



Phase 2b Western Leg Information Paper

E2: Ecology

This information paper outlines the approaches taken to assessing, mitigating and compensating ecological impacts of the Proposed Scheme.

It will be of particular interest to those potentially affected by the Government's proposals for high speed rail.

This paper was prepared in relation to the promotion of the High Speed Rail (Crewe - Manchester) Bill. Content will be maintained and updated as considered appropriate during the passage of the Bill.

If you have any queries about this paper or about how it might apply to you, please contact the HS2 Helpdesk in the first instance.

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1 Introduction

- 1.1 High Speed Two (HS2) is the Government's scheme for a new, high speed north-south railway, which is being taken forward in a number of phases. Phase One will connect London with Birmingham and the West Midlands. Phase 2a will extend the route from the West Midlands to Crewe. The Phase 2b Western Leg will connect Crewe to Manchester. As set out in the Integrated Rail Plan, published in November 2021, HS2 East is proposed to deliver a new high speed line from the West Midlands to East Midlands Parkway.
- 1.2 HS2 Ltd is the non-departmental public body responsible for developing and promoting these proposals. The company works under the terms of a Development Agreement entered into with the Secretary of State for Transport.
- 1.3 The construction and operation of Phase One of HS2 is authorised by the High Speed Rail (London – West Midlands) Act 2017 and Phase 2a by the High Speed Rail (West Midlands – Crewe) Act 2021.
- 1.4 In January 2022, the Government introduced a hybrid Bill to Parliament (hereafter referred to as 'the Bill'), to seek powers for the construction and operation of the Phase 2b Western Leg (the Proposed Scheme), which is called the High Speed Rail (Crewe – Manchester) Bill. The Proposed Scheme comprises the Phase 2b Western Leg from Crewe to Manchester and several off-route works. It also facilitates the delivery of Northern Powerhouse Rail by providing the Crewe Northern Connection and junctions and other infrastructure to be used in future schemes.
- 1.5 The work to produce the Bill includes an Equalities Impact Assessment and an Environmental Impact Assessment (EIA), the results of which are reported in an Environmental Statement (ES) submitted alongside the Bill. The Secretary of State has also published draft Environmental Minimum Requirements (EMRs), which set out the environmental and sustainability commitments that will be observed in the construction of the Proposed

Scheme. For more information on the EMRs please see Information Paper E1: Control of environmental impacts.

- 1.6 The Secretary of State for Transport is the Promoter of the Bill through Parliament. The Promoter will also appoint a body responsible for delivering the Proposed Scheme under the powers granted by the Bill. This body is known as the 'nominated undertaker'. There may be more than one nominated undertaker. However, any and all nominated undertakers will be bound by the obligations contained in the Bill, the policies established in the EMRs and any commitments provided in the information papers.
- 1.7 These information papers have been produced to explain the commitments made in the Bill and the EMRs and how they will be applied to the design and construction of the Proposed Scheme. They also provide information about the Proposed Scheme itself, the powers contained in the Bill and how particular decisions about the Proposed Scheme have been reached.

2 Overview

- 2.1 This information paper sets out the approaches taken to assessing, mitigating and compensating for the ecological impacts of the Proposed Scheme. It also explains key biodiversity policies of the Promoter and the approach taken to ancient woodland impacts, as well as the long-term management and monitoring commitments in place.

3 Approach to ecological assessment

- 3.1 The design of the Proposed Scheme reflects the 'Mitigation Hierarchy' consistent with National Planning Policy Framework and guidance on Environmental Impact Assessment. This approach is set out below.

Figure 1: The 'Mitigation Hierarchy'



3.2 Using the Mitigation Hierarchy, priority is given to avoiding or preventing effects where reasonably practicable; if not, to reducing or abating those effects; and then, if necessary, to offsetting them through repair (restoration or reinstatement) or compensation. Efforts have been made to reduce the duration, scale and extent of the anticipated effects in instances where avoidance has not been reasonably practicable. Appropriate compensation or enhancements have been identified to offset effects that are still anticipated following mitigation.

3.3 The approach used by HS2 Ltd for ecological mitigation and compensation is set out in the Scope and Methodology Report addendum (SMR) of the ES (Ecological Principles of Mitigation, Volume 5: Appendix CT-001-002) and explains the factors determining the cases in which these should be applied.

3.4 The ecological impact assessment has taken account of guidance published by the Chartered Institute of Ecology and Environmental Management (CIEEM). It considers all ecological receptors which have the potential to be affected by the construction and/or operation of the Proposed Scheme. The assessment includes the consideration of effects arising from habitat loss, fragmentation of sites, severance of ecological networks, noise and visual disturbance, barrier effects to movement of fauna, lighting, changes in water quality and quantity, air pollution, and mortality as a result of collisions with trains. In line with the CIEEM

approach, the evaluation of species receptors has been based on the distribution and status of the species concerned, rather than being based solely on the legal protection afforded to that species.

3.5 The spatial scope of the assessment depends on the ecological receptor under consideration and the magnitude and nature of the potential impacts. It has, as a minimum, included areas located within and adjacent to the land required for the construction of the Proposed Scheme.

3.6 The assessment has taken account of both desk based and field surveys. Existing biological data for the Proposed Scheme has been obtained from relevant Local Biological Records Centres and from national and local specialist data sources, such as wildlife trusts and ornithological groups. Local biodiversity action plans and ancient woodland inventories have also been consulted.

3.7 A wide range of field surveys have been conducted to inform the ES. The survey methodologies used have been based on relevant best practice approaches. The survey methods used are set out in the SMR addendum (Ecological Field Survey Methods and Standards, Volume 5: Appendix CT-001-00001) of the ES submitted with the Bill.

3.8 A precautionary approach to valuation has been used for instances where baseline information is incomplete, to ensure that all likely impacts of the Proposed Scheme have been identified. The degree of precaution built into the assessment for each receptor reflects the level of confidence in the existing data available.

4 Net gains in biodiversity

4.1 The Proposed Scheme's plans for nature recovery include seeking to achieve a 10% net gain in biodiversity excluding irreplaceable habitats. To demonstrate progress towards this objective, habitat losses and gains will be measured using a biodiversity metric.

4.2 It should be noted that the biodiversity metric is used as an accounting tool to check that the mitigation and compensation provided through the

EIA process is in line with the project objective; it has not been used to inform the level of compensation provision. As the design of the Proposed Scheme is modified or becomes more detailed, it is intended that the biodiversity accounting calculation will be run at appropriate intervals to measure progress towards the biodiversity net gain objective.

4.3 While every effort has been made to avoid losses of irreplaceable habitats (such as ancient woodland), there are some instances where due to other design constraints, losses are unavoidable. HS2 Ltd acknowledges that the biodiversity losses of irreplaceable habitats as well as the biodiversity gained through associated compensation measures will not form part of the biodiversity accounting calculations. HS2 Ltd's response to irreplaceable habitat loss will be reported separately. A separate Ancient Woodland Strategy, which outlines the anticipated losses at each ancient woodland site and the specific measures being taken to compensate for these unavoidable losses, has been produced. The Ancient Woodland Strategy can be found on: www.gov.uk/government/publications/hs2-ancient-woodland-reports

4.4 HS2 Ltd is developing a Biodiversity Action Plan for Phase One, Phase 2a and the Phase 2b Crewe to Manchester section of HS2, which will set out mechanisms for the project to achieve its nature recovery ambitions in line with the HS2 Environmental Policy (available at: <https://www.gov.uk/government/publications/hs2-environmental-policy>) and the HS2 Environmental Sustainability Vision (available at: <https://www.hs2.org.uk/about-us/our-documents/environmental-sustainability-vision/>). The Biodiversity Action Plan will be developed, taking into account all stakeholder input, and will be published in Autumn 2023.

5 Protected sites

5.1 The EIA undertaken for the Proposed Scheme has taken account of internationally, nationally and locally designated sites for wildlife. The Proposed Scheme will not directly affect any internationally designated sites. There are 13 statutory designated nature conservation sites where

it has not been possible to rule out significant effects as a result of the AP2 revised scheme at this stage of the assessment. These effects arise as a result of construction and/or operational phase traffic emissions effects. These designated sites comprise 5 sites of international conservation value and 8 of national conservation value, five of which are component parts of the aforementioned international sites. Further assessment of the potential effects will continue in accordance with the requirements of Regulation 63 of the Conservation of Habitats and Species Regulations 2017 (as amended).

- 5.2 Habitats Regulations Assessment (HRA) screening reports and associated addenda for any international sites considered as part of the assessment are available in the SMR (Ecological Principles of Mitigation, Volume 5: Appendix CT-001-002) of the ES.
- 5.3 Where it has not been possible to rule out all significant effects on an internationally designated site further assessment will be carried out in accordance with the Habitat Regulations.
- 5.4 As reported in the ES, as amended by AP1 and AP2, 36 non-statutory wildlife sites comprising 32 Local Wildlife Sites (LWS) and four locally designated Sites of Biological Interest (SBI) will be subject to significant adverse effects and/or fragmentation effects. Where a significant adverse effect on the integrity of a non-statutory wildlife site is expected, sufficient compensation will be incorporated into the Proposed Scheme to address effects on the conservation status of the habitats and species for which that non-statutory wildlife site was designated. Effects to individual sites and associated mitigation and/or compensation are described in detail in Section 8 of the Volume 2 Community Area reports within the ES, and Volume 2 Community Area reports for SES1 and AP1 ES and SES 2 and AP2 ES
- 5.5 HS2 Ltd has carried out a review, as part of the Ancient Woodland Strategy, to identify existing ancient woodlands along the line of route not already listed on the respective ancient woodland inventories (AWI) in England and Scotland. This review found that the Proposed Scheme will

result in loss of up to approximately 5.1 ha of ancient woodland across 15 sites, 12 of which were already on the AWI. To seek to partially compensate for the loss of ancient woodland the nominated undertaker will use best practice measures such as re-using the ancient woodland soils where practicable, enhancement of retained woodland and creating new mixed deciduous woodland. However, it is acknowledged that it is not possible to replace ancient woodland. Losses of habitats that are irreplaceable are reported in the ES as permanent adverse effects. Further details can be found in the Ancient Woodland Strategy.

- 5.6 HS2 Ltd recognises that ancient and veteran trees are also an irreplaceable habitat and their potential loss will result in a permanent adverse effect that is significant at a national level in each case. Where reasonably practicable, measures will be taken to protect and retain ancient and veteran trees within and adjacent to the proposed works area to reduce the number that will be impacted. Where loss is unavoidable, the trees will be soft felled and sections placed within retained habitats to provide a continued deadwood resource.
- 5.7 HS2 Ltd have considered other irreplaceable habitats, as defined by the National Planning Policy Framework, in addition to ancient woodlands and ancient and veteran trees. No irreplaceable habitats other than those listed above have been identified to be affected by the Proposed Scheme.

6 Protected species

- 6.1 Protected species that may be affected by the Proposed Scheme include, but are not limited to, a number of bat species, barn owl, great crested newt, otter, water vole and badger.
- 6.2 Mitigation and compensation to address effects on legally protected species will, where appropriate, include translocation of species, the provision of replacement habitat and provision of special measures such as ecological underbridges and appropriately designed culverts to facilitate the movement of species across the route.

- 6.3 Formal applications for derogation and mitigation licences for protected species will be made after Royal Assent and are likely to be accompanied by updated baseline surveys.

7 Habitat creation and enhancement

- 7.1 The Proposed Scheme will result in a loss of habitats outside of protected sites including non-ancient woodland, veteran and ancient trees, grassland, wetland and hedgerow. Many of these will qualify as Habitats of Principal Importance (as listed under Section 41 of the Natural Environment and Rural Communities Act 2006).
- 7.2 Where Habitats of Principal Importance (including lowland mixed deciduous woodland, lowland meadow and ponds) will be lost, opportunities to create new compensatory habitat have been explored.
- 7.3 In addition to the creation of new habitats, some existing habitats will be subject to enhancement (where appropriate) as part of the proposed compensation measures.
- 7.4 Habitat creation and enhancement measures will contribute towards the HS2 Green Corridor, being an extensive environmental programme included in the Proposed Scheme to run alongside the railway and create a network of bigger, better-connected, climate-resilient habitats and new green spaces for nature and people. For more information on the HS2 Green Corridor please see Information Paper E28: The Green Corridor.

8 Design techniques

- 8.1 The Proposed Scheme incorporates a wide range of design techniques to mitigate or compensate effects on species and habitats.
- 8.2 The location and design of compensatory habitat creation areas has sought to adhere to the key Lawton Review principles of 'bigger, better, more and joined up'. These aim to result in areas of habitat creation which will also enhance and connect habitat parcels within the local area and where possible contribute to local, regional and national conservation strategies. These measures also support climate change

requirements by increasing the resilience of ecological networks and allowing species to move more freely in response to changing climatic conditions.

- 8.3 The Proposed Scheme includes a number of design features to facilitate the safe movement of species from one side to the other. This includes stretches of the railway in tunnel and on viaduct, as well as passages underneath or over the line such as underpasses, culverts and ecological underbridges. On roads associated with the Proposed Scheme, measures such as ‘hop-overs’ may be used to facilitate the safe movement of bats. Hop-overs are where tall vegetation/ trees exist or have been planted either side of a road with the aim of keeping bats flying at height over the road. The need for each will be assessed on a case by case basis during design development.

9 Design development and further approvals

- 9.1 The design of the Proposed Scheme in the Bill is in outline and the EIA is based upon a reasonable worst-case assessment of the impacts. The EMRs will ensure that the impacts of the Proposed Scheme do not exceed those stated in the ES. Following Royal Assent, design development will be undertaken, during which contractors will be required to take reasonable steps to further reduce the impacts assessed in the ES. For example, the ES generally assumes that all hedgerows within the construction boundary will be lost, whereas in practice the nominated undertaker is expected to be able to employ methods to reduce such habitat loss. This is consistent with the Mitigation Hierarchy of seeking to avoid impacts in the first instance.
- 9.2 Further surveys will be undertaken to verify the baseline ecological conditions described in the ES and inform design development work.
- 9.3 Bespoke Ecology Site Management Plans will be prepared at design development stage, which will specify the ecological objectives of each ecological habitat creation area, the measures to be taken to establish, maintain and monitor the habitats and the detailed planting

requirements. They will also be prepared for each statutory and non-statutory site of nature conservation importance and ancient woodland directly affected by the construction of the Proposed Scheme.

- 9.4 Further controls are included in the Bill to ensure that the Proposed Scheme includes adequate mitigation of the impacts on ecological receptors.
- 9.5 Schedule 17 of the Bill requires planning authorities along the line of route to approve plans and specifications for building works. Planning authorities may impose conditions on approval on the grounds that the design or external appearance of the building works ought to be modified to preserve a site of nature conservation value. For more information, see Information Paper B2: Main provisions of the planning regime.
- 9.6 Planning authorities are also required to give approval to the bringing of scheduled works into operational use. They will usually consider nature conservation issues as part of the approval process for each work.
- 9.7 When undertaking design development of the ecological measures proposed in the Environmental Statement, the nominated undertaker will be required to do so in accordance with the nominated undertaker's technical requirements.

10 Managing impacts through construction

- 10.1 Impacts on ecological receptors will be managed during the construction phase through Section 9 of the Draft Code of Construction Practice (Draft CoCP). It requires the nominated undertaker to ensure that procedures are implemented to control and limit disturbance to areas of nature conservation interest and protected species in accordance with relevant legislative requirements and accepted industry practice.
- 10.2 Ecological works such as planting and habitat creation for translocated species will be planned early within the construction programme so that new habitats are created and established as soon as reasonably

practicable, and to ensure the time between habitat loss and the creation of new habitats is minimised.

10.3 The nominated undertaker will define a programme for undertaking ecological surveys prior to and during construction. The surveys will refine the mitigation and control measures required during construction as appropriate and inform appropriate monitoring during construction.

10.4 The nominated undertaker will require its contractors to undertake appropriate monitoring of the consequences of construction works on ecological receptors and of the effectiveness of the management measures designed to control ecological effects, associated with works that may affect protected or notable species, statutory designated or non-statutory sites of nature conservation importance.

11 Ensuring outcomes

11.1 The nominated undertaker will ensure compliance with applicable legislation for the protection of areas of nature conservation interest and of protected species. Relevant provisions include, but are not limited to, the following:

- Wildlife and Countryside Act 1981 (as amended);
- The Conservation of Habitats and Species Regulations 2017 (as amended);
- Natural Environment and Rural Communities Act 2006;
- Countryside and Rights of Way Act 2000;
- Weeds Act 1959;
- Protection of Badgers Act 1992;
- Nature Conservation (Scotland) Act 2004; and
- The Wildlife and Natural Environment (Scotland) Act 2011.

- 11.2 The nominated undertaker will be required to demonstrate that there is sufficient mitigation/compensation through the creation of new habitats and/or provision of special measures such as ecological underbridges to maintain the populations of protected and other notable species affected by the Proposed Scheme.
- 11.3 In order to satisfy protected species licencing requirements and achieve the Proposed Scheme's objective of seeking to achieve a 10% net gain in biodiversity excluding irreplaceable habitats, habitats created for mitigation and compensation will need to be managed appropriately. The draft Environmental Memorandum contains a commitment to ensuring appropriate management by the Promoter and the nominated undertaker. For more information, see Information Paper E1: Control of environmental impacts.
- 11.4 HS2 Ltd is committed to monitoring the effectiveness of ecological mitigation and compensation measures for a sufficient period to ensure the objectives of the proposals for nature conservation are achieved. Monitoring may also need to continue beyond the establishment period. The monitoring period for sites used to translocate licensable species will be determined and agreed with Natural England and NatureScot.
- 11.5 An Ecology Review Group comprised of relevant statutory bodies, non-governmental organisations and local authorities will review the outputs of monitoring for habitat creation sites and make recommendations for remedial action where appropriate.
- 11.6 An appropriate management, maintenance and monitoring strategy for ecologically-led habitat creation and enhancement will consist of three interrelated elements:
- Management, maintenance and monitoring approaches, durations and frequencies for the period during the establishment of new habitats and enhancement of existing habitats;

- Management, maintenance and monitoring prescriptions, durations and frequencies beyond the point when establishment goals have been met (i.e. longer-term commitments); and
- The mechanism for providing all management, maintenance and monitoring.

- 11.7 For the first of these elements, Natural England have provided advice on appropriate generic durations for the maintenance, management and monitoring during the establishment of ecologically-led habitat creation. Table 1 in Appendix A provides broad generic indications of the likely durations of monitoring, maintenance and management during the establishment period for those habitats affected by the Proposed Scheme.
- 11.8 As there are no published industry standards, the durations quoted draw upon current Defra guidance and professional experience of typical management durations negotiated with stakeholders for other large-scale projects.
- 11.9 Table 1 in Appendix A sets out the broad habitat categories that are found within the Bill limits. For more information on Bill limits please refer to Information Paper B3: Limits on parliamentary plans. During design development, the design of these areas will be developed. Habitat mosaics will be required to include a number of these types of habitat in many cases. Additional habitat types may be created outside of Bill limits through separate agreement. The likely durations of monitoring, maintenance and management for these habitat types will be discussed with Natural England and NatureScot.
- 11.10 The durations shown in Table 1 in Appendix A will be used as a guide. In exceptional cases (e.g. where there is reason to believe that a habitat will be particularly difficult to create) there may be deviation from the figures provided. In consultation with Natural England, NatureScot and other environmental stakeholders, HS2 Ltd has identified measurable goals (or 'success criteria') for all habitat areas to be created. Monitoring during the establishment of new habitats will track progress towards these goals.

The frequency of monitoring will generally decrease with time where establishment towards the agreed objectives is progressing in line with expectations. This principle is shown with indicative times in Table 1 in Appendix A.

- 11.11 The durations shown in Table 1 in Appendix A cover only the management, maintenance and monitoring proposed during the period of establishment. Further discussions are in progress with Defra, Natural England, NatureScot, the Forestry Commission and the Environment Agency regarding an appropriate approach to on-going management, maintenance and monitoring beyond the establishment period.
- 11.12 After an initial period of maintenance, the nominated undertaker will seek to return the majority of land to previous landowners in the first instance and then to other interested parties (such as local wildlife trusts, the Woodland Trust, local authorities), where agreement can be reached that will ensure the continued objectives of the mitigation are maintained into the future.
- 11.13 Where agreement cannot be reached, the land will be retained and maintained by the nominated undertaker, at least until a maintenance agreement is put in place with a suitable owner or party.
- 11.14 For land that is retained by the nominated undertaker, the nominated undertaker will appoint a managing company (or companies) to ensure the adequate maintenance of mitigation.

12 More information

- 12.1 More detail on the Bill and related documents can be found at www.gov.uk/hs2-phase2b-crewe-manchester.

Appendix A:

Table 1: Indicative management, monitoring and maintenance durations for habitats to be created on the Proposed Scheme

Habitat type	Generic duration of monitoring, management and maintenance during establishment	Indicative monitoring intervals during habitat establishment	Comments
Open mosaic habitats on previously developed land	5 years	Annually for 5 years	A standard duration is likely to be applied to all habitats of this type.
Watercourses	5 years	6 months & Years 1, 3 and 5	A standard duration is likely to be applied to all habitats of this type.
Ponds	5 years	6 months & Years 1, 3 and 5	A standard duration is likely to be applied to all habitats of this type.
Grasslands	5-15 years	Years 1, 2, 3, 4, 5 and, 8, 11 and 15.	Areas of grassland with the primary purpose of landscaping are likely to fall under a 5 year regime; Majority of grassland provided as compensation for losses is likely to be subject to a 15-year regime.
Hedgerows	5-10 years	6 months & Years 1, 3, 5, 7 & 10.	Hedgerows provided specifically for ecological purposes (e.g. to provide connectivity between other areas of planting, or those translocated due to their ecological value) may be subject to a

Habitat type	Generic duration of monitoring, management and maintenance during establishment	Indicative monitoring intervals during habitat establishment	Comments
			<p>regime of up to 10 years; Majority of hedgerows will be subject to a 5-year regime.</p>
Young heathland/acid grassland	15	6 months & Years 1, 2, 3, 5, 7, 10, 13, 15.	<p>All areas of this habitat affected by the proposed scheme are fragmented lowland heathland; 15 years is considered appropriate, as the aim is to create similar or better habitat than that lost.</p>
Woodland (including screening planting)	10-50 years	6 months & Years 1, 3, 5, 7, 10, 13, 15, 20, 25, 30, 35, 40, 45, 50.	<p>Durations of up to 10 years for areas provided for primary purpose of landscaping; Duration of up to 50 years during establishment for those areas that are created specifically for ecological mitigation/compensation. The 50-year period would be provided for all locations where the translocation of ancient woodland soils is proposed.</p>

References

National Planning Policy Framework:

<https://www.gov.uk/government/publications/national-planning-policy-framework--2>

Lawton Review:

https://www.researchgate.net/publication/268279426_Making_Space_for_Nature_A_Review_of_England's_Wildlife_Sites_and_Ecological_Network

Ancient Woodland Strategy:

<https://www.gov.uk/government/publications/hs2-ancient-woodland-reports>

The Conservation of Habitats and Species Regulations 2017 (as amended):

<https://www.legislation.gov.uk/uksi/2010/490/contents/made>

Phase 2b Draft Code of Construction Practice:

<https://www.gov.uk/government/publications/draft-code-of-construction-practice-ct-002-00000>