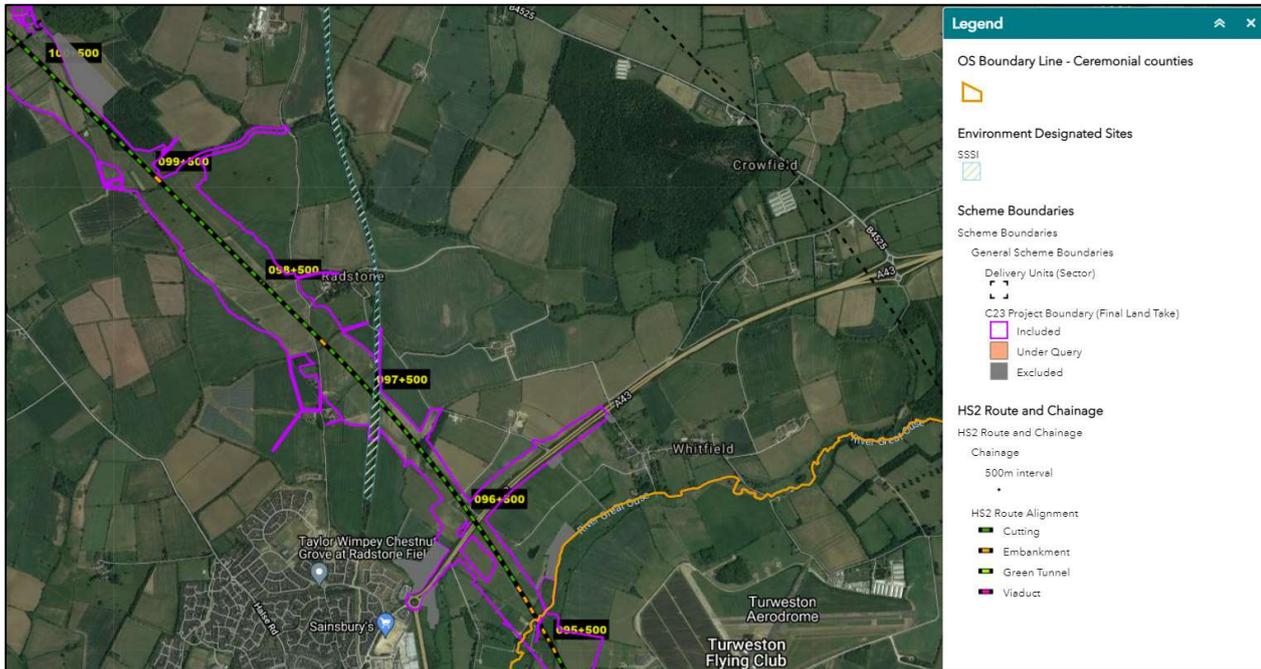


Figure 2: Location of Radstone to Helmdon Disused Railway SSSI

1.1.10 The Nominated Undertaker will prepare site-specific management plans for these identified environmentally sensitive worksites, focusing on mitigation, compensation and monitoring requirements, with opportunities for enhancement in relation to the identified environmental topics as outlined within the Environmental Memorandum shown in Table 1.

Table 1; Directly affected sites within WNC area

Site Name	Details	Chainage
Radstone and Helmdon Disused Railway SSSI	Radstone and Helmdon Disused Railway Key Environmentally Sensitive Worksite Management Plan	97 + 500

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

1.1.12 HS2 documents referenced within this LEMP can be found on the [www.gov.uk](http://www.gov.uk) website.

## 1.2. Area and scope

- 1.2.1 The WNC area covers two Community Forum Areas (CFA). Plans showing details of the Scheme, as revised in AP5 and covered by this LEMP, are presented in the Environmental Statement (ES) maps (CFA 14 and 15 Volume 2 maps books ES Ref 3.2.2.14 to 3.2.2.15); CT-05-001 to CT-06-001; CFA 14: CT-05-065 to 067 (SES, AP2 ES), CT05-068A (ES); and
- 1.2.2 CFA15: CT-05-068b (ES), CT-05-069 (SES, AP2 ES), CT-05-070 (SES4, AP5 ES), CT-05-071 (SES3, AP4 ES), CT-05-072 (SES, AP4 ES), and CT-05-073 to 079a (SES3, AP4 ES).



1.2.3 Construction worksites and areas required for construction works are shown within the CT- 05 maps. The following construction compound locations in WNC will be:

- Greatworth park temporary construction compound;
- Greatworth main construction compound;
- Chipping Warden main construction compound;
- Heave trial secondary construction compound;
- Southam (A423) main construction compound;
- Twyford Earthworks (formally Twyford Viaduct) satellite construction compound;
- PBI/5A Accommodation Overbridge satellite construction compound;
- Godlington East Culvert satellite construction compound;
- Chetwode ATS satellite construction compound;
- Chetwode Cutting satellite construction compound;
- Footpath BHA/2 Overbridge satellite construction compound;
- A4421 Buckingham Road Overbridge site establishment construction compound;
- A4421 Buckingham Road Overbridge construction compound;
- Bridleway 213/7 Overbridge satellite construction compound;
- A421 London Road Overbridge - Temp South satellite construction compound;
- A421 London Road Overbridge site establishment construction compound;
- A421 London Road Overbridge construction compound;
- Featherbed Lane Overbridge satellite construction compound;
- Bridleway 303/4 Overbridge satellite construction compound;
- Westbury Viaduct satellite construction compound;
- A422 Brackley Road Overbridge (F) site establishment construction compound;
- A422 Brackley Road Overbridge (F) construction compound;
- Turweston Green Overbridge satellite construction compound;
- Turweston Viaduct satellite construction compound;
- A43 Brackley South Cutting site establishment construction compound;
- A43 Brackley South Cutting construction compound;
- Radstone Road Overbridge satellite construction compound;
- Footpath AN22 Accommodation Overbridge satellite construction compound;  
and
- Bridleway AN14 Accommodation Overbridge satellite construction compound.

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

1.2.5 The Main Works Civils Contractor developed the Scheme Design between July 2017 and April 2020 and Notice to Proceed, which provided approval to begin detailed design and construction works. The EWC works should be completed by the end of 2021 with remaining scope passed to MWCC.

1.2.6 The following work activities in WNC will include but are not limited to:

- Advance works, including: site investigations and surveys further to those already undertaken;
- Enabling works, including: utilities works in the wider area; highway and public right of way (PRoW) diversions; building demolitions; site clearance, habitat removal, creation and environmental mitigation measures.
- Civil engineering works including; establishment of construction compounds; site preparation; main earthworks and structure works, building works and fit out, retaining structures and erection of bridges/viaducts, subsurface tunnelling and excavations, site restoration and removal of construction compounds;
- Earthworks to create cuttings and embankments along the route. Construction of structures including bridges, viaducts and culverts;
- Works to conventional railway track, signalling and other railway systems;
- High speed railway installation works and systems fit-out including: establishment of construction compounds; infrastructure installation, traction power supplies, overhead line equipment and communications features; connections to utilities; removal of construction compounds; and
- System testing and commissioning.

## 2 Purpose of the Local Environmental Management Plan

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

## 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 WNC area was 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 WNC area was EK, a joint venture made of Eiffage and Kier. In 2020 the partnership became EKFB, made up of Eiffage, Keir, Ferrovial Construction and BAM Nuttall.

## 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, including:

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

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

### 5.2. Community relations

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 in WNC and will involve the Contractors and any relevant third parties and stakeholders, for which there will be co-ordination arrangements.

5.2.4 In addition, information on the construction of HS2 in WNC will be made to the local community through the 'HS2 in Northamptonshire' webpage (available online at <https://www.hs2.org.uk/in-your-area/local-community-webpages/hs2-in-northamptonshire/> ).

5.2.5 For the purposes of this LEMP, a third party is an organisation with whom HS2 Ltd has entered into a legal agreement to undertake works on its behalf, to be delivered under the powers of the High-Speed Rail (London – West Midlands) Act (the Act), or the third party's own powers (e.g., permitted development). Such agreements require the third parties to comply with the requirements of the Act and the EMRs, including the CoCP. Third parties relevant to this LEMP include utility companies such as Western Power Distribution and Severn Trent Water.

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

#### **Advanced notice of works**

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

## 5.3. Working hours

### Consents

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

### Core working hours

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

5.3.3 A period of up to one hour before and up to one hour after core working hours will be required for start-up and close down activities as detailed within the CoCP. To maximise the productivity within the core working hours, the one hour start up and close down periods will include activities such as deliveries, workforce arrival/departure, unloading, maintenance and general preparation works etc. During this period plant and machinery that is likely to cause disturbance to local residents will not be allowed to operate. This period will not be an extension of the core working hours. Working outside of these hours would need to be agreed through the S61 consenting process with WNC. Emergencies (not repairs and maintenance) may be undertaken outside core hours.

5.3.4 Certain work activities at specific locations within the local authority area will need to take place outside of the core working hours for safety and engineering purposes. These work activities will be covered by the Section 61 process and are likely to include:

- Turweston Viaduct and Adjacent Earthworks and Brackley South Cutting;
- A43 Oxford Road Realignment and Overbridge;
- Brackley North Cutting;
- Greatworth South Cutting;
- Greatworth Green Tunnel;
- Thorpe Mandeville Cutting;
- Lower Thorpe Viaduct and Adjacent Earthworks;
- Edgcote Viaduct and Adjacent Earthworks;
- Chipping Warden Green Tunnel;
- Highfurlong Brook Viaduct and Adjacent Earthworks;
- Lower Boddington Cutting and Embankment and Boddington Cutting; and
- Construction site layout and good housekeeping.

## 5.4. Construction Site Layout and Good Housekeeping

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

## **5.5. Site lighting**

- 5.5.1 All construction sites will be lit in accordance with the requirements of the CoCP as detailed within Section 5.4 and class approval requirements for site lighting in Schedule 17 Part 1 of the Act.
- 5.5.2 Site lighting will be designed to avoid light pollution to surrounding buildings, ecological receptors, structures used by protected species, local residents, railway operations, passing motorists and other sensitive land uses, where reasonably practicable.

## **5.6. Worksite security**

- 5.6.1 The intention is to achieve safe and secure worksites, with balanced and appropriate security measures that are commensurate with the risk, as detailed within Section 5.5 of the CoCP.
- 5.6.2 A security plan will be required for each site and where appropriate, security fencing and gates provided to perimeters of construction locations and site compounds. Fence type and construction will be appropriate to the level of security required and depend upon the likelihood of intruders, level of danger and visual impact to the environment.
- 5.6.3 Contractors will be responsible for ensuring that the site/working areas and plant and materials are secure from use by unauthorised persons at all times 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.
- 5.6.4 In some situations, particularly in an urban setting, consideration will be given to extra visibility for the public and workforce at night, e.g. use of half-timber / half-infill (i.e. Perspex) at hoarding corners together with convex mirror to prevent blind spots. All sites will have security lighting to ensure the safety of passing pedestrians and other traffic.
- 5.6.5 Security provisions will be deployed at all HS2 sites and working areas on a 24/7 basis this may include CCTV cameras, alarms and security personnel. This approach will help protect assets with measures that deter, delay and detect intrusion.

## **5.7. Hoardings, fencing and screening**

- 5.7.1 Where there are earthworks along the trace, for cuttings and embankments from the area north of Turweston viaduct to Lower Boddington, 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 with regard to environmental and safety considerations. General fencing adjoining agricultural land will be post and rail fencing. Compound fencing will be 2.4m security fencing.

- 5.7.2 In a small number of areas the site perimeter will be fenced with solid hoardings for screening purposes during the construction phase, in line with measures described within Section 5.6.1 of the CoCP, if appropriate. To date no locations have been identified for hoardings.
- 5.7.3 Hoardings may on occasion, also 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 locations in WNC will be included in this LEMP as and when the construction designs are finalised.
- 5.7.4 No temporary workers' on-site accommodation is currently proposed within the WNC area.
- 5.7.5 Opportunities to include temporary landscaping measures including but not limited to temporary bunds to be positioned to screen views to the route construction, temporary material stockpiles to reduce visual impacts and specific location of construction compound layouts and site access in relation to existing vegetation to reduce visual impacts where practicable.

## **5.8. Unexploded ordnance**

- 5.8.1 A risk assessment for the possibility of unexploded ordnance being found within construction areas will be carried out, as detailed within Section 5.7 of the CoCP.
- 5.8.2 Following desk studies and risk assessments, the majority of land within the LLAU has been assessed as having a low risk of encountering unexploded ordnance. A small number of areas have a moderate risk of encountering unexploded ordnance and any works in these areas is subject to additional controls and supervision by specialist explosive ordnance clearance Subcontractors. Two devices have been encountered to date at the former RAF Chipping Warden site.

## **5.9. Electromagnetic interference**

- 5.9.1 The impacts of any electromagnetic interference to surrounding environments, during design and construction will be assessed, as detailed within Section 5.8 of the CoCP.

## **5.10. Temporary living accommodation**

5.10.1 Currently there are no plans for provision of temporary on-site workers temporary living accommodation.

## **5.11. Occupational healthcare**

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

## **5.12. Clearance and re-instatement of sites on completion**

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

## **5.13. Pollution incident control and emergency preparedness**

5.13.1 The Contractors' Pollution Incident Control and Emergency Preparedness Plan(s) will need to have due regard to local receptors as detailed in Sections 6 to 16 of this LEMP.

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

## **5.14. Local control measures**

5.14.1 The Contractor's Pollution Incident Control and Emergency Preparedness Plan(s) will need to include the following pollution prevention and control measures:

- Static plant will be used with secondary containment measures such as bunds and plant nappies to retain any leakage of fuel or oil and reduce the risk of pollution;
- Spill kits will be provided where appropriate, such as at the 14 compounds and satellite compounds;
- The use of oil interceptors at site offices and work compounds; and
- Appropriate measures such as use of bunds of non-erodible material or silt or sediment fences adjacent to watercourses, such as the River Cherwell and Highfurlong Brook.

## **5.15. Fire prevention and control**

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

## **5.16. Extreme weather events**

5.16.1 The Contractor's pollution incident control and emergency preparedness plan(s) 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.

## **5.17. Carbon management plans**

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

## **5.18. Interface management between adjacent construction areas**

5.18.1 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 671ha of agricultural land will lie within the construction boundary in WNC area. 28% of this land is of the best and most versatile quality in Grades 1, 2 and 3a, with the remainder being moderate quality land in Subgrade 3b.

6.2.2. Approximately 247ha will be required permanently for the Scheme, with 345ha restored to agriculture and the remainder being habitat mitigation sites.

6.2.3. The generally high-quality soils that will be permanently displaced and reused in the design of the Scheme for agriculture and other uses, represent a sensitive receptor.

6.2.4. Some land uses situated adjacent to the construction boundary may be considered sensitive receptors, particularly in respect of farm infrastructure and crops. This includes interruptions to drainage systems, livestock water supplies and irrigation systems, the potential for dust deposition on crops, particularly field vegetables; interruptions to farm and field accesses; and the maintenance of appropriate stock-proof fencing. This also applies to approximately 411ha of land within the construction boundary in WNC 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) has been 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 invasive species and noxious weeds. Route-wide measures will also be implemented to promote bio-security and minimise the risk that invasive non-native species and diseases are spread as a consequence of the 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

- 7.1.2. General control measures relating to management of air quality are provided in Section 7 of the CoCP.
- 7.1.3. 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'<sup>3</sup>.

### 7.2 Sensitive receptors

- 7.2.2. 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.
- 7.2.3. 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

---

<sup>3</sup> Guidance on the Assessment of dust from construction and demolition: Institute of Air Quality Management (IAQM), February 2014

designated ecological sites with sensitive vegetation. The potential impacts are considered in terms of dust soiling on people and property; human health effects of dust and air pollutant emissions; and effects of dust deposition on vegetation.

7.2.4. The locations of these receptors have been classified as 'low', 'medium' and 'high' risk using the Institute of Air Quality Management (IAQM) methodology<sup>4</sup>, 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.

7.2.5. In the WNC area, these can include:

- Properties Sundale, Hall Farm, Greatworth Hall, Water End, Manor Cottages, Astral House, Spella Bungalow, Blackgrounds Farm, properties on Culworth Road and Fir Tree House; and
- The Helmdon Disused Railway SSSI is crossed by the route.

7.2.6. Receptors affected by emissions from anticipated construction traffic include Chacombe Lodge Farm, Walnut House, Grimsbury Manor and properties on Banbury Lane, the A361 Byfield Road, Dean Close, Stroud Close, Daventry Road and Fisher Close.

### 7.3. Local control measures

7.3.1. All the relevant methods outlined within the CoCP will be applied to control and manage potential air quality effects. These methods are considered to be sufficiently effective within areas in and around those listed in Section 7.2.2, which can include; the provision of dust suppression measures to be carried out in all areas of the site that are likely to generate dust, measures to keep roads and accesses clean and vehicles 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 are approved route-wide under the Class Approval process<sup>5</sup> and therefore will not require additional approval process. Further measures are detailed within Section 7 of the CoCP.

---

The Control of Dust and Emissions during Demolition and Construction: GLA Supplementary Planning Guidance Document, July 2014

<sup>4</sup> *Guidance on the assessment of dust from construction and demolition: Institute of Air Quality Management (IAQM), February 2014*

<sup>5</sup> Hs2 Class Approval under the HS2 Act 2017.

[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/579280/high-speed-rail-bill-draft-class-approval.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/579280/high-speed-rail-bill-draft-class-approval.pdf)

- 7.3.3. HS2 has set emission requirements and targets for the engines of Contractors' 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 WNC the relevant category of vehicle emission standard is the 'Rest of Route'. Within the 'Rest of Route' category, there are requirements for heavy road vehicles to be powered by EURO VI engines (with targets for cleaner engines) and for cars and vans to be Euro 6 diesel and Euro 4 petrol<sup>6</sup>. 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 WNC, 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)<sup>7</sup>.
- 7.3.6. The HS2 Information Paper E31: Air Quality gives further information on the HS2 emissions standards.

## 7.4 Monitoring Procedures

- 7.4.1. An inspection monitoring programme will be implemented by the Contractor to assess the effectiveness of the control measures as outlined in Section 7.3 of the CoCP. In the WNC area, the monitoring procedures may include continuous automatic monitoring of airborne dust, including 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 NO<sub>x</sub> 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>.

---

<sup>6</sup> 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.

<sup>7</sup> Roman numerals are also used within the NRMM EU regulations but are not directly comparable to the road vehicle Euro standards.

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

## 8 Cultural heritage

- 8.1.1. General control measures relating to cultural heritage are provided in Section 8 of the CoCP. Further control measures for Cultural Heritage are provided in the Hs2 Phase One Heritage Memorandum within the Environmental Minimum Requirements and the specific documents identified therein.
- 8.1.2. A route-wide Generic Written Scheme of Investigation: Historic Environment Research and Delivery Strategy (GWSI:HERDS) has been prepared which sets out the general principles for design, evaluation, mitigation, analysis, reporting and archive deposition to be adopted for the design development and construction of the Scheme.
- 8.1.3. Archaeological and built heritage works will affect both designated and non-designated assets in WN. 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, Location-Specific Written Scheme of Investigations (LS-WSI) and Heritage Agreement Method Statements (HAMS).
- 8.1.4. Works associated with the scheme will impact both designated and non-designated archaeological and built heritage assets in WNC. 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).
- 8.1.5. Schedule 18 and Schedule 19 to the Act concern how legislation in respect of listed buildings and scheduled monuments respectively apply to the Phase One works. Schedule 20 to the Act provides a regime for the removal of human remains and related funerary monuments.

### 8.2. Sensitive receptors

- 8.2.1. Details of all designated and non-designated heritage assets within 500m of the land required, temporarily or permanently, for the construction of the Scheme are listed in Volume 5 of the ES (Appendix CH-001-015, CH-002-015, CH-003-015 and CH-004-15).

8.2.2. The following designated heritage assets are located within or adjacent to the Scheme and therefore require particular attention by the Contractor:

- The registered battlefield, Edgcote Battlefield;
- The Grade II listed building, Lower Thorpe Farmhouse;
- The Grade II listed building, Trafford Bridge;
- Chipping Warden Conservation Area;
- Greatworth Conservation Area;
- Church of St. Lawrence Radstone (Grade I);
- Greatworth Hall, Greatworth (Grade II);
- Stone walls, gatepiers and gateways at entrance to Manor House Thorpe Mandeville (Grade II);
- Church St. John the Baptist, Thorpe Mandeville (Grade I);
- Thorpe Mandeville Conservation Area; and
- Culworth Conservation Area.

8.2.3. 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-002-014 and CH-002-015 and Maps CH-01-045 to CH-01-053 (Volume 5, Cultural Heritage Map Book)).

8.2.4. In Schedule 18 of the Act Table 1 identifies listed buildings to be demolished and Table 2 identifies listed buildings which may be subject to further work or monitoring.

8.2.5. Buildings identified within Schedule 18 Table 1 of the Act, as buildings authorised to be demolished, altered or extended. The following property is undergoing monitoring:

- Lower Thorpe Farmhouse (Grade II).

8.2.6. Buildings identified within Schedule 18 Table 2 as buildings authorised to be altered or extended for heritage or monitoring purposes are listed in the table below. These properties will be subject to further assessment and monitoring.

Table 2: Properties in Schedule 18 Table 2

Building	Parish	Route chainage	Distance and direction from construction	Closest HS2 route asset
Church of St Lawrence	Radstone	98+100	280m East	Brackley North Cutting
Greatworth Hall	Greatworth	101+500	100m East	Greatworth South Cutting
Trafford Bridge	Culworth	108+300	50m East	Culworth Cutting
Stone walls, gatepiers and gateways at entrance to Manor House	Thorpe Mandeville	105+100	550m West	Thorpe Mandeville Cutting
Church of St John the Baptist	Thorpe Mandeville	105+100	500m West	Thorpe Mandeville Cutting

### 8.3. Local control measures

- 8.3.1. Where practicable, construction methodologies will be required to reduce the impacts on heritage assets. The CoCP sets out the provisions that will be adopted to control those effects, including the use of appropriate equipment and methods to limit ground disturbance and settlement followed by monitoring, protection and remediation. A programme of settlement monitoring and the implementation of avoidance measures where appropriate will be undertaken by the Contractor. Detailed provisions with regard to settlement and listed buildings are outlined in the Settlement Policy / HS2 Information Paper: C3 Ground Settlement.
- 8.3.2. Those Listed Buildings to be demolished, altered or relocated are named in Table 1 of Schedule 18 of the Act and are the subject of Heritage Agreements with WNC and Historic England. These agreements require details of works concerning each of the listed buildings to be submitted to WNC for approval, and Historic England for consultation where applicable.

- 8.3.3. Those Listed Buildings which may require works to maintain or restore their character, or for the affixing of monitoring apparatus are named in Table 2 of Schedule 18 of the Act. Listed Buildings named in Table 2 are also covered by a Heritage Agreement with WNC, which sets out arrangements for obtaining approvals for protective or monitoring works to these buildings.
- 8.3.4. Where practicable, below ground assets will be preserved in situ beneath mitigation earthworks through the adoption of appropriate design measures.
- 8.3.5. Where practicable, construction methodologies will reduce the impacts on buried and upstanding remains.
- 8.3.6. The programme of archaeological and built heritage works will be undertaken by a specialist Contractor appointed by the Nominated Undertaker prior to and during, the construction period in accordance with the provisions of the LS-WSI for archaeology and built heritage.

## 8.4. Monitoring

- 8.4.1. 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 West Northamptonshire are designated for nature conservation. These locations are shown within the Volume 5 map books of the ES:

- Helmdon Disused Railway Site of Special Scientific Interest (SSSI) is crossed by the route(Ch97+400);
- Fox Covert (Whitfield) Local Wildlife Site (LWS), the southern part of the site lies within the land required for the construction (Ch97+000);
- Radstone Road Verge LWS, section of the road verge lies within land required for the construction (Ch99+000);

- Halse Copse South LWS, the southern part of the LWS, some of which is ancient woodland lies within the land required for the construction (Ch99+500 to Ch100+000);
- Halse Copse North LWS, the western boundary of which will be next to an area that will be used for ecological compensation for the scheme (Ch100+200 to Ch100+750);
- Washbrook Spinney LWS, located approximately 470m north of the land required for construction of the scheme but it may be subject to changes in groundwater (Ch102+500);
- Washbrook Lake LWS, located approximately 675m north of the land required for construction of the scheme but it may be subject to changes in groundwater (Ch102+100);
- Trafford Bridge Marsh LWS, includes part of the River Cherwell and is partially within land required for construction of the scheme (Ch108+500); and
- Aston le Walls Railway LWS, the central section of this linear site is within land required for construction of the scheme (Ch112+500).

9.2.2. Sensitive habitat receptors outside of designated sites are displayed within the Volume 5 map books of the ES. These include:

- River Great Ouse, crossed by the scheme on the border with Buckinghamshire Council (Ch95+600);
- The Radstone Brook, a tributary of the River Great Ouse (Ch97+900);
- Woodland at Fox Covert (Whitfield) LWS (Ch97+000);
- An area of unnamed wood south of Radstone, semi-natural broadleaved woodland (Ch97+800);
- Helmdon Disused Railway SSSI including grassland (lowland calcareous and semi-improved neutral grassland), wetland (including a field immediately to the south of the SSSI) and mature scrub (Ch97+400);
- Painters Spinney (Ch103+200);
- Areas of semi-improved neutral grassland is present to the east of Thorpe Mandeville and adjacent to Costow Field, to the south-east of Thorpe Mandeville (Ch104+500);
- The River Cherwell (Ch108+000 to Ch108+800) and Culworth Brook (a tributary of the River Cherwell at Lower Thorpe) (Ch104+900 to Ch105+300)
- Two areas of lowland fens, associated with Trafford Bridge Marsh LWS (Ch108+000) and Costow Field (Ch104+500);
- An unnamed woodland near Lower Thorpe (Ch105+500);
- Osierbed Spinney (Ch108+900 to Ch108+800);
- Calves Close Spinney (Ch110+100);
- The Highfurlong Brook (Ch113+000);
- The Oxford (also known as Boddington) Canal Feeder and several drainage ditches are crossed by land required for the construction (Ch114+750);

- Fox Covert (also known as Glyn Davies Wood), west of Upper Boddington (Ch116+200 to CH116+500);
- Small areas of woodland near Culworth (Ch106+000), Aston le Walls (Ch112+000) and Lower Boddington (Ch114+000);
- Grassland associated with Trafford Bridge Marsh LWS (Ch108+000), Radstone Road Verge LWS (Ch99+000) and Aston le Walls Disused Railway LWS (Ch112+500);
- Hedgerows (see Volume 5 maps for specific locations); and
- Ponds, most of which are located near Aston le Walls, Lower Boddington, Edgcote and Thorpe Mandeville (see Volume 5 EC-04 maps for specific locations).

9.2.3. All other habitats are of local/parish value or below. Full descriptions are provided in Volume 5 of the main ES (Appendices EC-001-002, EC-002-002 and EC-003-002 and EC-004-002).

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

- Bats (roosts and key commuting and foraging habitat);
- Bat assemblages;
- Breeding birds including barn owls;
- Great crested newts;
- Common reptiles;
- Otter;
- Fish;
- Wintering bird assemblages;
- Widespread reptiles;
- Badgers;
- Water vole;
- Terrestrial invertebrates including small blue butterfly, dingy skipper, as well as nationally scarce beetles;
- Aquatic macroinvertebrates; and
- Notable plant species (including corn spurrey/ marsh stitchwort, many-seasoned thread-moss, scarce redshank, spiral chalk-moss, bluebell, large-leaved lime, midland hawthorn, tufted forget-me-not) .

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

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

- 9.2.7. Natural England has granted the HS2 organisational great crested newt and badger licences across Phase 1 in April 2017. Contractors will check whether any protected species licences are required prior to work commencing or where such licences have been obtained, ensure compliance with the requirements of the licence.
- 9.2.8. All actions required to comply with licences, will be undertaken by suitably qualified specialist ecologists licensed to undertake the work.

### 9.3. Local control measures

- 9.3.1. The standard ecological issues and associated control measures outlined in Table 3 are of particular relevance to this area.

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

Species/species group	Issue	Standard control measure
Designated Sites	The Scheme affects SSSI, LWS and non-statutory wildlife sites	Measures to reduce habitat loss should be included in planning of construction works, such as avoiding siting temporary material stockpiles, construction materials and vehicle parking within designated sites.  Potentially hazardous materials should also be located away from designated sites and stored correctly.  Specific measures for control of surface water and for air and water-borne pollution should also take account of the proximity of these designated sites.
Ancient Woodland	The Scheme will result in the loss of ancient woodland.	Measures to reduce habitat loss should be included in planning of construction works.  Translocation of ancient woodland soils and vegetation will be undertaken where appropriate, following the design specification set out in the relevant Ecology Site Management Plans.
Bats	All UK bat species and their roosts (even if bats are not present) are fully protected under both UK and European legislation.	Measures to reduce impacts to bats such as loss of roost features should be included in planning of construction works where possible.

Species/species group	Issue	Standard control measure
	<p>The Scheme will result in the loss of confirmed bat roosts in trees and buildings.</p>	<p>Where unavoidable adhere to requirements and conditions set out within applicable licences and, where relevant, Ecology Site Management Plans.</p>
	<p>The Scheme will result in the loss of trees and buildings identified as having moderate or high potential to support roosting bats. Surveys for some of these features are still being conducted, the results of which will inform suitable control measures for the avoidance of impact.</p>	<p>Where sufficient survey data exists, adopt precautionary approach.  Follow appropriate Working Method Statement for demolition of buildings and felling or trees.</p>
	<p>Retained bat roosts are present in close proximity to the Scheme. Caution is required to ensure that these roosts are not disturbed during works.</p>	<p>Suitable protection zones should be demarcated on site with suitable fencing and/or signage, throughout the duration of works.  Where practicable, undertake activities with the potential to cause disturbance to maternity or hibernation roosts, such as noise and vibration, during seasonal periods when these bats are likely to be absent.  Reduce night-time working in close proximity to retained roosts. Where night working is unavoidable ensure lighting is designed, positions and directed away from known roosts.  Where practicable, temporary structures will be erected to screen the entrances/exits of retained roosts from construction areas.</p>
<p>Bats continued</p>	<p>The Scheme will result in the loss of and disruption to bat foraging areas and commuting routes.</p>	<p>Suitable protection zones should be demarcated on site for retained foraging and commuting routes with suitable fencing and/or signage.  Where loss will occur, this should be kept to a minimum. Retain as much of the key habitat for as long as possible and establish new areas as quickly as possible to</p>

Species/species group	Issue	Standard control measure
		<p>reduce the effects to foraging and commuting bats. Temporary mitigation measures, such as flight lines, should be implemented until new areas, such as planting, become established.</p> <p>Where practicable, undertake activities causing loss or disruption during seasonal periods when bats are likely to be less active.</p> <p>Ensure lighting is designed, positions and directed away from foraging areas and commuting routes.</p> <p>Minimise night-time working in close proximity to foraging areas and commuting routes. Where unavoidable ensure lighting is designed, positions and directed away from foraging areas and commuting routes.</p> <p>Screening should be erected for in-situ foraging and commuting routes to prevent disturbance such as that from light spill.</p>
Breeding birds	<p>All wild birds, their nests (whilst being built or in use) and eggs are legally protected against being damaged, destroyed or taken.</p> <p>Some species are also afforded additional protection against disturbance whilst nesting.</p> <p>The Scheme will result in the loss of nesting bird habitat, including vegetation, buildings and structures.</p>	<p>Habitat clearance, demolition of buildings or structures should where possible be conducted outside of the core bird nesting season (Typically, March to August inclusive) where practicable.</p> <p>If habitat clearance, demolition of buildings or structures is carried out during the core bird nesting season then an appropriate nesting bird check and Working Method Statement shall be implemented in advance of works commencing.</p>
Great crested newt	<p>Great crested newts and their habitats are fully protected under both UK and European legislation.</p> <p>The Scheme will result in the loss of water bodies and terrestrial habitat used by great crested newts.</p>	<p>Adhere to requirements and conditions of HS2 great crested newt organisational licence, relevant method statements, and Ecology Site Management Plans.</p>

Species/species group	Issue	Standard control measure
Common amphibians	The Scheme will result in the loss of water bodies supporting common amphibians. Clearance during peak periods of occupation could result in the loss of these populations.	Drain down of water bodies suitable for amphibians should be conducted outside of the active period for amphibians (March to November) where practicable. If drain down of water bodies is carried out during the main breeding period for amphibians then an appropriate Working Method Statement shall be completed in advance of drain down works commencing.
Common reptiles	Common species of reptile (grass snake, adder, common lizard and slow worm) are protected from intentional killing or injury. Common reptiles are widespread, and the Scheme will result in the loss of confirmed and potential reptile habitat.	Where works have the potential to kill or injure reptiles, but there is suitable habitat immediately adjacent to the work site that could support a viable population (with enhancements where necessary) the Habitat Manipulation and Displacement approach should be followed. A Working Method Statement should be produced in advance of works commencing. Where there is no suitable habitat immediately adjacent to the work site, the Reptile Translocation approach should be followed. A Working Method Statement should be produced in advance of works commencing. This will include details of the approach, any exclusion fencing required, and details of the receptor site. Destructive searches of features suitable of rest, refugia, shelter or egg laying should only be conducted outside of hibernation and egg laying periods.
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.	Every effort should be made to avoid impacting habitat suitable for badgers where possible. Adhere to the requirements and conditions of the HS2 badger organisational licence, method statements, and Ecology Site Management Plans.

Species/species group	Issue	Standard control measure
		<p>Suitable protection buffers should be demarcated around retained setts (including artificial setts) to minimise disturbance or other impacts to badgers.</p> <p>Ensure lighting is designed, positions and directed away from foraging areas and commuting routes.</p> <p>Excavations, trenches and other earth works should be backfilled at the end of each working day or given suitable ramp as means of escape to prevent badgers becoming trapped.</p> <p>Badgers are a highly mobile species, therefore a pre-commencement check for badger activity such as setts should be conducted prior to works commencing. Contractors should also be aware of the potential for badger setts to be present within or adjacent to work sites and procedure for unexpected finds</p>
Hazel dormouse	<p>Hazel dormice and their habitats are fully protected under both UK and European legislation.</p> <p>The Scheme will result in the loss of habitats that are suitable for hazel dormouse.</p>	<p>Where relevant adhere to requirements of licences and Ecology Site Management Plans.</p>
Otter	<p>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.</p>	<p>Adhere to requirements of licences and, where relevant, Ecology Site Management Plans.</p> <p>Ensure that route of safe passage for otters is maintained throughout construction at crossing points.</p> <p>Use fencing as required to prevent otters being forced over existing road crossings.</p> <p>Reduce light spill onto watercourses.</p>
Water vole	<p>Water voles are fully protected under UK legislation.</p> <p>The Scheme will result in the loss of confirmed and potential water vole habitat.</p>	<p>An appropriate Working Method Statement should be produced in advance of works commencing, where relevant.</p>

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

- 9.3.2. Further information on the control of ecological impacts is provided in HS2 Information Paper E2: Ecological Impact, Section 9 of the CoCP, 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)).
- 9.3.3. Where work is to be undertaken under European protected species licences, applications and method statements are prepared by qualified ecologists who are specialists in their particular field. The works are subject to approval by Natural England and all works are monitored by a Named Ecologist or Accredited Agent. Some licences will be subject to ongoing monitoring and record submission to Natural England. Copies of applications and records submitted in support of licences are maintained by Natural England.
- 9.3.4. Ecological Site Management Plans (ESMP) will be prepared prior to any works commencing on site for each statutory and non-statutory site of nature conservation importance and ancient woodland affected by construction, including measures to avoid or minimise adverse effects. Drafts of these management plans will be discussed with relevant environmental bodies, including for instance; Natural England, the Wildlife Trusts, the Environment Agency and the Woodland Trust who hold copies.
- 9.3.5. Some Ecological Mitigation Sites have already been constructed ahead of works commencing. These sites are also subject to an ESMP which sets out the design objectives and long-term maintenance of the sites. These ESMP documents are consulted with Wildlife Groups, Woodland Trust and Local Authorities who hold copies.

## **9.4. Monitoring**

- 9.4.1. Contractors will be required to undertake appropriate monitoring of the consequences of construction works on ecological resources and of the effectiveness of the management measures designed to control ecological effects, as detailed within Section 9.3 of the CoCP.
- 9.4.2. Some European protected species licences will be subject to ongoing monitoring and record submission to Natural England. Copies of applications and records submitted in support of licences is maintained by Natural England.
- 9.4.3. ESMPs detail ongoing maintenance and monitoring requirements for non-designated sites or ecological mitigation sites. Updates will be shared with the bodies consulted on the development of the ESMP.

## 10 Ground settlement

- 10.1.1. General control measures relating to ground settlement are provided in Section 10 of the CoCP. Specific measures to reduce and repair settlement and requirements with regard to assessment, surveys and monitoring are contained in the Settlement Policy / HS2 Information Paper C3: Ground Settlement.
- 10.1.2. Requirements for monitoring 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 within the predicted zone of influence
- 10.1.7. Compensation grouting arrays could be installed and serviced from within the main worksite. However external shaft locations may also be required. Current designs indicate that no shafts will be required within this planning area.

# 11 Land quality

11.1.1. Further land quality study work including intrusive ground investigation (where needed) and analysis will be conducted prior to construction in order to confirm areas of suspected land contamination 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 map book of the main ES):

- Existing sewage works east of Thorpe Mandeville;
- Radstone Turn Inert historical landfill;
- Dismantled railways crossing route (Helmdon Disused Railway, Aston le Walls);
- Former sand and gravel quarry;
- Dismantled railway crossing (east of Greatworth);
- Former RAF Greatworth Wireless Transmission Station, now Greatworth Park Trading Estate and farmland;
- Various historical quarries (including north-west of Lower Thorpe, south of Trafford Bridge, north-west of Trafford Bridge and east of Chipping Warden);
- Tanks at Blackgrounds Farm;
- Former RAF Chipping Warden Airfield; and
- Sewage works (west of Lower Boddington).

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

- People, including residents in existing properties, local employees, construction and/or maintenance workers;

- Controlled waters, including groundwater in the Blisworth Limestone and Taynton Limestone Formations and White Limestone Formation (Principal aquifers) and various Secondary A aquifers;
- The River Great Ouse and River Cherwell and their tributaries;
- Ecological receptor of Helmdon Disused Railway SSSI;
- The built environment, including buildings, property and underground structures and services; and
- The natural environment.

### 11.3. Local control measures

- 11.3.1. Ground investigations are to be undertaken to assess areas of potential contamination within the Scheme. Following development of a conceptual ground model and a risk assessment a remedial strategy will be prepared, as needed. Consultation with WNC 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, wherever reasonably practicable, will be treated as necessary to remove or render any contamination inactive, and reused within the Scheme where needed and suitable for use. Treatment techniques are likely to include stabilisation methods, soil washing and appropriately permitted bio-remediation to remove oil contaminants. Contaminated soil disposed off-site will be taken to a soil treatment facility, another construction site (for licensed treatment, as necessary, and reuse) or an appropriately permitted landfill site.
- 11.3.3. Excavation through the Dismantled Railway at Helmdon, Dismantled railway crossing (east of Greatworth), the Former RAF Greatworth Wireless Transmission station and RAF Chipping Warden in WNC 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. Minerals

- 11.4.1. The Scheme crosses a number of Mineral Safeguarding Areas in WNC area, including those for building stone, sand and gravel as well as Preferred Areas and an Area of Search for sand and gravel.
- 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 track bed, which will require good founding conditions. A plan will be discussed in advance of the construction works with the landowner and/or mineral owner, the mineral planning department at Northamptonshire 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.
- 11.4.3. The feasibility of establishing a borrow pit at Chipping Warden is currently being assessed to provide aggregates for the construction phase and reduce lorry movements on public highways.

## 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 Contractors will have due regard to limiting impacts of the character of the following landscape character areas (LCAs):
- The Tove Catchment Undulating Claylands LCA;
  - Middleton Cheney and Woodford Halse LCA;
  - Eydon Ironstone Hills LCA;
  - Boddington Broad Unwooded Vale LCA; and
  - Boddington Low Pastoral Hills LCA.
- 12.2.2. The Contractors will also have due regard to limiting visual intrusion on the following visual receptors:
- Residents in the area, particularly at villages of Halse, Greatworth, Marston St Lawrence, Thorpe Mandeville, Culworth, Chipping Warden, Aston le Walls, Lower

Boddington and Upper Boddington, Whitfield, Radstone and the larger settlement area of Brackley and isolated groups of residences interspersed throughout the landscape;

- Recreational users on PRow throughout the study area, including the Battlefields Trail, Macmillan Way and the Jurassic Way;
- People travelling through the area along numerous 'scenic' rural roads within the study area and on main roads, including the A361 Byfield Road at Chipping Warden and the A43 at Brackley;
- People engaged in formal sports at Washbrook Farm Eventing Centre;
- People at work at Greatworth Park and Appleton Business Park;
- Chipping Warden Primary School; and
- Appleton Industrial Estate.

## 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;
- Use of high-quality hoardings and noise barriers;
- Designing lighting to avoid unnecessary intrusion onto adjacent buildings and other land uses;
- Appropriate design, implementation and maintenance of planting and seeding works and implementation of management measures throughout the construction period as landscape works are completed;
- Temporary bunds to be positioned to screen views to the route during construction;
- Consideration of 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.

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

## **12.5. Site Buildings for Office and Welfare**

- 12.5.1. Buildings will generally be of a temporary modular type; they will typically be 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: ES3.5.4)
- 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. HS2 Ltd will continue to seek reasonably practicable measures to further reduce or avoid these significant effects.
- 13.2.4. Residential and non-residential sensitive receptors for which the ES has reported likely adverse impacts from construction noise and/or vibration are mainly located at residential communities at Greatworth (including Greatworth Park), Thorpe Mandeville, Chipping Warden, Aston le Walls and Lower Boddington and commercial properties at Greatworth Hall, Greatworth Park and Radstone. Noise from construction traffic is likely to affect residential properties, the Church of St John the Baptist, Thorpe Mandeville village hall and The Three Conies public house along Banbury Lane, where it passes through Thorpe Mandeville.
- 13.2.5. The following residential properties are currently identified as qualifying for a noise insulation package as detailed within the noise insulation and temporary rehousing policy and further detailed assessment would be required to confirm this:

- Two residential buildings (the dwellings at The Old Dairy and Greatworth Hall, Greatworth).

13.2.6. The management of the construction traffic routes leading to elevated traffic noise levels will be important in the following areas:

- At approximately 40 dwellings located immediately adjacent to Banbury Lane where it passes through Thorpe Mandeville; and
- Along Banbury Road, which is likely to cause significant indirect noise effects at the Church of St John the Baptist, Thorpe Mandeville village hall and The Three Conies public house.

13.2.7. Noise from construction works within the vicinity of the following locations will need to be managed carefully:

- Commercial properties located in Greatworth Park and Greatworth Hall. Works in the vicinity include the construction of the Greatworth green tunnel;
- Chipping Warden Primary School. Works in the vicinity include the construction of the Byfield Road realignment;
- St Lawrence's Church, Radstone. Works in the vicinity include the construction of the Radstone Road overbridge and footpath diversions works; and
- Proposed bed and breakfast development at Hall Farm, Radstone. Works in the vicinity include the construction of the landscape mitigation earthworks.

### **13.3. Local control measures**

13.3.1. Site specific best practicable means measures to control noise and vibration have been identified through the Parliamentary process and discussions with WNC, and reflected in this document. Furthermore, site specific measures will be identified by the works contractor on a site-by-site and activity-by-activity basis and agreed with WNC 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 of 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 boundary adjacent to the residential communities at

Greatworth (including Greatworth Park); Thorpe Mandeville; Chipping Warden; Aston le Walls; Lower Boddington and Radstone; 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:

- Two residential buildings (the dwellings at The Old Dairy and Greatworth Hall, Greatworth).

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 will require its Contractors' to undertake and report such monitoring, as is necessary to ensure and demonstrate compliance with all noise and vibration commitments and the requirements of the CoCP. These can be found on the HS2 website at this address: <https://www.gov.uk/government/collections/monitoring-the-environmental-effects-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 WNC if a written request is made. In addition, monthly noise monitoring reports will be made publicly available throughout construction. The monthly reports will include information such as measurement methodology and monitoring locations. The reports will be available on the HS2 website: <https://data.gov.uk/dataset/24542ae7-dd44-444f-b259-871c4cc43b5e/environmental-monitoring-data>.

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 PRow 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 reduced by its Contractors where reasonably practicable:
- A Route-wide Traffic Management Plan (RTMP) setting out generic traffic management measures to be implemented during the construction of the project;
  - Local Traffic Management Plans (LTMPs) will set out our proposals for traffic management measures for each work site within particular areas along the route. Information on how the local impacts of construction will be mitigated, in particular those associated with materials delivery and redistribution, offices and workers' accommodation will 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.
- 14.1.3. HS2 will require its contractors to undertake such monitoring as is necessary to ensure compliance with the requirements of the CoCP, and this will include the maintenance of records of traffic management measures.
- 14.1.4. 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;
  - E14: Highways and traffic during construction – legislative provisions; and,
  - E30: Vehicle flow management and safety requirements during construction.

## 14.2. Local control measures

### Sensitive Receptors

- 14.2.1. In relation to traffic and transport, key sensitive receptors will need to be considered when the Contractor develops the overall programme within the LTMP and the site-specific traffic management schemes.
- 14.2.2. These requirements will be addressed appropriately through the development of the LTMPs or site-specific measures and discussed at the Local Traffic Liaison Group meeting, established in accordance with the Code of Construction Practice and the Route-wide Traffic Management Plan.

### 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 of 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 of the Act when large goods vehicle movements exceed 24 single movements (12 two-way movements) per day to and/or from a site.
- 14.2.5. 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. The ES noted that temporary and permanent road closures and diversions of the following roads will likely be required:
- Temporary closure of Helmdon Road, with alternate route via B4525 Welsh Road for a period of approximately a year and a half;
  - A temporary realignment of B4525 Welsh Road for a period of approximately two and a half years;
  - A temporary realignment of Sulgrave Road for a period of approximately two and a half years;
  - A temporary closure of Banbury Road to the south for a period of up to approximately two and a half years;
  - Temporary closure of Banbury Lane with temporary alternative route via Banbury Road, for a period of approximately one to two months- not to be undertaken during the Banbury Road temporary closure;

- Temporary closure of Wardington Road with temporary alternative route via A361 Byfield Road, Culworth Road (before it is stopped up) and Welsh Road, for approximately two years;
- Stopping up of Culworth Road (Note: Non-motorised user access will be retained via a shared bridleway over the Chipping Warden green tunnel south portal, see Public Footpath AE28);
- A temporary realignment of A361 Byfield Road to the north for a period of approximately three years;
- Temporary alternative route for Appletree Lane (south of Aston le Walls), via the Appletree Road, Welsh Road and A361 Byfield Road for a period of approximately four years;
- Temporary closure of Claydon Road (also known as Hill Road) with a temporary alternative route via Claydon Road (also known as Boddington Road), for a period of approximately one and a half years;
- Permanent closure of Claydon Road (also known as Boddington Road), with traffic diverted 550m to the north via the realigned Banbury Road; and
- Permanent diversion of Banbury Road, over more than 1km from Spella House into the Ladbrooke and Southam area (CFA16).

14.3.2. The following PRow will be affected by the scheme, namely:

- Footpath BD8; Bridleway BD7 ; Bridleway BD10; Bridleway AX16; Bridleway AX14; Footpath AN22; Footpath AN19; Footpath AN28; Footpath AN14; Footpath AN13; Footpath AN4; Footpath AN40; Footpath AN42; Footpath AN39; Footpath AN6; Footpath AY12; Footpath AE12; Footpath AE20; Footpath AE21; Footpath BB3; Banbury Lane Footpath; Bridleway AG9; Bridleway AG10; Footpath AE5; Footpath AE16; Footpath AE17; Footpath AA8; Footpath AC2; and Footpath AC1.

14.3.3. Since completion of the Environmental Statement in 2012, the construction methodology and programme has been reviewed and, as a result, it has been necessary to alter the plans proposed in the ES.

14.3.4. All reasonable endeavours will be made to ensure connectivity across the line of route for as long as is reasonably practicable and safe. Where this is not possible, a number of alternatives will be assessed for feasibility, such as diversions and weekend/evening closures. Only if it is deemed unsafe for a PRow to remain open and there are no reasonable alternatives will the PRow be closed. Closures will be kept to the minimum practicable duration and construction of the associated permanent work(s) is currently under review, with a view to accelerate the completion of PRow permanent diversions.

14.3.5. All closures and diversions will be assessed in full for EMR compliance, and any works must have an associated Schedule 4 submission, which will be communicated with the Local Authorities through the due processes outlined in the HS2 Act. The following temporary private access diversions will be required:

- To Greatworth Field during the construction of Bridleway AN14 accommodation overbridge;
- To Three Shires Farm, via the realigned Claydon Road (also known as Boddington Road);
- Into Cedars Farm, accessed from Claydon Road (also known as Boddington Road) on the west side of the route;
- And unnamed road, to Oatleys Wood for a period of one year, with permanent reinstatement along its existing alignment; and
- To land at Calves Close Spinney during construction of Chipping Warden Green Tunnel.

14.3.6. All temporary closures and diversions will be subject to appropriate consultation, submissions and notifications to the relevant highway authority.

## 14.4. Monitoring procedures

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

# 15 Waste and materials

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

## 15.2. Local control measures

### Testing and classification of materials

15.2.1. Characterisation of materials will be determined by the Contractor to ascertain suitability for reuse, recycling, recovery or disposal to inert, non-hazardous or hazardous landfill.

- 15.2.2. Materials Management Plans will be developed in accordance with the Definition of Waste: Development Industry Code of Practice to set out the processes to be adopted in respect of the reuse of excavated materials either on the Scheme or transferred to another development site.
- 15.2.3. In the event that excavated material is to be sent for disposal, which shall be the option of last resort, testing and classification of will be undertaken by the Contractors in line with the Environment Agency's guidance. This includes:
- Technical Guidance WM3: Waste Classification – Guidance on the Classification and Assessment of Waste (July 2015)<sup>8</sup>;
  - Waste Sampling and Testing for Disposal<sup>9</sup>;
  - Technical Guidance WM2 – Hazardous Waste, Interpretation of the Definition and Classification of Hazardous Waste (3rd Edition 2013)<sup>10</sup>; and
  - Technical Guidance WM2 – Appendix D Waste Sampling, A Supplement to Hazardous Waste, Interpretation of the Definition and Classification of Hazardous Waste (3rd Edition 2013)<sup>11</sup>.

#### **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.

---

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

<sup>9</sup> Environment Agency (2013), *Waste Sampling and Testing for Disposal to Landfill, March 2013*.

<sup>10</sup> Environment Agency (2013), Technical Guidance WM2 – Hazardous Waste, Interpretation of the Definition and Classification of Hazardous Waste (3rd Edition 2013).

<sup>11</sup> Environment Agency (2013), Technical Guidance WM2 – Appendix D Waste Sampling, A Supplement to Hazardous Waste, Interpretation of the Definition and Classification of Hazardous Waste (3rd Edition 2013).

## 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: Alluvium (Secondary A aquifer); Head (Secondary undifferentiated aquifer); Glaciofluvial deposits (Secondary A aquifer); Great Oolite Group (composed of formations designated as Principal and Secondary A & B aquifers); Inferior Oolite Group (Secondary A aquifer); Lias Group (composed of formations designated as Secondary type A aquifers and unproductive strata);
- The Contractor will have due regard to the three licensed groundwater abstractions and four unlicensed groundwater abstractions present within the study area. There is also a potential private drinking water supply at Edgcote near Chipping Warden. There are no Source Protection Zones (SPZs) in this study area;
- Surface water features: River Great Ouse; Unnamed tributary of River Great Ouse; Radstone Brook; Unnamed tributary and headwater channel of the Radstone Brook, three source streams of the River Cherwell, the largest of which is referred to as Culworth Brook; Unnamed source stream of Culworth Brook; Tributary of River Cherwell from Danes Moor; River Cherwell; Tributary of River Cherwell; Highfurlong Brook; Unnamed drain from Boddington Feeder Channel; Boddington Feeder Channel (Oxford Canal); Unnamed tributary of Boddington Feeder Channel (Oxford Canal); and numerous small ponds within 1km radius of the Scheme;
- Issues and Springs: issues south of Halse Copse, springs to south of Halse Copse Farm, spring at Bungalow Farm, spring at Greatworth Fields, issues south-west of Greatworth Hall, spring at the disused railway embankment between Greatworth Hall and Stuchbury Fox Culvert, issues at Floyd's Farm, issues south of Greatworth, springs and issues at Oldbarn Spinney, issues at Painters Spinney, springs and issues at Keepers Cottage, issues south-west of Magpie Cottage and issues east of Costow House; and
- Water dependent habitats: Trafford Bridge Marsh Local Wildlife Site (LWS); Culworth Marsh LWS; Washbrook Spinney LWS; Washbrook Lake LWS; Helmdon Disused Railway SSSI and Fox Covert (Whitfield) LWS. In addition, small areas of woodland to the west and south-east of Greatworth that may contain some areas of water dependent habitat. There is also an area of habitat with fen characteristics at Costow Field.

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:

- Culworth Brook;
- River Cherwell and tributaries;
- Highfurlong 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:

- At Lower Thorpe hamlet and Lower Thorpe Farm there are residential properties within Flood Zone 3 (including Twin Oaks, Water End and Manor Cottages);
- Near where the route will cross the River Cherwell on the Edgcote viaduct there are two residential properties in Flood Zone 3 (Edgcote Mill and Home Farm); and
- Land used by the equestrian centre at Washbrook Farm is located within Flood Zone 3 near the Highfurlong Brook viaduct.

### **16.3. Potential sources of contamination**

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

### **16.4. Local control measures**

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

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. As noted in Section 5.12 of this document, a pollution incident control management system 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. The monitoring programme scope and duration will be developed and agreed with the Environment Agency in consultation with other stakeholders as necessary (Lead Local Flood Authority LLFAs and Internal Drainage Board (IDBs)). A management strategy will also be agreed with the Environment Agency in consultation with other stakeholders that will cover any physical mitigation required for the protection of public water supply.
- 16.4.5. If dewatering from excavations is required, it will be carried out in consultation with the Environment Agency and will take into consideration risks posed to water quality or quantity and not adversely affect those who have a protected right to abstract water.
- 16.4.6. If required, appropriate guidance will be adhered to, including the Piling and Preventative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution Prevention<sup>12</sup>. 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. Site specific flood risk management plans will be prepared prior to works within flood plains to manage the potential risks. These plans will take account of the flood risk assessments produced for CFA14 and CFA15 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 of the Act.
- 16.4.9. In certain instances, the excavated retained cut is at a level below the natural ground water table. Mitigation, where necessary with continuous piles or grouting, will ensure that any changes to local groundwater levels and flow are minimised through the use of cut-offs and applying relatively short timescales for dewatering. A hydrogeological risk assessment will be produced for all construction earthworks activities to support the Schedule 33.5 applications, where required. In addition, the

---

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

permanent design solution for cuttings and green tunnels shall be assessed in line with the Water Framework Directive and Undertaking and Assurance 49.

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

# Appendix 1: Glossary of Terms

AP	Additional Provision
CFA	Community Forum Area
WNC	West Northamptonshire Council
CoCP	Code of Construction Practice
Contractor	The Contractor on a construction site is responsible for planning, managing and coordinating themselves and/or the works and all other Subcontractors working on their site, or any other Contractor directly employed by the Nominated Undertaker to undertake key construction works on site.
CoPA	Control of Pollution Act 1974
ES	Environmental Statement
HGVs	Heavy Goods vehicles
HS2	High Speed 2
HS2 Ltd	High Speed Two Limited - is a company wholly owned by the Department for Transport, established in 2009 to develop plans for a new high-speed network and present a route connecting London - West Midlands.
IAQM	Institute of Air Quality Management
IP	Information Paper
LCAs	Landscape character areas
LEMP	Local Environmental Management Plan
LTMP	Local Traffic Management Plan
LWS	Local Wildlife Site
Nominated Undertaker	The body or bodies appointed to implement the powers of the HS2 Act 2017 to construct and maintain the railway.
PRoW	Public rights of way
RRVs	Road Rail Vehicles. A vehicle which can operate both on rail tracks and road, often used for railway maintenance.
RTMP	Route-wide Traffic Management Plan
SBI	Site of Biological Importance
Scheme	The Scheme to which this CoCP relates is the high-speed railway between London - West

	Midlands. This is a high-speed railway between London - West Midlands with a connection via the West Coast Main Line at conventional speeds to the North West and Scotland and to the Channel Tunnel via HS1. It includes four high speed rail stations at London Euston, Old Oak Common (West London), Birmingham Airport (Birmingham Interchange) and Birmingham (Curzon Street).
Section 61	Section 61 of the Control of Pollution Act 1974 (which sets out procedures seeking and obtaining local authority consent to measures for the control of noise and vibration on construction sites).
SES	Supplementary Environmental Statement
SFRA	Strategic Flood Risk Assessment
SLI	Site of Local Importance
SMI	Site of Metropolitan Importance
SPZ	Source Protection Zone
SRP	Soil Resources Plan
SSMP	Site Specific Management Plan
SSSI	Site of Special Scientific Interest
TMP	Traffic Management Plan

# Appendix 2: Non-exhaustive list of Local Interest and Community Groups in West Northamptonshire District

West Northamptonshire Council	Culworth Church of England (CofE) Primary School
Aston Le Walls Parish Council (PC)	Chipping Warden Primary School
Boddington PC	Boddington CofE Primary School
Chipping Warden and Edgcote PC	Brackley C of E junior School
Culworth PC	Radstone Primary School
Thorpe Mandeville PC	St Mary's Catholic Primary School, Aston le Walls
Greatworth PC	Greatworth Primary School
Evenley PC	Magdalene College, Brackley
Marston St. Lawrence PC	
Radstone PC	Brackley Round Table
Helmdon PC	Brackley Food Bank
Whitfield PC	Northamptonshire Chamber of Commerce
Brackley Town Council	Brackley Football Club
Syresham PC	Silverstone Racetrack
Turweston PC	Whitfield Racecourse
	Washbrook Farm Equestrian Centre
St Lawrence's Church	Culworth Grounds Farm (Equestrian Centre)
St Mary Magdalene Church, Helmdon	Edgcote Estate
Greatworth St Peter's Church	Appleton Business Park
Cottisford St Mary the Virgin	Greatworth Park
	R.I.F.T. Airsoft
Highways Agency	Greatworth Hall Estate
Ramblers Association (Northamptonshire)	Canal and River Trust
Bat Conservation Trust	Battlefields Trust
Wildlife Trust for Bedfordshire, Cambridgeshire and Northamptonshire	Northamptonshire Archaeological Society

Natural England

Banbury Ornithological Society

Environment Agency

RAF Croughton

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

# **Appendix 3: Radstone and Helmdon Disused Railway Key Environmentally Sensitive Worksite Management Plan**



Working in  
partnership with

**HS2**

---

# **Radstone and Helmdon Disused Railway – Key Environmentally Sensitive Worksite Management Plan**

**P1C-HS2-EV-PLN-C000-000013**

Security classification: OFFICIAL

# Contents

<b>1</b>	<b>Introduction</b>	<b>1</b>
1.1	Background	1
1.2	Radstone and Helmdon Disused Railway in the Context of HS2	1
1.3	Purpose of the Management Plan	3
1.4	Consultation	4
<b>2</b>	<b>Potential impacts reported in the Environmental Statement</b>	<b>5</b>
<b>3</b>	<b>Consultation on outline Site design</b>	<b>6</b>
<b>4</b>	<b>Design and construction</b>	<b>6</b>
<b>5</b>	<b>Overview of works within Radstone and Helmdon Disused Railway</b>	<b>9</b>
5.1	Enabling works	9
5.2	Main works	10
<b>6</b>	<b>Summary</b>	<b>11</b>
<b>7</b>	<b>Appendix</b>	<b>11</b>
7.1	Consultation with Natural England	11
7.2	Agreements from Natural England consultation	13
<b>List of figures</b>		
	Figure 1: Site Location	3
	Figure 2: Proposed habitats and features	8

# 1 Introduction

## 1.1 Background

1.1.1 The HS2 Environmental Memorandum 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 are 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 key environmentally sensitive worksites management plans (KESWMP) are 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 updated as HS2 Contractors develop their designs and programme.

1.1.4 This management plan is for the Radstone and Helmdon disused railway.

## 1.2 Radstone and Helmdon Disused Railway in the Context of HS2

1.2.1 The Radstone and Helmdon disused railway is located near Brackley in Northamptonshire and falls within West Northamptonshire Council area. It is identified in the HS2 Environmental Memorandum as being a key environmentally sensitive worksite in relation to the category 'nature conservation, terrestrial and aquatic ecology'. However, there is no aquatic ecology associated with this site and therefore only terrestrial ecology is discussed in this document.

1.2.2 The section of Radstone and Helmdon disused railway which intersects with HS2 is a Site of Special Scientific Interest (SSSI).

- 1.2.3 The SSSI is 16.6ha in area and approximately 4km long and is designated for lowland calcareous grassland, a habitat of principal importance under Section 41 of the Natural Environment and Rural Communities (NERC) Act (2006) and a local Biodiversity Action Plan (BAP) habitat.
- 1.2.4 The citation for the SSSI (updated in 1991) details the 'features of interest' for which the SSSI is considered special and has been legally notified.
- 1.2.5 The SSSI's botanical interest is due plant communities associated with the habitat type Jurassic limestone grassland, which is scarce in Britain and particularly in Northamptonshire. The site has three distinct grassland communities, reflecting the underlying soil conditions as well as past and present management practices. The site supports a rich butterfly fauna including the nationally scarce wood white (*Leptidea sinapsis*) and five nationally declining species. Of particular note is the presence of small blue (*Cupido minimus*) a species of principal importance at its only Northamptonshire locality.
- 1.2.6 The SSSI is divided into four units; with units 1 is 3.3 ha, unit 2 is 4.0 ha, unit 3 is 3.1 ha and unit 4, which is the most southerly unit, is 6.2 ha in area. Unit 1 contains the best area of remaining good quality calcareous grassland habitat. The condition status of the SSSI is classified as 'unfavourable recovering' as of January 2013. The site entered the High-Level Stewardship (HLS) in 2012 and management to achieve favourable condition is ongoing.
- 1.2.7 The Phase One route bisects the SSSI approximately 380m from its southern end, shown on Figure 1. The area of the SSSI directly affected by the scheme is 2.34 ha or 14% of the total SSSI area. References to the Site refer to the land represented by the intersect of the SSSI and Phase One boundaries shown on Figure 1.
- 1.2.8 The Site bisects a small hill, with the disused railway being in a cutting 12m below surrounding ground level at its southern end but at ground level at its northern end as the land slopes to the North. At the southern end a bridleway and farm access track crosses over the disused railway on a brick-built bridge. The bridleway is referenced as Bridleway AX15.
- 1.2.9 The proposed scheme is shown on Map CT-06-066-L1, published as part of the HS2 Phase One Environmental Statement.

Figure 1: Site Location



## 1.3 Purpose of the Management Plan

1.3.1 The purpose of this management plan is to:

- Identify future works potentially affecting the Site in relation to the HS2 scheme;
- Outline mitigation, compensation and monitoring requirements and opportunities for enhancement in relation to nature conservation and terrestrial ecology at the Site;
- 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 West Northamptonshire Council. The management plan is part of a suite of documents which identify environmental issues, controls, and opportunities in relation to the Radstone and Helmdon disused railway including:

- The Environmental Minimum Requirements: which contains the Code of Construction Practice (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 and where appropriate, heritage applications under Schedule 18, 19 and 20.
- HS2 design policy (see Information Paper D1: Design Policy).

- The site-specific Ecology Site Management Plan (ESMP): outlines maintenance and management requirements for ecological mitigation sites; two of which are associated with the Site: AP2-M7 (Radstone Footpath AX15 Green Overbridge) and 096-M1E (Helmdon disused railway SSSI).
- Protective provisions. The Act 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.
- Legally binding consenting and licensing process. HS2 Ltd will be submitting licenses and consents in accordance with the Schedules of the Act.
- 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 This management plan is a 'live document' and will be reviewed whenever there is a significant change to works proposed in line with the revision of the Local Environmental Management Plans (LEMPs). This was first produced by Fusion as a first draft and was submitted to the National Environment Forum (NEF) for consultation and subsequent publication. Future revisions of this KESWMP will always go through consultation with NEF to ensure they are kept up to date with works.

## 1.4 Consultation

1.4.1 NEF members and relevant planning authorities will be consulted on the KESWMP following requirements within the HS2 Environmental Memorandum. In addition, relevant landowners will be consulted where appropriate.

1.4.2 Copies of the updated plan will be made available for consultees electronically. Comments from NEF members and planning authorities will be collated for consideration of updates and amendments.

1.4.3 Following the Environmental Memorandum commitments, the management plan will be submitted with Schedule 17 submission SNC P1 Turweston to Radstone to local planning authorities and, where appropriate, heritage applications. A link to the HS2 Ltd website area containing the LEMP and KESWMP will be provided for Schedule 17 submissions.

1.4.4 HS2 Contractors will work closely with key stakeholders, communicating and consulting as appropriate on works within the area.

## 2 Potential impacts reported in the Environmental Statement

- 2.1.1 The Phase One Environmental Statement (ES) reported that construction of the Brackley South Cutting would remove approximately 0.8ha (4.8 %) of the SSSI, of which 0.1 ha was lowland calcareous grassland. This would sever the site isolating the southernmost 16% of the SSSI from the remainder. The fragmentation of the SSSI (90m at its narrowest point) is likely to restrict the movement of species such as the wood white butterfly. The impacts of the project would result in a permanent adverse effect on the structure and function of the SSSI that is significant at the national level.
- 2.1.2 The AP2 revised scheme includes the provision of an approximately 24m-wide green bridge at Radstone (Footpath AX15 Green Overbridge) that would follow the route of the Helmdon Disused Railway SSSI to enable bats using this flight path to fly safely over the AP2 revised scheme. This green bridge would also provide a corridor for butterflies to cross over the railway. The bridge would require the construction of footings for the green bridge within the SSSI. This would result in an additional loss of up to 1.4ha from the SSSI of which almost 0.6ha is lowland calcareous grassland, for which the site is designated. These impacts would result in a different significant effect on the SSSI. However, this will not change the level of significance of the effects reported in the main
- 2.1.3 The AP2 revised scheme altered the location and extent of the ecological and landscape mitigation previously reported in the main ES. The amendment included the relocation of land that would provide compensation for the loss of lowland calcareous grassland at Helmdon Disused Railway SSSI. The replacement compensatory habitat creation identified in the amendment to the ES comprised 5.2ha of landscape earthworks situated on both sides of the route to the north of the SSSI. In addition, limestone would be used to create a mosaic of calcareous grassland and scrub across the green bridge to replicate the habitat of the SSSI. The area required to compensate for the loss of habitat from the SSSI in the AP2 revised scheme is smaller (5.2ha) since the green bridge would avoid the permanent fragmentation of the southernmost 16% of the SSSI.
- 2.1.4 The AP2 revised scheme removed approximately 2ha of woodland habitat mitigation proposed in the original scheme. Additional hedgerow habitat mitigation would be provided to funnel the movement of bats towards the green bridge. The hedgerow planting would also provide visual screening for the village of Radstone.

2.1.5 Overall construction of HS2 Phase One was predicted to result in the removal of approximately 2.2 ha of habitat from the SSSI (over 13%).

## 3 Consultation on outline Site design

3.1.1 The following was agreed between Natural England and HS2 Ltd, in early 2017, regarding compensation for impacts on the SSSI:

- A National Vegetation Classification (NVC) survey to sub-community level of the SSSI habitat to be lost would be carried out by HS2 Ltd;
- The NVC survey undertaken by Fusion in 2017 identified Calcareous grassland: CG3b Bromus erectus grassland, present along the middle and upper sides of the disused railway cutting. It was also noted in the NVC survey that the decline of this habitat type was largely due to the increased extent of scrubby communities at the Site (W21a/OV24b). NVC communities approximated to hawthorn and ivy scrub (W21a Crataegus monogyna-Hedera helix scrub) and open habitats dominated by common nettle and cleavers (OV24b Urtica dioica-Galium aparine community).
- HS2 Ltd to consult Natural England at the detailed design phase, on the ESMP and on this management plan;
  - Consultation can be seen in the Appendix 7.1.
  - Consultation agreement can be seen in Appendix 7.2
- Compensation areas of calcareous grassland, totalling an approximate area of 5.2 ha, to be created on railway embankments and HS2 Ltd would seek to provide calcareous grassland on the cut slopes facing the railway and through habitat creation up to Footpath AX15 Green over bridge and the preferred methodologies for habitat creation will be discussed with Natural England;
- A principle of betterment would be applied to habitat creation sites;
- HS2 Ltd would ensure the habitat creation areas include key food plants for small blue and scarce wood white butterflies; and
- HS2 Ltd commit to ensuring long-term monitoring and management to ensure the habitat creation areas are successfully established and maintained.

## 4 Design and construction

4.1.1 On 16 November 2016, contracts were awarded to three Enabling Works Contractors (EWC) working across Phase One of HS2. Fusion is the EWC for the area that covers Helmdon Disused Railway. Fusion's work encompassed surveys, species mitigation work and vegetation clearance within the Site.

- 4.1.2 On 17 July 2017 contracts were awarded for HS2's Main Works Civils Contractors (MWCC). The MWCC covering the site is EKFB which is a joint venture between Eiffage, Kier, Ferrovial Agroman and BAM Nuttall. Fusion's work will be completed in Summer 2022 and ongoing works transferred to EKFB.
- 4.1.3 The habitat design process is still ongoing, however, the current design and plans are set out in the ESMP and summarized in this document. The ESMP document reference is Helmdon Disused Railway SSSI Ecological Mitigation Site Management Plan (1MC07-CEK-EV-REP-CS07\_CL12-000040). The area within the footprint of the AX15 Green overbridge is referred to within this plan and is subject to its own ESMP: Radstone - Footpath AX15 Green Overbridge Ecological Mitigation Site Management Plan (1MC07-CEK-EV-REP-CS07\_CL12-000041).
- 4.1.4 The current design includes creation of compensation areas totalling 8.44ha of calcareous grassland. This is an increase of 62% since the outline discussions on design between HS2 Ltd and Natural England in 2017. Opportunities to increase the area of calcareous grassland provision further are still being explored.
- 4.1.5 The aim will be to create species-rich calcareous grassland targeting NVC community types CG3 *Bromus erectus* and CG7a, b, d and e *Festuca ovina* – *Hieracium pilosella* – *Thymus praecox* grassland as appropriate for the local conditions. The grassland will provide replacement habitat for the notable species of invertebrate and reptiles associated with the SSSI. These habitats will be consistent with and connected to habitat creation proposed on the green over bridge which is described in the Radstone - Footpath AX15 Green Overbridge ESMP.
- 4.1.6 The seed mix for grassland creation on this site will also include key food plants for four identified scarce butterfly species: the small blue, dingy skipper, grizzled skipper and wood white.
- 4.1.7 Thin strips of dense scrub and/or species-rich hedgerows will also be provided along the edge of the site to maintain a flight corridor for foraging and commuting bats, and safe refuge for reptiles. A total of 450m of hedgerow and 0.2ha of scrub habitat will be created.
- 4.1.8 Habitats and features to be created are shown on Figure 2.

Figure 2: Proposed habitats and features



Legend

- |  |  |
|--|--|
|  ESMP Site Boundary |  Hedgerow                                   |
| <b>HS2 Route Formation</b>   |  Dense Scrub                                |
|  Cutting            |  Lowland Calcareous Grassland               |
|  Embankment         |  Radstone - Footpath AX15 Green Overbridge  |
|  100m Interval      |  Site of Special Scientific Interest (SSSI) |

- 4.1.9 In accordance with HS2 Ltd's route wide goal of achieving no net loss in biodiversity, habitat creation at the Site will aim to maximise the distinctiveness and condition of created habitats.
- 4.1.10 To ensure there is a flight line available for the Natterer's bat population at Radstone there have been discussions around the AX15 overbridge. Enlargement of the Brackley Culvert is still under consideration to make it suitable for use as a bat route, together with additional hedgerow planting to funnel the movement of bats towards Footpath AX15 Green Overbridge. The design of the bridge will follow the principles of HS2 Information Paper E15 Green Bridges (for a Type 2 green bridge for important populations of scarce bat species and high value assemblages of bats).
- 4.1.11 The new habitats will be created in accordance with the Ecological Principles of Mitigation provided in ES Volume 5 Appendix CT-001-000/2. Following maturation of the habitats both in the calcareous grassland compensation area and on the green bridge, the impacts from habitat loss and fragmentation will be reduced to a level at which they will not result in a significant effect on the structure and function of the SSSI.
- 4.1.12 Sufficient long-term monitoring will be undertaken to ensure the habitat creation areas are successfully established and maintained. The HS2 Information Paper on monitoring E26: Indicative Periods for The Management and Monitoring of Habitats indicates the need for monitoring at Years 1, 2, 3, 4, 5, 8, 11 and 14. The ESMP outlines monitoring requirements in more detail.
- 4.1.13 The grassland habitats created at the site will be subject to management agreements with the landowner and are still being finalised but will include mowing and grazing.

## **5 Overview of works within Radstone and Helmdon Disused Railway**

### **5.1 Enabling works**

- 5.1.1 No construction works have been undertaken within the Site by Fusion. An artificial badger sett was constructed on land to the Northwest of the Site.
- 5.1.2 Updated botanical surveys (NVC survey to sub-community level) were undertaken within the Site to inform the design of mitigation, as mentioned previously.

5.1.3 Species surveys of the site and surrounding areas have been undertaken and species mitigation undertaken under appropriate licenses for badger, bats and great crested newts. This work also included clearance of scrub from the site.

## 5.2 Main works

5.2.1 Some intrusive ground investigation has been undertaken through trial pitting and rotary cored boreholes within the SSSI under a Schedule 28 Assent from Natural England. Two more points of ground investigation are currently planned within the SSSI. Reference 316854.

5.2.2 The first construction works by EKFB at the Site have commenced in 2022 and include early works to: construct an earthworks ramp to provide vehicular access to land west of the Site; construction of a site access road and early works associated with construction of the Brackley South Cutting, Brackley Embankment and Footpath AX15 Green Overbridge. Consultation with Natural England on the scope and timing of the works has been through meetings and site visits undertaken in 2021, this can be seen in Appendix 7.1. This work is subject to a Section 28 Assent with Natural England. Reference 369516.

5.2.3 As part of the consultation with Natural England programme reviews and updates will be sent to Natural England every six months to review progress and designs.

- The activities to be undertaken within the Site by EKFB include:
- Soil stripping;
- Creation of access ramps and internal roads;
- Drainage work;
- Excavation work;
- Construction of AX15 green overbridge, including piling; and
- Landscaping and restoration work.

5.2.4 The habitat mitigation areas, outlined in Section 4 of this document, will be created between 08/2022 and 08/2024 following the construction of Brackley Embankment and Brackley South Cutting.

5.2.5 Additional habitat improvement was raised by Natural England at a site visit during 2021, relating to the section of the SSSI to the south of the area affected by HS2. Consultation regarding this is ongoing with the landowner by EKFB to assist with maintenance and reduce the scrub encroachment while access is impeded by HS2 works.

## 6 Summary

- 6.1.1 This document addresses the impacts associated with the Radstone and Helmdon disused railway. The nature conservation and terrestrial ecology have been assessed and the process for mitigation, compensation, and opportunities for enhancement within Radstone and Helmdon Disused Railway area are outlined.
- 6.1.2 The KESWMP will be reviewed when significant changes to the design or construction works are identified.

## 7 Appendix

### 7.1 Consultation with Natural England

Date	Organisation	Named Contact	Comment	Response
24/02/2015	High Speed Rail Committee, residents of Radstone	Mr Robert Syms	Helmdon SSSI court case re ownership	Land Ownership in the area was determined
01/02/2017	Natural England	Adrian Osborn	Natural England's position was clarified along with several issues agreed with HS2 (Doc ref: 1EW03-FUS-EV-REP-C000-002023)	The EKFB ESMP (Doc Ref. 1MC07-CEK-EV-REP-CS07_CL12-000040) has been created in line with these agreements
04/05/2018	Natural England and Fusion		Fusion issues KESWMP to Natural England	Document reference 1EW03-FUS-EV-PLN-C003-000002
16/09/2020	HS2, Natural England, EKFB, ASC	Mark Drayton	Helmdon SSSI update meeting. Aim of the meeting to update Natural England on design development works and provide a forward look ahead of activities.	Several actions taken on by HS2, EKFB ASC & Natural England. Natural England expressed an interest in maintaining involvement with design.

Date	Organisation	Named Contact	Comment	Response
05/07/2021	EKFB, ASC, Natural England	Zara Rostance	Presentation	Design update, Sch17 plans and future engagement.
10/08/2021	EKFB, ASC, Natural England	Paul Manson	Natural England Representative Julian Key attended a site visit to discuss management of SSSI compensation & mitigation. Notes collated by Paul Manson.	Design to maximise creation of calcareous grassland where possible and use new seed mix instead of maintaining the existing seed bank.
30/09/2021	Natural England	Pierre Fleet	Section 28 Assent granted. Reference 369516	Works granted from 1st November 2021 to August 2023. 6 monthly programme updates requested
09/12/2021	Land owner	Murry Brown	During Radstone Parish meeting discussions about maintenance of the SSSI that will not be able to be inaccessible during the construction of HS2.	Waiting on formal agreement with landowner that maintenance can take place as part of green corridor
10/01/2022	Natural England	Matt Taylor	ESMP submitted for comment to NE	Small change in when vegetation maintenance would take place (outside of bird nesting season)

## 7.2 Agreements from Natural England consultation

Agreement	Responsible	Date
NVC surveys to be completed on the SSSI.	EWC	Complete
The scrub density on the landscape planting has been decreased.	MWCC -Design	Detailed Design
The extent of the ecological mitigation area will create a mosaic of calcareous grassland and scrub in the surrounding landscaping and on the AX15 overbridge. Approximately 5.2 ha.	MWCC- Design	Detailed Design
Habitat creation areas will include key food plants for the SSSI invertebrates (Small Blue and nationally scarce Wood White butterflies). These include Wild Thyme <i>Thymus drucei</i> , locally appropriate Clover species and Yellow-rattle <i>Rhinanthus minor</i> .	MWCC - Design	Detailed Design
Grassland creation to be unimproved grassland rather than improved grassland.	MWCC – Design	Detailed Design
The AX15 bridge is now 24m wide to enable use as a bat flight path.	MWCC – Design	Detailed Design
Additional hedgerow planting to encourage movement of bats towards AX15.	MWCC – Design	Detailed Design
Brackley culvert will be enlarged to make it suitable for use as a bat route.	MWCC – Design	Detailed Design
Translocation of soil and seedbanks from the SSSI will no longer take place.	MWCC - Design	Detailed Design
Scrub clearance of the SSSI that is within the land take limits but will not be impacted by the construction works.	MWCC	Construction
Existing bridge that crosses the SSSI to remain and not be demolished as part of the construction works	MWCC	Construction
Six months updates on programme to be submitted to Natural England by EKFB.	MWCC	6 monthly
Long term maintenance of the grassland to look at grazing and grazing partnerships.	MWCC – design / HS2	Detailed Design
Pasture pumps to be looked at to allow animals to drink if grazing takes place, rather than risk them entering and fouling ponds.	MWCC - Design	Detailed Design