

## Ecology

The purpose of this factsheet is to outline the expected approach that will be applied to assessing, mitigating and compensating ecological impacts that may arise from Proposed Scheme.

# 1 Introduction

- 1.1.1 High Speed Two (HS2) is the Government's proposal for a new, high speed north-south railway. The proposal is being taken forward in phases. Phase One will connect London with Birmingham and the West Midlands. Phase 2a will extend the route to Crewe. The Western Leg of Phase 2b comprises an extension of the network to Manchester and a connection to the West Coast Main Line at Golborne, and is referred to as the Western Leg hybrid Bill. The Eastern Leg of Phase 2b currently comprises an extension of the network from the West Midlands through the East Midlands to Leeds.
- 1.1.2 HS2 Ltd is the non-departmental public body responsible for developing and promoting these proposals. The company works to a Development Agreement made with the Secretary of State for Transport.
- 1.1.3 The construction and operation of Phase One of HS2 is authorised by the High Speed Rail (London – West Midlands) Act (2017). In July 2017, the Government introduced a hybrid Bill to Parliament to seek powers for the construction and operation of Phase 2a.
- 1.1.1 In February 2020, the Government announced its intention to draw up an Integrated Rail Plan. This will recommend a way forward on scoping, phasing and sequencing the delivery of HS2 Phase 2b, Northern Powerhouse Rail, Midlands Rail Hub and other proposed rail investments across the north. At the same time, the Government asked HS2 Ltd to prepare the Western Leg hybrid Bill, provided it does not prejudice any recommendations or decisions that will be taken in this plan, which will be published by the end of the year.
- 1.1.2 It is intended to deposit a Western Leg hybrid Bill seeking powers to construct and operate this phase in Parliament in early 2022 or sooner if possible (the Proposed Scheme). The work to produce the Bill will include an Environmental Impact Assessment (EIA), the results of which will then be reported in an Environmental Statement (ES). The ES would be submitted alongside the Bill when it is introduced to Parliament. As was the case with Phase One and Phase 2a, when the Bill is introduced to Parliament the Secretary of State will also publish draft Environmental Minimum Requirements (EMRs). The EMRs will set out the environmental and sustainability commitments that will be observed in the construction of the Proposed Scheme.
- 1.1.3 A series of information papers were produced for the Phase One and Phase 2a hybrid Bills, explaining the commitments made in those Bills and EMRs. It is the Secretary of State's intention to follow a similar process for the Western Leg Bill. These information papers will be used to provide information about

the Proposed Scheme itself, the powers contained in the Bill and how decisions on the Proposed Scheme have been reached. It is currently proposed that these information papers for the Western Leg of Phase 2b will be published at the time the Bill is introduced in Parliament.

- 1.1.4 The Secretary of State for Transport will be ‘the Promoter’ of the Western Leg Bill. The Promoter will also eventually appoint a body responsible for delivering the Proposed Scheme under the powers to be granted by the Bill. This body will be known as the ‘nominated undertaker’. There may well 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 Western Leg EMRs and any commitments provided in the Western Leg information papers.
- 1.1.5 These Western Leg factsheets have been produced to provide information on the emerging proposals for measures to manage the design process for the Proposed Scheme and to control impacts which may arise from the construction and operation of the Proposed Scheme. These measures may then be applied to the Western Leg as commitments made through the eventual Bill, EMRs or information papers.

## **2 Overview**

- 2.1.1 The purpose of this factsheet is to outline the expected approach that will be applied to assessing, mitigating and compensating ecological impacts that may arise from Proposed Scheme.

## **3 Approach to ecological impact assessment**

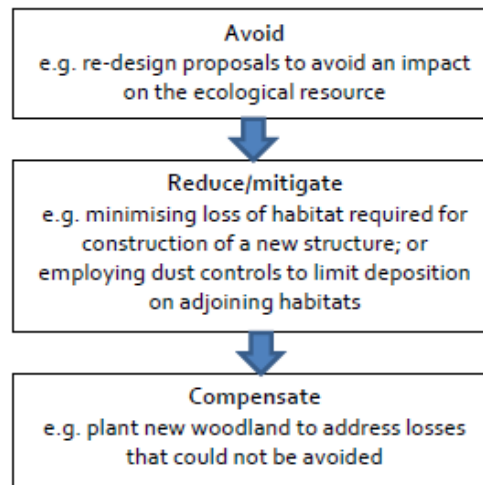
- 3.1.1 The design of HS2 will reflect the ‘mitigation hierarchy’ consistent with the current National Planning Policy Framework<sup>1</sup> in England and the current Scottish Planning Policy<sup>2</sup> (NPF3) in Scotland, as well as guidance on Environmental Impact Assessment as may be applicable to the Proposed Scheme. This approach is set out below.

---

<sup>1</sup> DCLG (2019) National Planning Policy Framework, London: HMSO.

<sup>2</sup> Local Government and Communities Directorate (2014) Scottish Planning Policy, Edinburgh.

Figure 1: The Mitigation Hierarchy



- 3.1.2 Using the 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 would be 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 would be identified to offset effects that are still anticipated following mitigation.
- 3.1.3 The approach to be used by HS2 Ltd for ecological mitigation and compensation is proposed to be set out in the Scope and Methodology Report addendum (SMR) which will be contained in the ES and will explain the factors determining the cases in which these should be applied.
- 3.1.4 The ecological impact assessment will take account of current guidance published by the Chartered Institute of Ecology and Environmental Management (CIEEM)<sup>3</sup>. It considers all ecological receptors which have the potential to be affected by the construction and/or operation of the Proposed Scheme. The assessment will include 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 of key species as a result of collisions with trains. In line with the CIEEM approach, the evaluation of species receptors will be based on the distribution and status of the species concerned, rather than being based solely on the legal protection afforded to that species.

<sup>3</sup> Chartered Institute of Ecology and Environmental Management (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland – Terrestrial, Freshwater and Coastal. CIEEM.

- 3.1.5 The spatial scope of the assessment will depend on the ecological receptor under consideration and the magnitude and nature of the potential impacts. It will, as a minimum, include areas located within, and adjacent to, the land required for the construction of the Proposed Scheme.
- 3.1.6 The assessment will take account of both desk-based and field surveys. Existing biological data for the Proposed Scheme will be 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 will also be consulted.
- 3.1.7 A wide range of field surveys will be conducted to inform the ES. The survey methodologies used will be based on relevant best practice approaches, and the extent and scope of surveys conducted will range widely based on the species or habitat involved. It is proposed that the survey methods used will be set out in the SMR addendum of the ES that will be submitted with the Bill.
- 3.1.8 A precautionary approach to valuation will be used for instances where baseline information is incomplete, to ensure that all likely impacts of the Proposed Scheme are identified. The degree of precaution built into the assessment for each receptor will reflect the level of confidence in the data available at the time of assessment.

## 4 Protected Sites

- 4.1.1 The EIA which will be undertaken for the Proposed Scheme will take account of internationally, nationally and locally designated sites for wildlife. The current Proposed Scheme may have an effect upon internationally and nationally designated sites. Any Habitats Regulations Assessment (HRA) reports and associated addenda for any international sites which may be required to be considered as part of the EIA for the Proposed Scheme will be made available in the ES. HS2 Ltd will also consult with relevant organisations (including Natural England, Scottish Natural Heritage, the Forestry Commission and Forestry and Land Scotland) during the development of the design of the Proposed Scheme to ensure this is reflected in the HRA process.
- 4.1.2 Direct impacts on Sites of Special Scientific Interest (SSSI) will be assessed as part of the EIA for the Proposed Scheme. Impact Risk Zones (IRZ) for SSSIs will also be considered to identify any indirect impacts, and the assessment will include consultation with Natural England and Scottish Natural Heritage.
- 4.1.3 If the EIA for the Proposed Scheme predicts a significant adverse effect on the integrity of a Local Wildlife Site (LWS) in England or a Local Nature

Conservation Site (LNCS) in Scotland, then sufficient compensation would be incorporated into the Proposed Scheme to address effects on the conservation status of the habitats and species for which that LWS was designated. Any effects to individual sites and associated Framework for the control of impacts will be described in detail in the ES.

## **5 Protected species**

5.1.1 Protected species that may be affected by the Proposed Scheme are likely to include, but are not limited to, a number of bat species, barn owl, great crested newt, otter, water vole and badger.

5.1.2 The proposals for mitigation and compensation to address any effects on legally protected species may, where appropriate, include translocation of species, the provision of replacement habitat and provision of special measures such as ecological underpasses and green bridges to facilitate the movement of species across the route. Any such proposed measures will be described in the ES.

5.1.3 If required, any formal applications for derogation and mitigation licences for protected species affected by the Proposed Scheme will be made after Royal Assent and would likely be accompanied by updated baseline surveys.

## **6 Habitat loss, creation and enhancement**

6.1.1 The Proposed Scheme may result in a loss of habitats outside of protected sites. For example, this may include loss of non-ancient woodland, veteran and ancient trees, grassland, wetland and hedgerow. Many of these may qualify as habitats of principal importance (as listed under Section 41 of the Natural Environment and Rural Communities Act 2006) in England, or Section 2 of the Nature Conservation (Scotland) Act 2004.

6.1.2 Where habitats of principal importance (including lowland mixed deciduous woodland, lowland meadow and ponds) may be lost, opportunities to create new mitigatory habitat will be explored. Any such habitat areas would be described in the ES.

6.1.3 In addition to the creation of new habitats, some existing habitats (where appropriate) may be subject to enhancement as part of the proposed compensation measures.

## 7 Design techniques

- 7.1.1 It is HS2 Ltd's intention to incorporate within the Proposed Scheme a wide range of design techniques to mitigate or compensate effects on species and habitats.
- 7.1.2 In considering the location and design of any compensatory habitat creation areas, the Proposed Scheme will seek to adhere to the key Lawton Review<sup>4</sup> principles of '*more, bigger, better, and joined*'. These will aim to result in habitat creation areas which will also enhance and connect habitat parcels within the local area. These measures will also support climate change requirements by increasing the resilience of ecological networks and through allowing species to move more freely in response to changing climatic conditions.
- 7.1.3 In developing the Proposed Scheme consideration will be given to the inclusion of appropriate design features to facilitate the safe movement of species from one side to the other. This may, for example, include stretches of the railway in tunnel and on viaduct, as well as passages underneath or over the line such as underpasses, culverts, ecological under bridges and green bridges. On roads associated with the Proposed Scheme, measures such as 'hop-overs'<sup>5</sup> may be used to facilitate the safe movement of bats.

## 8 No net loss in biodiversity

- 8.1.1 The Proposed Scheme will have the objective of seeking to achieve no net loss in biodiversity at a route-wide level. In order to demonstrate progress towards this objective, habitat losses and gains will be measured using a modified version of the Department for Environment, Food and Rural Affairs' (Defra) biodiversity offsetting metric. This has been developed in consultation with Defra and Natural England. Details of the Phase 2b metric will be set out in the SMR addendum of the ES.
- 8.1.2 It should be noted that the metric will be 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 will not be 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 no net loss calculation will

---

<sup>4</sup> Lawton, J.H., Brotherton, P.N.M., Brown, V.K., Elphick, C., Fitter, A.H., Forshaw, J., Haddow, R.W., Hilborne, S., Leafe, R.N., Mace, G.M., Southgate, M.P., Sutherland, W.J., Tew, T.E., Varley, J., & Wynne, G.R. (2010) Making Space for Nature: a review of England's wildlife sites and ecological network. Report to Defra.

<sup>5</sup> 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 detailed design.

be run at appropriate intervals to demonstrate progress towards the no net loss objective.

- 8.1.3 While every effort will be made to avoid losses of ancient woodland, there may be some instances where, due to other design constraints, losses are unavoidable. HS2 Ltd acknowledges that ancient woodland is an irreplaceable habitat and as such, losses of ancient woodland as well as associated compensation measures will not be considered within the scope of the no net loss calculation.

## 9 Ancient Woodland

- 9.1.1 HS2 Ltd will carry out an early review to identify existing ancient woodlands along the line of route not already listed on the Ancient Woodland Inventory (AWI) in England or the Ancient Woodland Inventory (Scotland) where appropriate.
- 9.1.2 To partially compensate for any loss of ancient woodland which may occur in consequence of the Proposed Scheme it is proposed that the nominated undertaker will be committed to use best practice measures such as re-using the ancient woodland soils, enhancement of retained woodland and creating new mixed deciduous woodland. However, it is acknowledged that it is not possible to replace ancient woodland. Where losses of habitats that are irreplaceable occur this will be acknowledged in the ES as permanent adverse effects.
- 9.1.3 As published for Phase One and Phase 2a, an Ancient Woodland Strategy will be prepared for the Proposed Scheme. This will provide an area-based comparison between the losses of ancient woodland habitat that may occur as a consequence of the Proposed Scheme and the proposed associated package of compensation measures to be provided in response to those losses that cannot be reasonably avoided. During detailed design and construction, efforts will continue to be made to seek to avoid or further reduce the impacts of the Proposed Scheme.
- 9.1.4 Details of specific measures for the long-term management and monitoring for each ancient woodland will be prepared at the relevant detailed design stage and included within the relevant iteration of the Ecology Site Management Plan (ESMP) for that location. It is expected that all future relevant information relating to each ancient woodland would be captured by the respective ESMP and not in an updated Ancient Woodland Strategy.



## 10 Detailed design and further approvals

- 10.1.1 The design of the Proposed Scheme in the Bill will be outlined and will be based upon a reasonable worst-case assessment. The purpose of the EMRs will be to ensure that the impacts of the Proposed Scheme do not exceed those that will be stated in the ES.
- 10.1.2 Following Royal Assent, detailed design would be undertaken, during which contractors would be required to take reasonable steps further to reduce the effects stated in the ES. For example, the ES will assume that all hedgerows within the construction boundary will be destroyed, whereas in practice such a scenario is highly unlikely; contractors would be expected to be able to employ methods to reduce habitat loss. This is consistent with the mitigation hierarchy of seeking to avoid impacts in the first instance.
- 10.1.3 Further surveys would be undertaken to verify the baseline ecological conditions and inform detailed design work.
- 10.1.4 ESMPs would be prepared at detailed design stage. It is expected that these would 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 would also be prepared for each statutory and non-statutory site of nature conservation importance and ancient woodland affected by construction.
- 10.1.5 Further controls would be proposed to ensure that the Proposed Scheme has adequately mitigated its impacts on ecological receptors.
- 10.1.6 It is anticipated that the Phase 2b Bill will contain planning controls requiring planning authorities along the line of route to approve plans and specifications for building works. These proposed controls will provide that 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.
- 10.1.7 It is expected that the planning controls included in the Phase 2b Bill will also require planning authorities to give approval to bring scheduled works into operational use, for the purpose of which the interests of nature conservation will be a material consideration.

- 10.1.8 It is expected that when undertaking detailed design of the ecological measures that will be proposed in the Phase 2b Bill, contractors will be required to do so in accordance with HS2 Ltd's technical standards.

## **11 Managing impacts through construction**

- 11.1.1 Impacts on ecological receptors will be managed under the construction phase through a Code of Construction Practice (CoCP), which will be prepared for the purposes of the Proposed Scheme. The purpose of the CoCP will be to require 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.
- 11.1.2 It is expected that ecological works such as planting and habitat creation for translocated species would be planned early within the construction programme so that new habitats are created as soon as reasonably practicable, and to ensure the time between habitat loss and the creation of new habitats is minimised.
- 11.1.3 The nominated undertaker would define a programme for undertaking ecological surveys prior to and during construction. The surveys would refine the mitigation and control measures required during construction as appropriate and would inform appropriate monitoring during construction.
- 11.1.4 The nominated undertaker would require its contractors 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 associated with works that may affect protected or notable species, statutory designated or non-statutory sites of ecological interest.

## **12 Ensuring outcomes**

- 12.1.1 The nominated undertaker will ensure compliance with applicable legislation for the protection of areas of nature conservation interest and of protected species. It is expected that relevant provisions will 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;
  - Nature Conservation (Scotland) Act 2004;
  - Countryside and Rights of Way Act 2000;
  - Weeds Act 1959; and
  - Protection of Badgers Act 1992.
- 12.1.2 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 or green bridges to maintain the populations of protected and other notable species that may be affected by the Proposed Scheme.
- 12.1.3 In order to satisfy protected species licencing requirements and achieve the Proposed Scheme's objective of seeking no net loss in biodiversity, habitats created for mitigation and compensation will need to be managed appropriately. The Environmental Memorandum<sup>6</sup> is expected to contain a commitment to ensuring appropriate management by the Promoter and the nominated undertaker.
- 12.1.4 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.
- 12.1.5 It is expected that an Ecology Review Group comprised of relevant statutory bodies, non-governmental organisations and local authorities will be established to review the outputs of monitoring for habitat creation sites and make recommendations for remedial action where appropriate.
- 12.1.6 An appropriate management, maintenance and monitoring strategy for ecologically-led habitat creation is likely to consist of three interrelated elements:
- management, maintenance and monitoring approaches, durations and frequencies for the period during the establishment of new 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.
- 12.1.7 Further discussions will take place with Defra, Natural England and Scottish Natural Heritage regarding an appropriate approach to ongoing

---

<sup>6</sup> The Environmental Memorandum is defined within the Western Leg Factsheet: Control of Environmental Impacts

management, maintenance and monitoring beyond the establishment period. This will likely be achieved through a variety of mechanisms.

- 12.1.8 After an initial period of maintenance, the nominated undertaker would seek to return the majority of land to previous landowners or other interested parties (such as local wildlife trusts, woodland trust, local authorities), where agreement can be reached that will ensure the continued objectives of the mitigation are maintained into the future.
- 12.1.9 Where agreement cannot be reached, the land would be retained and maintained by the nominated undertaker, at least until a maintenance agreement is put in place with a suitable owner or party.
- 12.1.10 For land that is retained by the nominated undertaker, the nominated undertaker would appoint a managing company (or companies) to ensure the adequate maintenance of mitigation.

## **13 More information**

- 13.1.1 Further factsheets and details on the Proposed Scheme can be found at:  
[www.hs2.org.uk/phase2b](http://www.hs2.org.uk/phase2b)