

## **Annex 4**

# **High Speed Rail (London-West Midlands)**

## **Draft Environmental Memorandum**

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# 1 Introduction

## 1.1 General introduction

1.1.1 This Memorandum relates to the environmental aspects of the design and construction of Phase One of HS2. It will build upon discussions which have taken place between HS2 Ltd and representatives of the National Environmental Forum comprising the Agencies (English Heritage, Environment Agency and Natural England) and representatives from relevant Government Departments. These parties intend to continue to have clear and open discussion during the on-going design and construction phases of the Project.

1.1.2 The terms of this Memorandum have also been discussed with the local authorities along the route.

## 1.2 Scope of the Memorandum

1.2.1 This Memorandum is concerned with the impacts of Phase One of HS2 on the following: nature conservation, terrestrial and aquatic ecology, water resources and flood risk, geological features, archaeology (in relation to watercourses and wetlands/aquatic systems, as all other aspects are covered by the Heritage Memorandum), recreation and amenity impacts, landscape and visual, public open space, soils, agricultural and forestry land; and excavated material.

1.2.2 It is intended that the Environmental Memorandum is entirely consistent with the High Speed Rail (London - West Midlands) Bill and does not duplicate provisions therein (for example Protective Provisions in Schedule 3~~12~~). Should there be any perceived conflict between this Memorandum and the Bill, the Bill will take precedence.

1.2.3 It is not intended that this Memorandum duplicate other components of the Environmental Minimum Requirements (EMR). ~~In particular:~~

~~1.2.4 The other components of the EMRs are described in paragraph 3.1.1 of the EMR General Principles document. These include requirements on the nominated undertaker to comply with the Planning Memorandum, the Heritage Memorandum and Undertakings and Assurances concerning the project specified in the register of undertakings and assurances, and to adopt and implement the Code of Construction Practice (CoCP) and the Environmental Memorandum.~~

- ~~• the General Principles presents the text of the relevant Environment Minimum Requirements, which are referred to as EMRs. It also contains as Annexes a series of papers which support the EMR, including the Code of Construction Practice (CoCP), the Environmental Memorandum, the Planning Memorandum and the Heritage Memorandum;~~
- ~~• the CoCP covers the nominated undertaker's responsible approach to environmental protection and limiting disturbance from construction activities, including other environmental issues such as noise and dust;~~
- ~~• the Planning Memorandum covers the handling of planning matters arising~~

~~from Schedule 16 (Planning conditions); and~~

- ~~• the Heritage Memorandum covers the handling of matters arising from Schedule 18 (Listed buildings), Schedule 19 (Ancient Monuments) and Schedule 20 (Burial Grounds) and the wider historic environment, including non-designated heritage assets.~~

## 1.3 Purpose and understanding

- 1.3.1 The Environmental Memorandum provides a framework for the nominated undertaker and representatives of the National Environment Forum to work together to ensure that the design and construction of Phase One of HS2 is carried out with due regard for environmental considerations, including the historic environment.
- 1.3.2 Until such time as a nominated undertaker is appointed, the Department for Transport will fulfil the nominated undertaker's role.
- 1.3.3 The parties to this Memorandum have therefore reached an understanding as to:
- the aims to control and limit the environmental effects of constructing Phase One of HS2;
  - the mechanisms for ensuring consultation and liaison between the parties, monitoring of the impacts of the construction of Phase One of HS2, monitoring of the post construction performance of mitigation and compliance with (amongst other things) the environmental provisions in the High Speed Rail (London - West Midlands) Bill as outlined in the HS2 Information Paper E1: Control of Environmental Impacts; and
  - the principles to be followed to achieve the aims during the ongoing design and construction of Phase One of HS2.
- 1.3.4 The nominated undertaker and the Forum members will agree to take all reasonable steps to achieve the aims of this Memorandum, through subscribing to the mechanisms and principles set out below.

## 2 Aims

- 2.1.1 The nominated undertaker and the representatives of the National Environmental Forum agree to the following environmental aims for the design and construction stage of Phase One of HS2:
- to design and construct Phase One of HS2 such that significant environmental effects are eliminated, controlled or reduced where reasonably practicable;
  - to prevent environmental risks and avoid or control the extent of environmental damage by developing mitigation measures to an appropriate standard and monitoring and enforcing them effectively; and
  - to address sustainability principles in on-going design development, taking opportunities for environmental enhancement and compensation where practicable and reasonable;

- and in doing so, recognise that the nominated undertaker will take a responsible approach to balancing the achievement of environmental principles set out in Section 4 with the overall objectives of Phase One of HS2.

2.1.2 The mechanisms for achieving these aims are set out in Section 3.

## 3 Mechanisms

### 3.1 National Environmental Forum

3.1.1 A National Environmental Forum will continue to meet throughout the design and construction period and up to one year post-commissioning, unless agreed by the Forum that further meetings are no longer required. The Forum will provide a framework for early and effective consultation with the member agencies and will keep them apprised of progress and issues. It will assist in the execution of this Memorandum, including advising on:

- strategic approach for avoidance or mitigation of adverse effects on those matters identified in 1.2.1; and
- strategic programme for monitoring the environmental effects of the Project, and periodic review of results.

~~3.1.2 Additionally the National Environmental Forum will provide a co-ordinating mechanism for environmental aspects of submissions under Section 16 (Planning Conditions) to the High Speed Rail (London – West Midlands) Bill.~~

~~3.1.3 The Terms of reference and the function of the National Environment Forum will be reviewed as appropriate as the project develops.~~

### 3.2 Engagement

3.2.1 The Protective Provisions to the High Speed Rail (London - West Midlands) Bill (as set out in Schedule 3~~12~~) contain specific timescales for the nominated undertaker and specified Agencies to respond to plans and method statements (or the approval of the Agencies is deemed to have been given). It is understood that such timescales are necessary to the timely delivery of the Phase One of HS2.

3.2.2 However, notwithstanding these statutory timescales, the nominated undertaker and the Agencies will ~~seek early consultation undertake early consultation on~~ environmental issues, except where it is not practicable ~~nor or is unnecessary~~, to ensure, as far as reasonably practicable, that environmental matters are not hindered by tight timescales, and the best practicable environmental solution is achieved.

3.2.3 The nominated undertaker will take the primary role in circulating available information of relevance to the Agencies in performing their regulatory and advisory duties. So far as permitted to do so by law, the Agencies will provide the nominated undertaker with all relevant information they possess.

- 3.2.4 The nominated undertaker and the Agencies will each identify named individuals who will be the 'single point of contact' between the parties. The nominated undertaker will inform the Agencies of the person in control of the works if reference is made to such a person within their respective Protective Provisions.
- 3.2.5 The nominated undertaker and the Agencies will ensure that constructive dialogue continues throughout the various phases of Phase One of HS2 through agreed consultation and liaison mechanisms as set out in this Memorandum.

### 3.3 Interrelationship between National Environmental Forum and Planning Forum

- 3.3.1 For qualifying authorities, the Planning Memorandum sets out the principles to be taken into account as material considerations in the determination of requests for the approval of details. However, the nominated undertaker will involve relevant Agencies on applications to Local Planning Authorities and circulate information of relevance to the Agencies at the same time as submitting for planning approval.
- 3.3.2 As far as reasonably practicable, the Nominated Undertaker will co-ordinate submission of Agency permits or licences and planning applications.

### 3.4 Code of Construction Practice

- 3.4.1 The CoCP sets out specific details and working practices that apply to site preparation (including site investigation and remediation, where appropriate), demolition, material delivery, management of excavated materials and disposal of surplus excavated material, waste removal and all related engineering and construction activities. Subject to any specific requirements arising under protective provisions, these will be the arrangements by which the nominated undertaker and its' contractors will be required to work.
- 3.4.2 The CoCP will be supported by Local Environmental Management Plans (LEMPs) which will include a number of specific measures by topic, relevant to each relevant local authority area.

### 3.5 Environmental management system (EMS) - overview

- 3.5.1 As part of HS2 Ltd's Sustainability Policy, the nominated undertaker will develop an EMS in accordance with BS EN ISO 14001. The EMS provides the processes by which environmental management both within its organisation and in relation to the organisation's nominated undertaker's operations is undertaken to ensure the relevant findings of the Environmental Statement are addressed through the construction phase. The EMS will set out:
- the procedures to be implemented to plan and monitor compliance with environmental legislation;
  - the key environmental aspects of the work and how they will be managed;
  - staff competence and awareness requirements and how these are achieved and maintained;

- record keeping arrangements, including reporting to the Sponsor;
  - the procedures to be implemented to monitor compliance with the environmental provisions in the hybrid Bill; and
  - monitoring compliance and the effectiveness of the measures included within the CoCP, the nominated undertaker's environmental policy and with all the Environmental Minimum Requirements other than non-environmental aspects of undertakings and assurances.
- 3.5.2 The nominated undertaker will require each of its lead contractors to have an EMS certified to BS EN ISO14001. Their EMS will include roles and responsibilities, together with appropriate control measures and monitoring systems to be employed during planning and constructing the works for all relevant topic areas covered by the HS2 Phase One Environmental Statement. Where the lead contractor is a joint venture, the EMS will be certified to cover the activities of the joint venture.

### Procurement

- 3.5.3 Environmental criteria appropriate to the scale and nature of the nominated undertaker's construction requirements will be used at tender stage to ensure that environmental considerations are taken account of in the awarding of contracts.

## 3.6 Control of environmental effects

- 3.6.1 It is the intention of the Secretary of State to carry out Phase One of HS2 so that its environmental effects are no greater than as assessed in the HS2 Phase One Environmental Statement. The mechanisms established to control this objective are explained in the introduction to the EMRs HS2 Information Paper E1: Control of Environmental Impacts.

## 3.7 Interpretation

- 3.7.1 Without prejudice to the exercise of their statutory functions, the nominated undertaker and the Agencies are committed to trying to resolve any differences of opinion as to the interpretation of the Environmental Memorandum through discussion.

# 4 Principles

## 4.1 Introduction

- 4.1.1 The principles by which future environmental decisions on Phase One of HS2 will be taken include the following.

## 4.2 Sustainability

- 4.2.1 All work shall be carried out in accordance with the HS2 Ltd Sustainability Policy, ~~its associated plan, goals and targets~~. The design of associated depots, railway buildings and stations shall be carried out to meet BREEAM New Construction Excellent rating, whereas the track and associated infrastructure (tunnels, viaducts etc) will be designed to meet BREEAM for Infrastructure.

- 4.2.2 Through the EMS the nominated undertaker will develop, and keep under regular review, environmental objectives which address this sustainability agenda. Achievement of these objectives during ongoing design and construction stages will be monitored and periodically reported to the National Environmental Forum.

## 4.3 Use of land

- 4.3.1 As the design is developed, the nominated undertaker through its contractors and so far as is reasonably practicable will seek to reduce land taken from habitats, sites of nature conservation or geological importance, public open space and best and most versatile agricultural land.

## 4.4 Integrated environmental approach

- 4.4.1 An integrated environmental approach will be adopted as the design is developed, taking account of environmental principles within this document, land-use and other environmental issues as set out in other parts of the EMRs, as appropriate.
- 4.4.2 Section 5 identifies the priorities for key environmentally sensitive worksites. Whilst all environmental issues will be considered at these and other sites, the nominated undertaker and the Agencies acknowledge the necessity of striking a balance between environmental interests and the needs of the project as it is built.
- 4.4.3 Opportunities for environmental enhancement will be identified and implemented where related to the impacts of the project and are considered reasonable and practicable.

## 4.5 Site reinstatement

- 4.5.1 The High Speed Rail (London - West Midlands) Bill requires that, upon completion of construction works, where temporary possession of sites has been undertaken, they shall be returned to a condition in accordance with a scheme to be agreed with both the owners of the land and the relevant planning authority. In a case where the site has been permanently acquired it must, after use has finished, be restored in accordance with scheme agreed with the relevant planning authority.
- 4.5.2 In addition, the High Speed Rail (London - West Midlands) Bill also requires that, upon completion of the principal permanent works, the sites of those works will be subject to 'Bringing Into Use' request from the local planning authority in order to ensure that appropriate mitigation has been incorporated into the scheme.
- 4.5.3 Site reinstatement shall follow the requirements set out in the CoCP. For specific worksites, as set out in Section 5, where loss of vegetation, trees or ecological habitat is a concern, the nominated undertaker will be required to address these features as part of the LEMP in accordance with the practices required under the CoCP.

## 4.6 Landscape and visual

- 4.6.1 ~~HS2 Ltd is~~ The nominated undertaker will be committed to high quality design that is sensitive to the character of the local area, including the historic environment, to avoid and minimise ~~s~~ effects as much as ~~possible~~ reasonably practicable.



- 4.6.2 DfT and the nominated undertaker will seek to ensure that;
- the design of all landscape and external spaces will be safe, efficient, and meets with the requirements of whole life operation and maintenance alongside initial buildability;
  - the design of all landscape and external spaces will contribute to the government's pursuit of sustainable development, as set out in the National Planning Policy Framework, which involves seeking positive improvements in the quality of the built, natural and historic environment, as well as in people's quality of life;
  - the design cohesion of all landscape and external spaces will be achieved through a strong aesthetic ethos and a recognisable architectural language;
  - the design of all landscape and external spaces will be developed through engagement to seek peoples' views and ideas on the aesthetic design of the visible buildings and permanent structures;
  - the design of all landscape and external spaces will consider the passenger experience;
  - the design of all landscape and external spaces will limit adverse environmental and visual impacts during design construction and operation;
  - Where possible, the landscape design will identify additional potential regeneration opportunities within area planning frameworks;
  - The nominated undertaker will design the landscape and external spaces in line with the principles and promoters requirements as set out in HS2 Information Paper D1: Design Policy.
- 4.6.2 Landscape design should be appropriate to the local landscape and ecological character along the route. Appropriate species of trees and vegetation on temporary worksites, which are lost as a result of construction, will be replaced.
- 4.6.3 Except for ornamental or specimen planting, preference will be given to native species typical of the area that are resilient to disease while giving consideration and appropriate to climate change.
- 4.6.4 All planting will be done in line with the Green Infrastructure (GI) concept, a form of environmental best practice and policy that has been used to inform HS2 Ltd's approach to developing the Proposed Scheme. Where the GI approach is applied to the Phase One line of route, this will also be referred to as a 'green' or 'environmental corridor,' of which landscape planting will form a major part. The environmental or green corridor is integral to HS2's aim of leaving a positive route legacy. For further detail, see HS2 Information Paper E11: Green Infrastructure and the Green Corridor.
- 4.6.5 In order that landscape planting is as effective as reasonably practicable on commissioning of Phase One of HS2, the nominated undertaker will put in place

planting and other screening measures in advance of or during construction (with the landowner's permission), where this is reasonably practicable and where there is no conflict with the construction programme or other construction requirements.

- 4.6.6 Where early visual screening is a key consideration, species to provide rapid growth will be provided. Species will be selected to complement the local landscape, historic and ecological character where there is no overriding conflict with operational requirements, and will be supported by the planting of slower growing species. Where appropriate the nominated undertaker will draw up and implement a programme for the thinning or removal of early growth species.
- 4.6.7 The nominated undertaker will put in place measures at an early date to ensure that sufficient stock of appropriate maturity and provenance is available.
- 4.6.8 Sites referred to in Section 5 will be the subject of the LEMP~~s~~ with priority given to landscape considerations where indicated. The nominated undertaker will maintain or make provision to maintain and monitor the new~~r~~ or managed planting, for a period as agreed with NEF Members in line with the principles set out in HS2 Information Paper E16.
- 4.6.9 The nominated undertaker shall maintain to an appropriate horticultural standard landscaped areas to ensure that the project's essential planting scheme successfully establishes and develops to achieve its mitigation objective, and maintain for an appropriate period of time in-line with principles set out in HS2 Information Paper E16: Maintenance of Landscaped Areas.
- 4.6.10 After an initial period of maintenance, the nominated undertaker will 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 landscaping are maintained into the future.
- 4.6.11 Where agreement cannot be reached, the land will be retained and maintained by the nominated undertaker until agreement is put in place with a suitable owner or party. This could mean that such land will remain under the ownership of the railway.
- 4.6.12 Where practicable the nominated undertaker will reduce the long term maintenance cost for the railway operator whilst ensuring that the essential mitigation remains in place and effective.
- 4.6.13 Tree planting will be designed to minimise risks to the operation of the railway that may arise from falling leaves, root damage and high winds breaking branches or felling trees in the vicinity. In practice, this means a 'zone of influence' will be established along HS2, within which the height of vegetation will be limited.
- 4.6.14~~9~~ Where reasonably practicable structures, fencing, bunding and acoustic screening will be sensitively designed to be both effective and sympathetic to the local environment.

## 4.7 Public open space

4.7.1 In a number of locations public open space will be required for construction of Phase One of the HS2 scheme. Public open space includes formal and informal parks and playing fields. The measures set out in Section 4.5 on Site Restoration above apply ~~y~~ies to ~~p~~Public ~~o~~Open ~~s~~Space.

4.7.2 Where there would be a temporary but significant effect on a community resulting from the temporary loss of public open space mitigation is likely to take one of the following forms:

- Improvements or alterations to the remaining portion of the public open space (in instances where the public open space is partially occupied and limits primary use), or community facilities, e.g. reconfiguring pitch layouts or relocating play areas;
- Improvements to other public open spaces or community facilities in the area;
- Improving accessibility to other existing public open space or community facilities; and
- Identify land owned by the relevant local authority that could be brought into use as public open space or community facilities with its agreement.

4.7.3 Where there would be a permanent significant community effect resulting from the permanent loss of public open space, mitigation is likely to take one of the following forms:

- ~~i~~Improvements or alterations to the remaining portion of the public open space (in instances where the public open space is partially occupied) or community facility, e.g. reconfiguring pitch layouts or relocating play areas;
- ~~p~~Provision of compensation open space or community facilities built into the design of the permanent works within Bill limits;
- ~~i~~Improvements to other public open spaces or community facilities in the area;
- ~~i~~Improving accessibility to other existing public open space or community facilities; and
- ~~l~~Land owned by the relevant local authority to be brought into use as public open space or community facilities with its agreement.

~~4.7.4 Where none of these other mitigation measures can provide suitable mitigation the Secretary of State could potentially acquire land for the mitigation of permanent significant effects on community facilities.~~

~~4.7.5 The nominated undertaker will design public open spaces in line with the principles and promoters requirements as set out in HS2 Information Paper D1: Design Policy;~~

## 4.8 Nature conservation

- 4.8.1 Where effects on protected species are identified, the appropriate licenses will be obtained from Natural England prior to any works being undertaken. This includes species protected by the Habitats Regulations 2010 and the Wildlife and Countryside Act 1981.
- 4.8.2 To ensure that the requirements of the species protection legislation are taken into account during consideration of the hybrid Bill, sufficient information will be submitted to Natural England to enable it to consider whether the appropriate measures are in place.
- 4.8.3 The nominated undertaker will prepare Ecology Site Management Plans. These will specify the ecological objectives of each ecological habitat creation area, the measures to be taken to establish and maintain these habitats, and the detailed planting requirements. The Ecology Site Management Plans will also be prepared for each designated site of nature conservation importance and ancient woodland affected by construction. These will include measures to reduce effects. Drafts of these management plans will be discussed with relevant environmental bodies and Natural England.
- 4.8.4 The principles for habitat creation and translocation are set out in the document 'Ecological principles of mitigation for HS2 LWM', which is part of the Environmental Statement.
- 4.8.5 The nominated undertaker will maintain or make provision to maintain and monitor ~~any the~~ new or managed habitat, for a sufficient period to ensure that the objectives of the proposals for nature conservation and protection of the historic environment ~~objectives of the proposals~~ are achieved. The details for specific locations will be identified by the nominated undertaker. ~~The principles for habitat creation and translocation are set out in the document 'Ecological principles of mitigation for HS2 LWM', which is part of the Environmental Statement.~~
- 4.8.6 Monitoring of the ecology mitigation and compensation measures is necessary to measure the extent to which the ecological objectives of the proposals are being met. The approach to monitoring will vary depending upon which management option is adopted for a particular area of land. Broad generic indications of the likely durations of monitoring, maintenance and management during the establishment period for those habitats affected by the project are set out in HS2 Information Paper E26: Indicative Periods for the Management and Monitoring of Habitats.
- 4.8.7 Subject to any relevant approvals or agreements required for any restoration or mitigation schemes under Schedule 16 to the Bill, land which is used temporarily in connection with the project will be considered for restoration as part of the HS2 Ltd's overall approach to seek no net loss to biodiversity.
- 4.8.8 In pursuance of this aim, HS2 Ltd ~~in conjunction with Natural England~~ will calculate the biodiversity value of habitats lost and gained. Details of the methodology and

metric are set out in the Scope and Methodology Report (SMR) addendum (volume 5 Appendix CT-001-000/2) of the Environmental Statement (ES) submitted with the Bill.

4.8.9 This will be based on the mitigation and compensation measures set out in the HS2 Phase One Environmental Statement. ~~Further iterations of the calculation may be appropriate to reflect any modifications made prior to construction through the Parliamentary process.~~

4.8.10 The Secretary of State will require the nominated undertaker to form an Ecology Review Group for the specific purpose of reviewing the outputs from the ecology monitoring programme. The Ecology Review Group will receive reports on an annual basis and will be asked to make recommendations for remedial measures to the nominated undertaker where progress against objectives is considered not to be sufficient. The composition of this group will include Natural England, local authority representation, appropriate nature conservation NGOs and relevant specialists as necessary.

4.8.11 Measures will be put in place to ensure that, in cases where the ecological objectives are not being realised, this can be dealt with in an appropriate manner.

## 4.9 Geological features

4.9.1 Should a geological deposit or feature of high scientific value be discovered, the nominated undertaker will carry out appropriate recording and, if reasonably practicable, protection of such deposits. If necessary and where practicable, the material may be removed for study and preservation.

4.9.2 Should unexpected contamination be revealed during the course of the works, a plan will be put in place to manage this.

## 4.10 Water resources and flood risk

4.10.1 Where reasonably practicable, material interference with surface and groundwater bodies and existing hydrological patterns of catchments, including ~~important subterranean groundwater~~ flows to aquatic habitats, will be avoided. Consultation shall allow for the Environment Agency to have reference to their wider environmental and recreational duties. Where appropriate to their role, consultation with Lead Local Flood Authorities and Internal Drainage Boards will also be undertaken. Where surface and groundwater bodies or existing hydrological patterns must be interfered with, so far as is reasonably practicable:

- necessary works will be positioned, designed and constructed to control impacts in terms of flow, minimise or manage flood risk, dewatering, water quality, ~~geo~~hydro morphology, resulting in adverse impacts on ~~archaeological (including palaeoenvironmental)~~, ecological or landscape receptors;

- continuity of surface and groundwater flows and quality will be maintained to mitigate environmental impacts, by means of watercourse diversions, sustainable drainage systems (SuDS), creation of natural banks and features and where unavoidable, culverts;
- mitigation for ecological impacts will be provided for and consideration will also be given to enhance nature conservation benefits resulting from drainage works;
- mitigation for loss of flood storage capacity will be provided by creating replacement floodplain storage areas taking climate change allowances into account.

4.10.2 Paragraph 4.10.1 shall apply equally ~~to seek~~ to ensure compliance with the Water Framework Directive objectives.

4.10.3 The use of SuDS will be investigated. SuDS will be implemented in preference to other forms of drainage, where it is reasonably practicable to do so, and in accordance with the necessary approvals.

4.10.4 The nominated undertaker will include appropriate measures to ensure the protection of controlled waters, including both surface water and groundwater bodies from pollution.

4.10.5 Monitoring will be undertaken in consultation with the Environment Agency and/or Natural England prior to and during construction, and if required post construction, to establish baseline conditions for surface water and groundwater and to confirm the effectiveness of temporary and permanent mitigation measures together with any remedial works deemed necessary.

4.10.6 The Heritage Memorandum requires a programme of mitigation for archaeological resources, in accordance with a written scheme of investigation. Where a watercourse or the banks of a watercourse are affected by any archaeological investigation, the nominated undertaker will consult the Environment Agency and, where relevant, Lead Local Flood Authorities, Internal Drainage Boards, Natural England and/or the Canal & River Trust, on the written scheme of investigation and, as far as reasonably practicable, ensure that the submission of any relevant application for Agency permits, licenses or consents are co-ordinated to avoid conflict with archaeological mitigation requirements agreed through the planning regime.

4.10.7 Maintenance access will be provided to water-related infrastructure, to enable inspections and maintenance to be regularly carried out.

## **4.11 Agricultural and forestry land**

4.11.1 Former agricultural land not required for the railway or its mitigation will, where practicable be restored to agricultural use after completion of HS2 construction.

4.11.2 Topsoil (and subsoil where appropriate) will be stripped from land prior to construction and stored appropriately. The intention is to reinstate agricultural

land to its former quality, with reference to Defra's Agricultural Land Classification system, where reasonably practicable.

- 4.11.3 It should be noted that whereas soils from woodland areas will also be conserved for beneficial use within the scheme, the nominated undertaker is not committed to the reinstatement of all woodland and forestry areas affected by Phase One of HS2.
- 4.11.4 In some circumstances, land to be returned to agriculture will be graded such that it fits in with the new landforms created by Phase One of HS2, prior to being reinstated to its former condition where practicable. Surface gradients on new landforms will be limited where practicable, ~~the steepness of ground surface gradients on new landforms will be limited, to ensure that former best and most versatile land is not downgraded~~ to ensure that former best and most versatile land is not downgraded.
- 4.11.5 The nominated undertaker will ~~produce a~~ apply a soil handling method statement strategy (covering soil stripping, storage and reinstatement), which will be based on a soil resources survey carried out as part of the environmental assessment. In carrying out soil handling operations for the conservation of the soil resource, the nominated undertaker will apply the good practice guidance and other more general prescriptions set out in the CoCP and the LEMPs.
- 4.11.6 To ensure that the objectives of the above works are achieved, the nominated undertaker will, where appropriate, manage or support the recovery of reinstated agricultural land during an appropriate aftercare period.

## 4.12 Excavated material

- 4.12.1 The nominated undertaker will utilise excavated materials in the construction of Phase One of HS2 where feasible and reasonably practicable, in accordance with the Contaminated Land: Applications in Real Environments (CL: AIRE) Definition of Waste: Development Industry Code of Practice.
- 4.12.2 Where it is not feasible or reasonably practicable to use excavated materials in the construction the nominated undertaker will minimise the quantity of excavated materials that are disposed of to landfill. This may include providing surplus materials for use in other ~~local~~ construction projects. ~~or disposal of surplus excavated material. On-site through sustainable placement.~~
- 4.12.3 Where the off-site transport of surplus excavated material would result in significant environmental effects sustainable placement may be used. Where sustainable placement is to be undertaken this will be permitted in line with the Environmental Permitting Regulations (England and Wales) 2010.

## 4.13 Waste management

- 4.13.1 All waste generated from the design, construction and operation of Phase One of HS2 will be managed in accordance with the waste hierarchy as described in the Government Review of Waste Policy in England 2011<sup>1</sup>.
- 4.13.2 The waste hierarchy sets out the preferred approach to the management of waste from waste prevention, to reuse, recycling, energy recovery and landfill. It supports the need to achieve efficient use of material resources, minimise the amount of waste produced (or otherwise increase its value as a resource) and reduce, as far as possible, the amount of waste that is disposed to landfill, in keeping with the HS2 Sustainability Policy.

## 4.14 Climate change

- ~~4.14.1 The nominated undertaker will produce and implement a carbon minimisation plan to minimise the carbon footprint of HS2 as far as reasonably practicable associated with construction and implement the Carbon Minimisation Policy. This will include a carbon assessment and reporting tool to track carbon emissions and reductions.~~
- 4.14.2 All work shall be carried out in accordance with HS2 Ltd.'s principles as set out in the HS2 Information paper E9: Climate Change Adaptation and Resilience and E10: Carbon Minimisation. The nominated undertaker will require each of its lead contractors to produce carbon management plans and pay due consideration to the impacts of extreme weather events and related conditions during construction.
- 4.14.3 Through the EMS the nominated undertaker will develop, and keep under regular review, objectives which address the climate change and resilience aspects of the sustainability agenda. Achievement of these objectives during ongoing design and construction stages will be monitored and periodically reported.

## 5 Key eEnvironmentally sensitive worksites

- 5.1.1 [Table 5.1] identifies key worksites along the Phase One of HS2 route that are particularly environmentally sensitive in terms of nature conservation, terrestrial and aquatic ecology, water resources, geomorphology, recreation and amenity, landscape, public open space and agricultural land. In this context, 'environmentally sensitive' does not refer to all sites where there are significant environmental effects as reported in the Environmental Statement. The criteria for inclusion in [Table 5.1] are:
- Worksites where a key significant impact (that has been agreed with the NEF Members) is generated in any of the environmental topics in paragraph 5.1.1.
- ~~5.1.2 For clarification, landscape impacts, as opposed to townscape impacts or visual~~

<sup>1</sup> Defra (2011), Government Review of Waste Policy in England 2011. London, HMSO



impacts, are classified as those where the predominant impact is on open space, rather than buildings or visual amenity, although clearly there is considerable overlap. The reason for the distinction is that the framework process for mitigation of townscape and related visual impacts is developed through Schedule 16 to the Bill and the Planning Memorandum as set out in HS2 Information Paper D1: Design Policy (section 3).

- 5.1.3 The CoCP requires the nominated undertaker to prepare a number of LEMPs setting out the specific control measures necessary to deliver the requirements it sets out of the Code. As part of the ose-LEMPs, this Memorandum requires the nominated undertaker to prepare site-specific management plans for the key identified environmentally sensitive worksites identified in Table 5.1, focusing on mitigation, compensation and monitoring requirements and opportunities for enhancement in relation to identified environmental topics as outlined in 5.1.1. [Table 5.1]. Individual LEMPs will be produced for each relevant local authority area (i.e. district council, London borough or other unitary authority).
- 5.1.4 [Table 5.1] also indicates key statutory consultees who, along with relevant local authorities will also be consulted on the LEMP for these key environmentally sensitive worksites. It is intended that these environmental site-specific management plans will be submitted for information with relevant Schedule 16 and, where appropriate, heritage applications, recognising that the grounds for consideration of Schedule 16 applications are those set out in the Bill.
- 5.1.5 If, during further design, the nominated undertaker is able to completely avoid the use of a specific environmentally sensitive worksite, then the nominated undertaker will report to the relevant members of the National Environment Forum and the relevant local authority that the specific key environmentally sensitive worksite will not feature in the respective LEMP.

