PHASE ONE

DRAFT ENVIRONMENTAL STATEMENT

Draft Code of Construction Practice

HS2 Phase One: London-West Midlands

ENGINE FOR GROWTH

High Speed Two (HS2) Limited,
2nd Floor, Eland House,
Bressenden Place,
London SW1E 5DU

Telephone 020 7944 4908

General email enquiries HS2enquiries@hs2.org.uk

Website: www.hs2.org.uk

Product code: ES/61

To order further copies contact:

DfT Publications

Tel: 0300 123 1102

Web: www.dft.gov.uk/orderingpublications

recycle Printed in Great Britain on paper containing at least 75% recycled fibre.

Contents

1 Introduction

1.0.1 This document is the draft Code of Construction Practice (CoCP) for the Phase One London and West Midlands route of the proposed High Speed 2 (HS2) railway. HS2 is being delivered by High Speed Two Limited (HS2 Ltd), which is the company set up by the Government to develop proposals for a new high speed railway line between London and the West Midlands and to consider the case for new high speed rail services linking London, northern England and Scotland. Powers to construct and operate HS2 will be sought by means of a hybrid bill to be submitted to Parliament. Responsibilities for construction will be discharged by the Nominated Undertaker appointed to implement the powers of the hybrid bill. The Nominated Undertaker is the body appointed by the Secretary of State responsible for delivering the scheme.

1.0.2 The CoCP will contain control measures and the standards to be implemented throughout Phase One of the HS2 project. At a local level, site specific control measures will be included within the Local Environmental Management Plans (LEMPs) to be developed following consultation with the relevant stakeholders.

1.0.3 As the HS2 project (as defined in 1.1.1) extends across 28 local authorities (LAs), the CoCP will provide a consistent approach to the management of construction activities across LA boundaries, and with a wide range of key stakeholders.

1.0.4 The CoCP will evolve and is subject to refinement, amendment and expansion as necessary as the project design, assessment and consultation processes develop. Engagement with stakeholders especially through the planning forums, the national environment forum and the community forums will inform its future development. This draft CoCP should not be taken to represent the views of the Secretary of State for Transport until such time as it has been finalised.

1.1 Structure of this document

1.1.1 This document comprises the following sections:

- Purpose of the CoCP (Section 2) – which includes reference to measures and standards to protect communities and the environment during construction works.
- Policy and environmental management principles (Section 3) – which form the basis of environmental management systems to be implemented during construction.
- Implementation (Section 4) – the mechanisms by which general environmental commitments and specific requirements in local community areas are passed from the Nominated Undertaker to their construction contractors.
- General requirements by environmental topic (Section 5 to 16) – which set out the measures that will be implemented to limit disturbance from construction activities as far as reasonably practicable in relation to the following topics which respond directly to the HS2 Environmental Statement (ES):
    - General requirements related to community relations, hours of work, pollution incident control and security etc.;
    - Agriculture, forestry and soils;
    - Air quality;
    - Cultural heritage;
    - Ecology;
    - Ground settlement;
    - Land quality;
    - Landscape and visual features;
    - Noise and vibration;
    - Traffic and transport;

- Waste and materials; and
- Water resources and flood risk.

2 Purpose of the Code of Construction Practice

2.1.1 This draft Code of Construction Practice (CoCP) sets out a series of proposed measures and standards of work, which shall be applied by the Nominated Undertaker and its contractors throughout the construction period to:

- provide effective planning, management and control during construction to control potential impacts upon people, businesses and the natural and historic environment; and
- provide the mechanisms to engage with the local community and their representatives throughout the construction period.

Measures will be applied to the construction to enable it to be undertaken economically and meet the requirements of the hybrid bill and its associated commitments.

2.1.2 The Nominated Undertaker and its contractors will comply as a minimum with applicable environmental legislation at the time of construction, together with any additional environmental controls imposed by the hybrid bill. For this reason the applicable statutory requirements are not repeated within this CoCP. Further guidance on specific areas, such as soil handling and dust management, will be considered from industry best practice guidance documents as set out in each discipline section of this CoCP. The references to guidance documents within this document are not intended to be exhaustive.

2.1.3 This draft CoCP has been produced in conjunction with the draft Environmental Statement (ES) documentation with the aim of ensuring that likely significant construction effects that are reported in the formal ES will either be avoided or mitigated. Site-specific controls, which are included within the LEMPs, will be produced once the hybrid bill has been through the Parliamentary process.

2.1.4 The draft CoCP is one of a suite of documents to be submitted to Parliament with the hybrid bill. See Figure 1 for a diagrammatic representation showing its relationship to other project documentation.

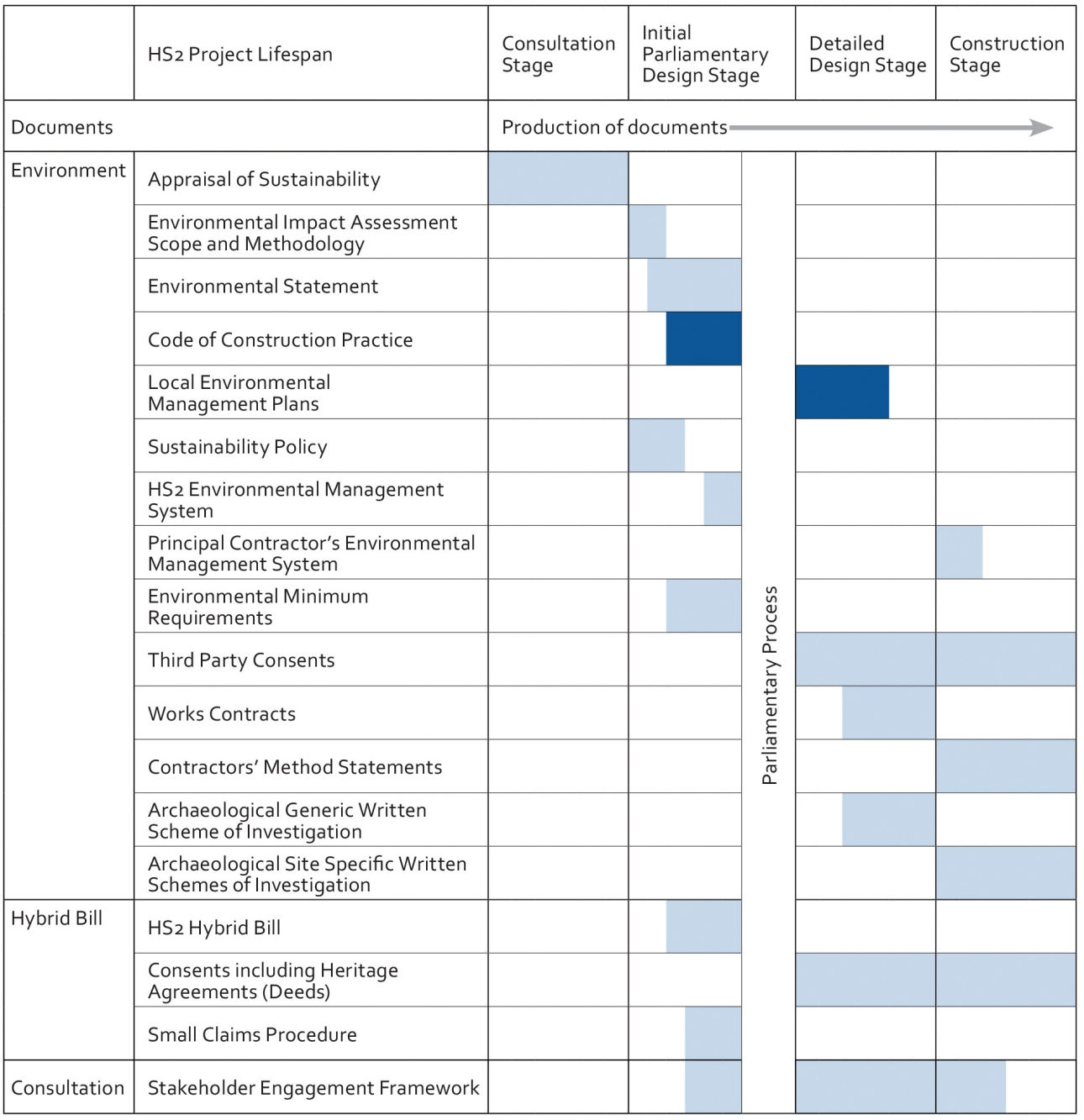

Figure 1: Diagram showing the Code of Construction Practice within the context of other documentation for the proposed scheme. This figure is provided for illustrative purposes only and the list of documents is not exhaustive. Document titles and timescales for their production may change.

3 Policy and environmental management principles

3.1 HS2 sustainability policy

3.1.1 HS2 Ltd has developed and is implementing a sustainability policy, which is included at Appendix 3. The policy sets out both the corporate approach to be adopted by the Nominated Undertaker to incorporating environmental and sustainability aspects and the high level principles which will define how these matters will be addressed on the HS2 project. All contractors will be required to comply with the requirements of the sustainability policy.

3.2 Environmental Minimum Requirements

3.2.1 The CoCP will be annexed to the ES submitted to Parliament as part of the hybrid bill process. The CoCP will form a component of the HS2 Environmental Minimum Requirements (EMRs). The EMRs will set out the high-level environmental and sustainability commitments that the Government will enter into through the hybrid bill process. The EMRs will consist of a suite of framework documents which will (i) define the mechanisms by which the Nominated Undertaker will engage with communities and other key stakeholders and (ii) implement environmental and sustainability management measures designed to protect communities and the environment during detailed design development and construction.

3.2.2 The Nominated Undertaker taking forward the detailed design and implementation of the scheme after the bill has been enacted will be required to comply with the EMRs.

3.2.3 The EMRs are likely to be formed of:

- a Code of Construction Practice;
- a planning and heritage memorandum to identify the responsibilities in relation to certain planning matters and site-specific details where particular heritage features may be affected by the scheme, to be agreed with local planning authorities and English Heritage;
- an environmental memorandum identifying the management approach to, and controls on, environmental aspects of the scheme, to be agreed with stakeholders such as the Environment Agency and Natural England;
- policies setting out the approach to particular aspects of the scheme, e.g. land acquisition and disposal, noise mitigation, property hardship scheme, prevention of and repairs relating to damage from settlement; and
- undertakings and assurances given to petitioners and to Parliament during the passage of the bill.

3.3 Environmental management system

The Nominated Undertaker's EMS

3.3.1 As part of the sustainability policy, the Nominated Undertaker will develop an environmental management system (EMS) in accordance with BS EN ISO 14001. The EMS provides the process by which environmental management, both within its organisation and in relation to its operations, is undertaken to ensure that 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; and
- the procedures to be implemented to monitor compliance with the environmental provisions in the hybrid bill and in this CoCP.

Principal contractors' EMS

3.3.2 The Nominated Undertaker will require each of its principal contractors to have an EMS certified to BS EN ISO14001. Their EMSs 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. Where the principal contractor is a joint venture, the EMS will be certified to cover the activities of the joint venture.

3.3.3 As part of their EMSs, principal contractors will be required to plan their works in advance to ensure that, in so far as is reasonably practicable, measures to reduce environmental effects are integrated into the construction methods and that commitments from the ES and hybrid bill are complied with. The works will also be subject to approval processes set out in this CoCP by the Nominated Undertaker (e.g. suitability of construction phase plans) and by any statutory consents required.

3.3.4 The principal contractors' EMSs will cover the activities of all sub-contractors. The principal contractors will also be required to coordinate with other contractors and relevant parties that may affect their works. This will be documented in their EMS, as appropriate.

3.3.5 The principal contractors' EMSs will include procedures to monitor compliance with the project's environmental requirements, as set out in Section 4.3.1 of this CoCP, together with provisions for any corrective actions required.

3.3.6 The detailed provisions of the principal contractors' EMSs will be subject to review and acceptance as being suitable by the Nominated Undertaker.

4 Implementation

4.1 Enforcement

4.1.1 The CoCP will be implemented during the planning and undertaking of construction works. The provisions of the CoCP will be passed by the Nominated Undertaker to the principal contractors by means of the works contracts. The contracts will incorporate both:

- general requirements; and
- site-specific requirements, including delivery of Local Environmental Management Plans (LEMPs).

The principal contractors and their sub-contractors will be required to comply with the terms of the CoCP by the Nominated Undertaker and appropriate action will be taken by the Nominated Undertaker as required to ensure compliance.

4.1.2 The general requirements are listed in the following sections of the CoCP and will be applicable to the whole of the HS2 project. They will apply to each construction contract let by the Nominated Undertaker. The general requirements will be supplemented by LEMPs for each community forum area. Further details on the LEMPs are given in Section 4.2 below.

4.1.3 The Nominated Undertaker will develop an environmental management system, which will set out the arrangements and responsibilities for auditing and assuring compliance with the environmental mitigation set out in this CoCP. The Nominated Undertaker will also be required by the EMRs to comply with the CoCP.

4.2 Local Environmental Management Plans

4.2.1 The LEMPs will include a number of specific measures by topic relevant to each community forum area, as set out in Section 6 onwards of this CoCP. The LEMPs will build on the general environmental requirements given below and will set out how the project will adapt and deliver the required environmental and community protection measures within each local community area.

4.2.2 The Nominated Undertaker and / or its contractors will engage with the local communities, local authorities and other stakeholders in order to develop the LEMPs.

4.2.3 A template for the LEMPs is included at Appendix 2 of this CoCP.

4.3 Site management

Monitoring

4.3.1 The principal contractors will undertake the necessary monitoring as outlined for each environmental topic (see Sections 6 to 16) to comply with the requirements of this CoCP, the relevant LEMP, any additional consent requirements and their EMS. Monitoring will include:

- monitoring the effectiveness of mitigation measures;
- monitoring the impact of construction works; and
- taking other actions as may be necessary to enable compliance.

Monitoring, together with provisions for any corrective action required, will be implemented under the principal contractors' EMS.

Training and competence

4.3.2 The Nominated Undertaker will require all contractors to employ an appropriately qualified and suitably experienced workforce and, where appropriate, will include holding a registration with relevant recognised competence schemes.

4.3.3 The Nominated Undertaker and its contractors will be responsible for identifying the training needs of their personnel to enable appropriate training to be provided and suitably qualified and experienced professionals will be engaged for this purpose. The training will include site briefings and toolbox talks for relevant staff to maintain the necessary level of knowledge on health, safety, community relations and environmental topics, an ability to follow environmental control measures and to advise employees of changing circumstances as work progresses.

Considerate constructors

4.3.4 All principal contractors will be required to sign up to the Considerate Constructors Scheme (see Appendix 1, Glossary, for more information).

4.4 Contractors' method statements

4.4.1 The Nominated Undertaker's contractors will set out the procedures to be followed for construction operations in method statements which will address health, safety, site security and the environmental issues associated with construction operations. The operations requiring a method statement will be identified using a risk-based approach. As a minimum, method statements will be prepared for site preparation, construction activities and reinstatement of land and / or infrastructure following completion of the main construction works.

4.4.2 Method statements will define any specific environmental control measures, including environmental and cultural heritage protection works, to be implemented to meet the requirements of this CoCP and the LEMPs, and will consider the cumulative effects of concurrent construction activities.

4.4.3 The principal contractors' approach to method statements will be reviewed and accepted by the Nominated Undertaker. An assurance programme will be established by the Nominated Undertaker and its contractors to ensure compliance with these planned arrangements.

4.5 Supervision

4.5.1 Sufficient suitably qualified and experienced personnel will be appointed by the principal contractors to supervise the main construction works. This will include professionally qualified environmental management staff, with relevant experience in the environmental disciplines included within the ES and this CoCP. They will be present on site during the main construction works to advise the Nominated Undertaker and the contract management team, and supervise and report on the implementation of appropriate environmental mitigation measures and safeguards.

Contact person

4.5.2 At each construction site, a contact person will be identified, who will be the first point of contact for the regulatory authorities and general enquiries.

5 General requirements

5.1 Community relations

5.1.1 The Nominated Undertaker and its contractors will produce and implement a stakeholder engagement framework and provide appropriately experienced community relations personnel to implement the framework, to provide appropriate information and to be the first point of contact to resolve community issues. The Nominated Undertaker will take reasonable steps to engage with the community, particularly focusing on those who may be affected by construction impacts, including local residents, businesses and community resources, and the specific needs of minority groups. Regular meetings will be held at Community Forum locations, where required by all parties, between the principal contractor, the Nominated Undertaker, the Local Authority and representatives of the local community to discuss the forthcoming programme of works. Experienced support for local businesses that may be affected by the works will be provided by the Nominated Undertaker.

Advance notice of works

5.1.2 The Nominated Undertaker and its contractors will ensure that local residents, occupiers, businesses, local authorities and parish councils affected by the proposed construction works, as outlined in the ES, will be informed in advance of works taking place by methods identified in the framework. The notifications will detail the estimated duration of the works, the working hours and the nature of the works. In the case of works required in response to an emergency, the local authority, parish council, local residents, businesses and community resources will be advised as soon as reasonably practicable. All notifications will include the community helpline number.

5.1.3 Information on the works will also be available on the HS2 website and at appropriate locations along the route, which will be identified in the LEMPs.

Community helpline

5.1.4 The Nominated Undertaker and its contractors will maintain a construction operations website (which includes an email function or the latest communication technique) and telephone helpline staffed 24 hours per day, 7 days a week, to handle enquiries from the general public regarding construction activities. It will also act as a first point of contact for the general public for information in the case of any emergency or an incident. The helpline will be widely promoted and displayed on site signboards and hoardings. It will be possible to contact the HS2 helpline service via the HS2 website email function. Information for the public will also be provided using other methods such as social media, email alerts, local radio and newspapers, as appropriate. The service will be available in different languages, on a case-by-case basis, as agreed by the Nominated Undertaker.

5.1.5 Should it be necessary to escalate a complaint, a process for handling such complaints will be established whereby all calls will be logged, together with responses. Statistical information on complaints and actions to resolve these will be sent to relevant local authorities on a regular basis (mechanism and period to be confirmed).

5.1.6 An independent complaints commissioner will be appointed by the Secretary of State for Transport to provide an independent arbitration service for the complaints process detailed above.

Small claims procedure

5.1.7 Following Royal Assent of the hybrid bill, the Nominated Undertaker would establish a small claims procedure, modelled on those operated for the construction of the Channel Tunnel, the Channel Tunnel Rail Link and Crossrail, to provide a positive and clear mechanism for minor construction-related residential, business or agricultural claims up to a value to be determined at the time.

5.1.8 The scheme is an informal approach to handling small claims that is designed to give a prompt response at minimum cost and inconvenience to claimants. It is a voluntary arrangement that does not affect statutory rights of redress.

Claims

5.1.9 The scheme would cater for claims related to damage to property and effects arising from the construction of HS2, but not for personal injury.

5.1.10 The scheme would deal with claims up to a value to be determined at the time of the start of construction. It is expected that this value would be up to £7,500.

5.1.11 The scheme would not apply to local authorities, Government departments or agencies.

Operation

5.1.12 The Nominated Undertaker would be required to appoint an administrator to deal with small claims (known as the Small Claims Administrator).

5.1.13 If a member of the public considers that he or she has a claim for physical damage arising from construction-related activity, the claimant must first address the claim to the person identified as the point of contact by the Nominated Undertaker.

5.1.14 The point of contact would be responsible for receiving any complaint. If immediate action cannot be taken to resolve or settle the small claim, it would be passed to the Small Claims Administrator for resolution and settlement.

5.1.15 The Small Claims Administrator would be responsible for investigating the claim, setting up a meeting with the claimant to discuss the claim, deciding whether the claim is warranted, assessing the damage and arranging payment to the claimant.

5.1.16 If a claimant considers that the award of the Small Claims Administrator is inadequate, then he would be able to write to the Complaints Commissioner requesting resolution and settlement.

5.1.17 It would be possible for claims to be referred to the Small Claims Administrator by the Complaints Commissioner.

Remedies and monitoring

5.1.18 The Complaints Commissioner would determine requests for arbitration under the scheme. The operation of the scheme would be monitored by the HS2 Complaints Commissioner, who would report performance to the Nominated Undertaker annually and at other times as he/she considers necessary.

5.2 Working hours

Core working hours

5.2.1 Core working hours will be from 08:00 to 18:00 on weekdays (excluding bank holidays) and from 08:00 to 13:00 on Saturdays. The Nominated Undertaker will require that its contractors to adhere to these core working hours for each site as far as reasonably practicable or unless otherwise permitted under section 61 of the Control of Pollution Act 1974.

5.2.2 Guidance on the site-specific variations to core hours and/or additional hours likely to be required will be included within the LEMP following consultation with the relevant local authority.

5.2.3 Except in the case of emergency, any work required to be undertaken outside of core hours (not including repairs or maintenance) will be agreed with the local authority prior to undertaking the works under section 61 of the Control of Pollution Act 1974 within the framework set out by the LEMP and this CoCP.

Start up and close down periods

5.2.4 To maximise productivity within the core hours, the Nominated Undertaker's contractors will require a period of up to one hour before and up to one hour after normal working hours for start-up and closedown of activities. This will include but not be limited to deliveries, movement to place of work, unloading, maintenance and general preparation works. This will not include operation of plant or machinery likely to cause a disturbance. These periods will not be considered an extension of core working hours.

Additional working hours

5.2.5 Tunnelling[1] and directly associated activities (such as removal of excavated material, supply of materials and maintenance of tunnelling equipment) will be carried out on a 24-hour day, 7-day week basis. Where reasonably practicable, material will be stockpiled within the site boundary for removal during normal working hours.

5.2.6 Work within existing stations, track-laying activities and work requiring possession of major transport infrastructure may be undertaken during night time, Saturday afternoon, Sunday and/or bank holiday working for reasons of safety or operational necessity and will often involve consecutive nights work over weekend possessions, and may on occasion involve longer durations. Activities outside core working hours that could give rise to disturbance will be kept to a reasonably practicable minimum.

5.2.7 Certain operations such as earthworks are season and weather-dependent. In these instances the Nominated Undertaker's contractors will seek to extend the core working hours and/or days for such operations to take advantage of daylight hours, with the consent of the relevant local authority.

5.2.8 Certain other specific construction activities will require extended working hours for reasons of engineering practicability. These activities include, but are not limited to, major concrete pours and piling / diaphragm wall works. Surveys, e.g. for wildlife or engineering purposes, may also need to be carried out outside core working hours.

5.2.9 Repairs or maintenance of construction equipment that is required to be carried out outside of core working hours will normally be carried out on Saturday afternoons or Sundays between 09:00 and 17:00.

5.2.10 In the case of work required in response to an emergency or which if not completed would be unsafe or harmful to the works, staff, public or local environment, the relevant local authority will be informed as soon as reasonably practicable of the reasons for, and likely duration of, the works. This information will also be made available to the HS2 helpline. Examples of the type of work envisaged would include: where pouring

[1] This does not refer to cut and cover tunnels

concrete takes longer than planned due to equipment failure or where unexpectedly poor ground conditions, encountered whilst excavating, require immediate stabilisation.

Abnormal deliveries

5.2.11 Abnormal and special loads may be delivered outside core working hours subject to the requirements and approval of the relevant authorities.

5.3 Construction site layout and good housekeeping

5.3.1 To reduce the likelihood of either an environmental incident or nuisance occurring,the following measures will be used, where relevant:

- treatment of perimeters, cleanliness on site, provision of staff facilities, pest control, waste management;
- prohibition of open fires, and a requirement to take measures to minimise likelihood of fires;
- removal or stopping and sealing of drains and sewers taken out of use;
- no discharge of site runoff to ditches, watercourses, drains, sewers or soakaways without agreement of the appropriate authority;
- maintenance of wheel-washing facilities or other containment measures;
- location of storage, machinery, equipment and temporary buildings to minimise environmental effects and, where practicable, outside flood risk areas;
- the use of less intrusive noise alarms which meet the particular safety requirements of the site, such as broadband reversing warnings, or proximity sensors to reduce the requirement for traditional reversing alarms;
- controls on lighting/illumination to minimise visual intrusion or any adverse effect on sensitive ecology;
- the location of site accommodation to avoid overlooking residential property;
- security measures including closed-circuit television (CCTV) location and direction of view of security cameras or blocking software to prevent intrusion into residential properties;
- avoidance of use of loudspeaker or loudhailer devices;
- containing and limiting visual intrusion of construction sites, as far as reasonably practicable;
- provision of maps showing sensitive areas and buffer zones where no pollutants are to be stored or used;
- maintenance of public rights of way for pedestrians, cyclists and equestrians around the perimeter of construction sites and across entry and exit points wherever practicable;
- adequate welfare facilities for staff;
- smoking areas at site offices/compounds or work sites equipped with containers for smoking waste (these would not be located at the boundary of working areas or adjacent to neighbouring land);
- the implementation of a "Construction Workers Travel Plan" to encourage use of public transport by project staff and control off-site parking; and
- a monitoring regime for each site.

5.4 Site lighting

5.4.1 Site lighting and signage will be provided to enable the safety and security of the construction sites. It will be at the minimum luminosity necessary and use low energy consumption fittings. Where appropriate, lighting to site boundaries will be provided and illumination will be sufficient to provide a safe route for the passing public. In particular, precautions will be taken to avoid shadows cast by the site hoarding on surrounding footpaths, roads and amenity areas. Where appropriate,

lighting will be activated by motion sensors to prevent unnecessary usage. It will comply with the Institution of Lighting Engineers' guidance notes for the reduction of light pollution and the provisions of *BS 5489, Code of Practice for the Design of Road Lighting*, where applicable.

5.4.2 Lighting will also be designed, positioned and directed so as not to unnecessarily intrude on adjacent buildings, ecological receptors, structures used by protected species and other land uses to prevent unnecessary disturbance, interference with local residents, railway operations, passing motorists, or the navigation lights for air or water traffic. This provision will apply particularly to sites where night working will be required. In addition, at construction sites where potentially significant impacts are identified, the principal contractor will develop and implement a lighting management plan as part of their EMS.

5.5 Worksite security

5.5.1 Construction worksites will be under the control of a principal contractor which has a statutory duty to prevent unauthorised access to the site. Principal contractors will carry out site-specific assessments of the security and trespass risk at each site and implement appropriate control measures.

5.5.2 The following measures may be used by the contractors to prevent unauthorised access to the site:

- use of high perimeter fencing or hoarding, but only where necessary for site security and public safety, and placed so that public rights of way are maintained or appropriately diverted;
- site lighting at site perimeters;
- adequate security guards;
- CCTV and infrared surveillance and alarm systems where required;
- communications initiatives for local schools to warn of dangers, and involving schools in response to incidents involving their pupils;
- consultation with neighbours on site security matters;
- consultation with local crime prevention officers on security proposals for each site with regular liaison to review security effectiveness and response to incidents; and
- immobilisation of plant out of hours, removing or securing hazardous materials from site, securing fuel storage containers and preventing unauthorised use of scaffolding.

5.6 Hoardings, fencing and screening

5.6.1 The following measures will be applied, as appropriate:

- maintenance of adequate fencing and hoardings to an acceptable condition to prevent unwanted access to the construction site, to provide noise attenuation, screening, and site security where required. This will include the need to provide viewing points at relevant locations, if appropriate;
- use of different types of fencing, including hoardings used for noise control;
- painting the side of hoardings facing away from the site, and to keep them free of graffiti or posters;
- providing site information boards with out of hours contact details, 24-hour telephone number (for comments/complaints), community information and information on the works programme, at key locations;
- displaying notices on site boundaries to warn of hazards on site such as deep excavations, construction access, etc.;
- maintenance of protective fencing (Heras or equivalent) and/or specialist fencing (e.g. reptile fencing) to protect environmentally sensitive features during construction; and
- retaining existing walls, fences, hedges and earth banks for the purpose of screening as far as reasonably practicable.

5.6.2 Design of hoardings around construction activities shall ensure fitness for purpose and include consideration of the character of the surrounding landscape (e.g. use of open mesh fencing where possible and appropriate in rural areas, solid hoarding in urban areas, use of artwork where appropriate, or use of vegetation on hoardings). Fencing and hoarding shall be kept well maintained throughout construction.

5.6.3 Where hoarding is required, it will be 2.4m in height and will be raised to 3.6m and possibly altered in form to enhance acoustic performance for specific locations. Further details will be included within the relevant LEMPs.

5.6.4 Temporary fences may be used in certain areas, such as for short term occupation of sites or at more remote locations.

5.6.5 Clear sight lines will be maintained around hoardings and fencing with no hidden corners to avoid, where reasonably practicable, opportunities for anti-social behaviour, crime and to ensure safety of vehicles. Footways of adequate width to facilitate pedestrian flows will be provided with signs provided to facilitate safe access around the site boundary. Adequate lighting will be installed near hoardings. Businesses located close to hoardings will be consulted on their design, materials and construction to reduce impacts on access to and visibility of their premises.

5.6.6 Hoarding and fencing in areas at risk of flooding will be permeable to floodwater, unless otherwise agreed with the Environment Agency (EA), to ensure that the fluvial floodplain and areas liable to other sources of flooding, continues to function effectively for storage and conveyance of floodwater.

5.6.7 Fencing and hoarding will, as far as is reasonably practicable, be located such that it does not damage sensitive habitats, trees or hedgerows.

5.7 Unexploded ordnance

5.7.1 As with any major infrastructure project, the Nominated Undertaker's contractors will carry out risk assessments for the possibility of unexploded ordnance being found within construction areas. An emergency response procedure will be prepared and implemented by the contractors to respond to the discovery of unexploded ordnance. This will include notifications to the relevant local authorities and emergency services.

5.8 Temporary living accommodation

5.8.1 The provision of on-site workers' temporary living accommodation will be considered and approved in advance by the local authority and will be located and managed in accordance with arrangements set out in that approval. Standards of temporary living accommodation will be approved by the relevant local authority, be subject to the same environmental control measures as are set out in this CoCP for other construction works and be positioned with consideration to known flood risk areas e.g. surface water.

5.9 Clearance and re-instatement of sites on completion

5.9.1 On completion of construction works, plant, materials, equipment, temporary buildings and vehicles not required during subsequent activities will be removed from the site. All reinstatement will be completed in accordance with the requirements of the hybrid bill.

5.10 Pollution incident control

Pollution prevention measures

5.10.1 The Nominated Undertaker's contractors will develop and implement appropriate measures to control the risk of pollution due to construction works, materials and extreme weather events. This will include a pollution incident control plan, as part of the contractors' EMS, that recognises the risk of pollution from construction activities and presents proactive management practices to ensure that any pollution incident that may occur, such as a diesel spillage, is minimised, controlled, reported and remediated.

5.10.2 The following measures will be adopted to manage the risk of pollution incidents:

- statement of appropriate information to be provided in the event of any incident, such as a spillage or release of a potentially hazardous material;
- notification of appropriate emergency services, authorities and personnel on the construction site;
- notification of relevant statutory bodies, environmental regulatory bodies, local authorities and local water and sewer providers of pollution incidents, where required;
- provision of maps showing the locations, together with address and contact details, of local emergency services facilities such as police stations, fire authorities, medical facilities and other relevant authorities;
- ensure that site drainage plans and flood risk management plans are available on site and are kept up-to-date;
- ensure that pollution shut-off valves are used in compounds with formal drainage;
- ensure staff competence and awareness in implementing plans and using pollution response kit;
- provision of contact details for the relevant authorities, such as the EA, and the persons responsible on the construction site and within the contractors' organisation for pollution incident response; and
- provision of contacts with a competent spill response company which can be contacted at short notice for an immediate response (where appropriate).

5.10.3 In the preparation of local pollution incident response measures, the Nominated Undertaker's contractors will consult with relevant organisations, including, but not limited to, statutory bodies and other relevant parties, such as the Health and Safety Executive (HSE) (Construction), the Fire Authority, the Ambulance Service, the EA, Natural England (NE), utilities companies and the respective local authorities (emergency planning and pollution control functions). Reference should also be made to the EA Pollution Prevention Guidelines 21 (Incident Response Planning).

Monitoring

5.10.4 The Nominated Undertaker will require that its contractors have in place effective arrangements to investigate and provide reports on any potential or actual significant pollution incidents, including, as appropriate:

- a description of the pollution incident, including its location (and Ordnance Survey grid reference), the type and quantity of contaminant and the likely receptor(s);
- contributory causes;
- adverse effects;
- measures implemented to mitigate adverse effects; and
- any recommendations to reduce the risk of similar incidents occurring.

5.11 Interface management between adjacent construction areas

5.11.1 The Nominated Undertaker will oversee the interface between the contractors and will require its contractors to put in place measures to manage the environmental aspects of interfaces between adjacent construction areas, including the boundaries between areas under the control of different contractors or other third-party contractors, where reasonably practicable.

6 Agriculture, forestry and soils

6.1 Agriculture, forestry & soils management – general provisions

6.1.1 Controls will be implemented to mitigate potential avoidable impacts on soils, farms, and farm-based businesses, including maintaining access and for this purpose, the Nominated Undertaker will:

- identify the farms and types of farm adjacent to the construction site;
- identify watercourses and, where known, field drainage layouts and outfalls into watercourses or ditches; fixed irrigation pipes and sources of irrigation water; fixed water supplies for livestock;
- maintain details of the owners, occupiers and agents for land adjacent to the construction site; and
- maintain details of the husbandry associated with the areas of land adjacent to the construction site.

6.1.2 The controls will include the following, as appropriate:

- protecting agricultural land adjacent to the construction site, including provision and maintenance of appropriate stock-proof fencing and avoidance of traffic over the land leading to soil compaction;
- reinstating any agricultural land which is used temporarily during construction, where this is the agreed end use;
- details of farm accesses which may be affected by construction, including the manner in which farm access will be maintained and avoidance of traffic over land which is used temporarily during construction; and
- providing a method statement for stripping, handling, storage and replacement of agricultural, forestry and woodland soils to reduce risks associated with soil degradation on areas of land to be returned to agriculture, forestry and woodland following construction. This will include any remediation measures necessary following completion of works.

6.1.3 The Nominated Undertaker will ensure liaison is maintained with affected landowners, occupiers and agents, as appropriate.

6.1.4 The Nominated Undertaker will require its contractors to:

- advise landowners, occupiers and agents, as appropriate, regarding the intended commencement of construction works in areas of the site adjacent to agricultural and forestry holdings, and when any agricultural and forestry land used temporarily, is intended to be returned to agricultural and forestry use;
- advise landowners, occupiers and agents, as appropriate, regarding the provision of accommodation works;
- to advise the programme of works and access routes to be used; and
- take precautions in developing the construction programme to reduce disturbance, where reasonably practicable.

6.2 Measures to reduce potential impacts on agricultural, forestry and soil resources

6.2.1 Appropriate measures will be implemented, in accordance with the *Code of practice for the sustainable use of soils on construction sites* (Defra 2009), in relation to undertaking works on or adjacent to agricultural and forestry land.

6.2.2 Prior to works commencing, surveys will be undertaken to record the quality of land which will be returned to agricultural or forestry use. These surveys will include as appropriate:

- topsoil and subsoil (depth, texture and structure);
- drainage, irrigation and water supplies;
- roads, accesses and paths;
- hedgerows, ditches, field boundaries and irrigation ponds; and
- forestry, including individual trees and small woodlands.

6.2.3 Where land used temporarily for construction is to be reinstated to agricultural and forestry use, reinstatement works will be implemented in accordance with the contract specification and Defra guidance where appropriate. Such reinstatement will be carried out under appropriately qualified supervision.

6.2.4 Reasonable precautions will be taken in relation to the handling and storage of soils, including the following, as appropriate:

- the separate handling and storage of different soils, particularly topsoils and subsoils;
- handling soils that are in a suitably dry condition and not during wet weather to avoid long-term damage to soil structure from compaction;
- seed or seal medium or long-term excavated material and soil stockpiles;
- the prevention of soil contamination with chemicals or other materials; and
- the control of weeds on soil stores either through treatment or removal.

6.2.5 The requirements stated in Sections 6, 7 and 15 of this CoCP relating to the handling and storage of material, and Section 16 of this CoCP in relation to control of run-off, insofar as they are applicable to protecting soils, will be met. Additionally, the requirements stated in Section 7 of this CoCP in relation to control of dust, insofar as they are applicable to the protection of agricultural crops (including grass), will also be met.

6.2.6 Reasonable precautions will be taken during the design and construction of the project to identify, protect and maintain existing land drainage, irrigation and livestock water supply systems.

6.2.7 The requirements of Section 9 of this CoCP in relation to measures to prevent the spread of invasive and non-native species will be met. Measures to prevent the spread of weeds generally from the construction site to adjacent land will also be implemented.

6.2.8 The Nominated Undertaker will require its contractors to comply with the relevant guidance issued by Defra regarding the prevention, as far as reasonably practicable, of the spread of soil-borne, crop and animal diseases. Appropriate measures, such as those described in Section 16 of this CoCP, will be implemented to control run-off to reduce any risks associated with disease transmission.

6.2.9 Wherever reasonably practicable, the Nominated Undertaker will endeavour to identify recorded locations of carcass burial sites within the construction site and to mitigate risks associated with

the existence of any unrecorded sites. This will include the obtaining locations of recorded burial sites from Animal Health & Veterinary Laboratories Agency (AHVLA) and the establishment of a protocol for procedures in the event that an unexpected/unrecorded burial site is discovered.

6.3 Monitoring

6.3.1 Appropriately qualified environmental management staff, whose responsibility will include the monitoring of topsoil and subsoil stripping, handling, storage and replacement, as appropriate, will be appointed to facilitate compliance with this section of the CoCP in relation to soils.

7 Air quality

7.1 Air quality management – general provisions

7.1.1 The Nominated Undertaker will require its contractors to manage dust, air pollution, odour and exhaust emission during the construction works in accordance with Best Practicable Means. This will include the following as appropriate:

- reference to the general site management and good housekeeping procedures (relevant to limiting dust and air pollution);
- controls and measures to control or mitigate the effect of potential nuisance caused by the construction works;
- dust and air pollution monitoring measures to be employed during construction of the project; and
- measures relevant to control risks associated with asbestos dust.

7.2 Measures to reduce potential impacts on air quality

Site management

7.2.1 The site layout will be planned to locate machinery and dust-causing activities away from sensitive receptors, where reasonably practicable. Appropriate methods, such as the erection of hoardings or other barriers along the site boundary, will be used, where appropriate, to mitigate the spread of dust to any sensitive buildings or other environmental receptors.

Construction plant, vehicles and equipment

7.2.2 Measures will be implemented to limit emissions from construction plant and vehicles, which will include the following, as appropriate:

- operation of construction plant in accordance with the manufacturer's written recommendations;
- vehicles and plant will be switched off when not in use;
- vehicle and construction plant exhausts to be directed away from the ground and be positioned at a height to facilitate appropriate dispersal of exhaust emissions;
- the enclosure, shielding or provision of filters on plant likely to generate excessive quantities of dust beyond the site boundaries;
- devices such as dust extractors, filters and collectors on drilling rigs and silos will be used;
- movement of construction traffic around the site will be kept to the minimum reasonable for the effective and efficient operation of the site and construction of the project;
- use of tower cranes to reduce vehicle movements;
- construction plant will be located away from site boundaries which are close to sensitive receptors where reasonable and practicable;
- site access points will be designed to minimise queuing traffic adjacent to access points;
- the use of diesel or petrol powered generators will be reduced by using mains electricity or battery powered equipment where reasonably practicable;
- non-road mobile machinery will use ultra-low sulphur diesel, where reasonably practicable;
- cutting and grinding operations will be conducted using equipment and techniques which reduce emissions and incorporate appropriate dust suppression measures;
- damping down of dust generating equipment and vehicles within the site and the provision of dust suppression in all areas of the site that are likely to generate dust;
- measures to keep roads and accesses clean; and

- vehicle, plant and equipment maintenance records will be kept on site and reviewed regularly.

Transportation, storage and handling of materials

7.2.3 Dust and air quality management measures will be implemented to limit pollution arising from the transportation and storage of materials, including the following, as appropriate:

- covering materials, deliveries or loads entering and leaving the construction site for the purposes of preventing materials and dust spillage. This will apply to the transport of materials by road, rail or waterway;
- vehicles transporting materials within or outside the construction site will not be overloaded;
- stockpiles and mounds will be kept away from sensitive receptors (including natural and historic features), watercourses and surface drains where reasonably practicable and sited to take into account the predominant wind direction relative to sensitive receptors;
- stockpiles and mounds will be maintained to avoid material slippage;
- material stockpiles likely to generate dust will be enclosed or securely sheeted, kept watered or stabilised as appropriate;
- fine dry material will be stored inside buildings or enclosures with measures in place to ensure no escape of material and of overfilling during delivery;
- mixing of large quantities of concrete or bentonite slurries will be undertaken in enclosed or shielded areas;
- the number of handling operations for materials will be kept to the minimum reasonably practicable;
- materials handling areas will be maintained to constrain dust emissions through the use of measures such as watering facilities to reduce or prevent escape of dust from the site boundaries; and
- mixing of grout or cement-based materials will be undertaken using appropriate techniques/ mitigation suitable for the prevention of dust emissions.

Haul routes

7.2.4 Haul routes will be provided through the works for use by construction vehicles to access the works. The construction and maintenance of haul routes, will include the following measures, as appropriate:

- the surfacing and maintenance of haul routes to control dust emissions as far as reasonably practicable, taking into account the contractors intended level of traffic movements;
- inspection of haul routes regularly and their prompt repair if required;
- re-use of haul route surfacing materials where the locations of haul routes change during the course of construction;
- provision of areas of hard-standing at site access and egress points to be used by any waiting vehicles;
- methods to clean and suppress dust on haul routes (including watering) and in designated vehicle waiting areas. The frequency of cleaning will be suitable for the purposes of suppressing dust emissions from the site boundaries; and
- enforcement of speed limits on haul roads for safety reasons and for the purposes of suppressing dust emissions.

Demolition activities

7.2.5 Dust pollution from demolition activities will be limited through the use of the following measures, as appropriate:

- strip insides of buildings before demolition;
- blasting works will be kept to the minimum practicable in the context of the design and programme requirements of the project;
- buildings or structures to be demolished will be sprayed with water or screened as necessary, prior to and during demolition;
- rubble chutes will be shielded or enclosed or use water to suppress dust emissions from such equipment;
- skips covered and secured;
- burning of any material will not be permitted on site;
- avoidance of the prolonged storage of waste materials on site and compliance with this CoCP in respect to storage; and
- removal of waste from the site will comply with the requirements of this CoCP relating to the transportation of materials.

Excavations and earthworks activities

7.2.6 Dust pollution from excavations and earthworks activities will be limited through the use of the following measures, as appropriate:

- topsoil will be stripped as close as reasonably practicable to the period of excavation or other earthworks activities to avoid risks associated with run-off or dust generation;
- drop heights from excavators to vehicles involved in the transport of excavated material will be kept to the reasonably practicable minimum;
- materials will be compacted after deposition, with the exception of topsoil and subsoil on land to be restored for agriculture, forestry, landscaping and wildlife habitats; and
- soil spreading, seeding, planting or sealing of completed earthworks will be undertaken as soon as reasonably practicable following completion of the earthworks.

Grouting activities

7.2.7 Dust pollution associated with grouting activities will be limited through the use of the following measures, as appropriate:

- dust extractors, filters and collectors on silos for example; and
- the mixing of grout or cement based materials will be undertaken using a process suitable for the prevention, as far as reasonably practicable, of dust emissions.

Conveying, processing, crushing, cutting and grinding activities

7.2.8 Dust pollution associated with processing and crushing rock, for use as aggregate or other materials within the works, and for conveying material, processing, crushing, cutting and grinding and liming will be limited through the use of the following measures, as appropriate:

- drop heights from conveyors, excavators, and crushing plant to stockpiles will be kept to the minimum reasonably practicable;
- the enclosure of conveyer transfer points, and damping of conveyor loads;
- enclosed conveyers where crossing roads, other public areas and property not owned by the Nominated Undertaker;
- suitable temporary enclosures for cutting and grinding activities; and

- the application of water sprays to damp down in dry weather.

7.3 Monitoring

7.3.1 Inspection and monitoring procedures will be implemented to assess the effectiveness of measures to prevent dust and air pollutant emissions. Relevant local authorities will be consulted regarding the monitoring procedures to be implemented which will include the following measures, as appropriate:

- site inspections covering the establishment of operation of the construction site;
- inspection procedures for areas adjacent to the construction site to visually assess any dust and air pollution which may be generated;
- reference to inspection and maintenance schedules for construction vehicles, plant and machinery; and
- inspection procedures relating to the level of traffic movements, use and condition of haul routes.

8 Cultural heritage

8.1 Cultural heritage management – general provisions

8.1.1 The Nominated Undertaker and its principal contractors will manage the impact of construction works on cultural heritage assets, including:

- designated assets: scheduled monuments; listed buildings, registered parks and gardens; conservation areas and registered historic battlefields;
- undesignated assets: archaeological and palaeo-environmental remains including geological deposits that may contain evidence of the human past; historic landscapes and historic buildings and the built environment and locally designated assets; and
- green spaces or community spaces that have a cultural heritage value.

8.1.2 All works will be managed in accordance with accepted industry practice and guidance, taking account of the relevant sections of the National Planning Policy Framework (2012) and local development plans.

8.1.3 General cultural heritage management measures will include:

- provision to contractors of locations and descriptions of all known cultural heritage assets within and adjacent to construction works, including restrictions to construction methods to protect cultural heritage assets, where these have been identified in the ES;
- a programme detailing the implementation of cultural heritage survey works prior to and during construction, addressing the measures set out in the ES;
- the Nominated Undertaker will ensure that the cultural heritage mitigation works (as set out in the ES) are properly programmed by its principal contractor;
- the Nominated Undertaker will require its contractors to monitor compliance using appropriately qualified environmental management staff with specific responsibility for supervising works with the potential to affect cultural heritage interests;
- during all stages, the Nominated Undertaker will require its contractors to facilitate archaeological specialists undertaking the works as specified as an appropriate mitigation measure (including purposive investigation and / or watching brief works);
- all archaeological historic building and historic landscape intervention, recording, analysis, dissemination and archiving will be undertaken by a suitably qualified and demonstrably experienced organisation; and
- English Heritage and the local authority (and National Trust or Canal and River Trust as appropriate) will be consulted as appropriate through all stages of the implementation of the programme of cultural heritage works.

Heritage assets

8.1.4 Suitable measures and procedures, to be developed in consultation with English Heritage and the local authorities, will include the following, as appropriate:

- implementation of controls at each site to avoid damage by settlement where reasonably practicable (and to record effects should these occur), to structures of historic importance or interest and the movement of construction vehicles and machinery as they relate to areas of heritage interest that may comprise: below ground and standing archaeological remains, archaeological remains buried in situ, earthworks and historic buildings;
- the Nominated Undertaker will require the principal contractors to develop procedures for topsoil stripping and excavation, before commencement of such works and the interface with archaeological watching brief works; procedures adopted in the event of a potentially nationally significant unanticipated discovery or disturbance of significant archaeological remains (refer also to 8.2);

- procedures adopted to preserve archaeological remains in situ beneath earthworks; and
- procedures for the recording, dismantling and re-erection of any buildings of cultural heritage interest.

Metal detectors

8.1.5 During site preparation and construction the use of metal detectors will be prohibited within areas of identified/defined archaeological interest unless deployed by archaeological specialists or other appointed persons in the execution of their activities. Should, during the course of construction, artefacts of archaeological interest or expected interest be located, these will immediately be reported to the principal contractor's project manager (See 8.1.3 and 8.2.1).

Human remains

8.1.6 Should human remains be located during construction, either during archaeological works or as part of construction activity, the Nominated Undertaker and its contractors will comply with all relevant legislative and project specific requirements.

Treasure Act

8.1.7 Should, during the course of construction, artefacts be located that are deemed by their material content or context to be treasure, as defined by the Treasure Act 1996, then all necessary measures to comply with the requirements of the Act and any project-specific requirements will be implemented.

Written scheme of investigation

8.1.8 A project-wide generic written scheme of investigation (WSI) will be prepared in advance of site preparation and construction, in consultation with English Heritage and the local authority. This document will detail the generic principles, standards, methods and techniques to be employed on the project for cultural heritage works.

8.1.9 A Site Specific Written Scheme of Investigation will be developed for each area or site-specific cultural heritage works. These documents will be developed in consultation with English Heritage and the local authorities.

8.1.10 All cultural heritage works will be undertaken in accordance with the generic and site-specific WSIs.

Heritage agreements

8.1.11 The hybrid bill will seek to disapply the various legislative provisions for designated heritage assets (scheduled monuments, listed buildings and buildings in conservation areas) that will be affected by construction of the railway and associated works. For specified works, which will be set out in the schedules to the hybrid bill, the usual need for consents will be removed and a project specific regime put in place to implement the terms of the hybrid bill. The Nominated Undertaker will enter into agreements (known as Heritage Deeds) with Local Planning Authorities (LPAs), English Heritage and any other relevant party. Under each Heritage Agreement, a method statement will need to be submitted for specified works for approval to the LPAs for listed buildings, and English Heritage for scheduled monuments.

8.2 Measures in the event of unexpected discoveries of significance

8.2.1 Should cultural heritage assets of potential national significance be unexpectedly revealed during construction the procedure, as previously agreed with English Heritage and the local planning

authorities, will be implemented in the event of any such discoveries being made. Mitigation may include the following, as appropriate:

- investigation and assessment of discoveries to determine their significance if this cannot be determined from the asset as found;
- assessment of potential project impacts to inform design of appropriate mitigation measures;
- preparation of a written scheme of investigation for any stage of archaeological work required;
- excavation, recording and reporting on any discoveries; and
- recording and implementing measures to preserve any discoveries in situ, if required or if appropriate.

8.2.2 Appropriate fencing and hoarding will be provided as necessary to protect sites of archaeological or cultural heritage interest within or adjacent to the construction site, including unknown sites discovered during construction.

8.3 Monitoring

8.3.1 Risk assessments, appropriate structural or condition surveys and vibration monitoring will be undertaken at sites of archaeological or built heritage interest adjacent to the construction site prior to, during and following construction works. The risk assessments will include, but not be limited to, specific buildings identified in the ES.

Watching brief

8.3.2 Generic and site specific WSIs, appropriate watching briefs and archaeological monitoring will be implemented during construction works adjacent to sites of archaeological or cultural heritage interest and during topsoil stripping. Discoveries made during these activities will be dealt with in accordance with detailed procedures developed in relation to the implementation of watching brief works.

9 Ecology

9.1 Ecological management – general provisions

9.1.1 Appropriate measures will be adopted to protect the ecology of the area through which the route is constructed, with special attention to specified areas of ecological value, as identified within the ES.

9.1.2 The Nominated Undertaker will require its contractors to manage impacts from construction on ecological resources, including the following:

- designated sites including Sites of Special Scientific Interest (SSSIs), nature reserves and local wildlife sites (i.e. non-statutory sites designated for nature conservation);
- protected and notable species; and
- other habitats and features of ecological importance (including linear/ecological corridors).

9.1.3 Where reasonably practicable, environmental mitigation will be provided via the design and implemented by the contractors within the works. This may require preparatory work to be undertaken ahead of the start of construction to permit timely progress of the programme.

9.1.4 Ecological management measures will include the following, as appropriate:

- summary of features of interest for all known areas of nature conservation interest (as identified within the ES) which may be affected due to construction;
- plans showing the locations of all known areas of nature conservation interest that may be affected due to construction including access routes;
- provision of guidance on ecological best practice methods to be followed in order to mitigate potential ecological effects during construction;
- plans showing the location for all fences/ barriers to be erected for the purpose of controlling animal movements during and post construction, e.g. deer, badger and amphibian fencing;
- plans showing the location of any ecological features which are to be created / installed prior to construction (e.g. bat roosting features / boxes, otter holts)
- procedures to be adopted in the event of unanticipated discovery or disturbance of protected species or important habitats;
- reference to the relevant procedures, including any special measures, to be implemented in the event of a pollution incident, where this occurs on or adjacent to a designated nature conservation site or where protected and/or notable species are known to be present; and
- individual habitat or species management plans to include the information above (where appropriate) for:
    - terrestrial habitats;
    - wetland habitats;
    - European Protected Species (e.g. great crested newt, dormouse, otter, and bats); and
    - other protected and/or notable species as appropriate (e.g. badgers, breeding birds, freshwater fish - including migratory species and their migration patterns, water vole, white clawed crayfish, common reptiles, invertebrates, and Schedule 9 invasive species e.g. Japanese knotweed).

9.1.5 The contractors will, where it is reasonably practicable to do so, reduce any habitat loss within the land provided for the project by keeping the working area to the minimum required for construction of the project.

9.2 Measures to reduce potential impacts on ecological resources

Measures described in other sections

9.2.1 Management measures for potential ecological impacts are addressed in other sections of this document and are not repeated here. These include measures relating to:

- protection of retained habitat, including trees (see Section 12);
- control of dust (see Section 7);
- control of water quality (see Section 16);
- control of noise and vibration (see Section 13); and
- lighting (see Section5.4).

Statutory designated sites, non-statutory sites, protected habitats and species

9.2.2 The Nominated Undertaker will require its contractors to manage impacts upon all statutory designated sites of ecological interest (including SSSIs), non-statutory sites of ecological interest, and other areas of notable habitat.

9.2.3 The Nominated Undertaker will require its contractors to obtain and comply with the requirements of any wildlife licences, including all protected species licences necessary for construction of the project.

9.2.4 The programming of construction works will take cognisance of the requirements set out in the ES, other relevant project documents, and ecological best practice guidance. In particular, the timing of construction works will be undertaken with due regard to the following:

- site clearance works – to mitigate potential impacts on protected and/or notable species; and
- works within watercourses – to mitigate potential impacts on plants, migratory fish, mammals, birds, amphibians and invertebrates.

9.2.5 In addition to the measures described in other sections, management of construction activities to minimise ecological effects may include:

- provision of appropriate watching briefs to be implemented during construction works;
- relocation or translocation of species, soils and plant material, as described in the ES;
- reinstatement of any areas of temporary habitat loss and any arrangements necessary for displaced species to maintain long-term conservation status of the species concerned;
- restoration and replacement planting (e.g. trees, hedgerows, scrub, grassland etc) to reinstate any retained habitats adversely affected during construction; and
- use of by-products of construction to enhance mitigation provision (e.g. use of felled timber to provide dead wood habitat).

9.2.6 Prior to and during construction, there will be consultation with Natural England, the Environment Agency, local wildlife trusts, and local planning authorities as appropriate.

Control of invasive and non-native species

9.2.7 Appropriate measures for the treatment/control of invasive, non-native species (both plants and animals) and injurious weeds will be implemented.

9.2.8 Appropriate construction, handling, treatment and disposal procedures will be implemented in relation to these and any other species listed in Schedule 9, Part I or Part II of s.62 of the Wildlife and Countryside Act 1981, as amended, or the Weeds Act 1959 to prevent the spread of such

species. Advice in the Environment Agency publication: *Managing invasive non-native plants, April 2010*, will also be referenced in determining the strategy.

9.2.9 Route wide measures will be implemented to promote bio-security and minimise the risk that invasive non-native species and diseases are spread as a consequence of the project.

9.2.10 A programme of works will be implemented which will reflect the fact that it can take a number of years to eradicate invasive species such as Japanese knotweed.

9.2.11 Removal of invasive species will take account of ecological best practice guidance and appropriate measures will be taken to identify and protect other features of environmental importance (e.g. heritage assets).

9.3 Monitoring

9.3.1 The Nominated Undertaker will define a programme for undertaking ecological surveys prior to and during construction. The surveys will be used to verify the baseline ecological conditions described in the ES, to refine the mitigation and control measures required during construction as appropriate, and to provide appropriate monitoring during construction

9.3.2 The Nominated Undertaker will 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 which may affect protected or notable species, statutory designated or non-statutory sites of ecological interest.

10 Ground settlement

10.1 Ground settlement – general provisions

Techniques to control and limit settlement

10.1.1 Excavating the HS2 tunnels, shafts cross-passages, station boxes and other below-ground structures will potentially lead to small ground movements at the surface and below ground. The amount of ground movement will depend on a number of factors including depth and volume of works below ground, soil and groundwater conditions and the presence and nature of building foundations/third-party assets. In most cases this will have no visible impact on property/third-party assets. Very rarely these ground movements may affect properties/third-party assets. Techniques for controlling settlement of buildings and protecting buildings from irreparable damage are well developed, based on other tunnelling projects within London such as the Jubilee line extension, Channel Tunnel Rail Link and Crossrail. Appropriate techniques will be implemented in order to control and limit, as far as reasonably practicable, the effects of settlement.

10.2 Measures to reduce settlement

10.2.1 A settlement policy is being prepared, which will address measures to reduce settlement. Further details will be included when the policy is issued.

10.3 Survey

10.3.1 Subject to the powers being sought in the hybrid bill, an appropriate structural or condition survey will be undertaken a few months before the commencement of below-ground construction works, for any buildings / third-party assets predicted to be potentially subject to ground settlement / movements above threshold values which could possibly lead to damage.

10.4 Monitoring

10.4.1 Monitoring of ground settlement / movements will be carried out prior to the start of, during and after below-ground construction works, to check that the recorded ground settlement / movements are within designed limits.

10.4.2 Monitoring of buildings and third-party assets will be carried out on a case-by-case basis, depending upon the assessment of risk of damage. Monitoring will begin prior to commencement of below-ground construction work to enable base-line values to be determined accurately, and will continue until settlement due to the works, as shown by the monitoring, has effectively ceased for a period of three months.

10.4.3 Monitoring results will be made available for inspection by the relevant property owner and, in the case of scheduled or listed buildings, by English Heritage.

11 Land quality

11.1 Geology and land contamination – general provisions

11.1.1 Any site assessment and remediation works required will be undertaken in accordance with Defra/ EA's Model Procedures for the Management of Land Contamination (CLR11).

11.1.2 Existing land contamination and construction activities, which alter or create new pathways, could affect the quality of aquifers in the vicinity of the scheme. Provisions to minimise this risk are contained here. Wider issues of groundwater quality are dealt with in Section 16 of this CoCP.

11.2 Measures to reduce potential impacts on geology and soils

11.2.1 The ES will identify any SSSI with geological interest, or other geological resources that may be impacted by the scheme, and the anticipated impacts. Procedures will be agreed in consultation with stakeholders for any works which may affect geological SSSIs, local geological sites (previously regionally important geological sites (RIGS)) or other geological resources, including for example, inspections, the appropriate recording of geological information, and mapping of soil and rock exposures.

11.2.2 There is potential for construction works to be undertaken over or close to abandoned mine workings. Measures will be implemented, including consultation with the Coal Authority, EA and HSE as appropriate, in relation to undertaking such works. Where necessary, a ground investigation and detailed risk assessment will be undertaken of the potential impact of drilling and grouting to consolidate abandoned mine workings, on groundwater, ground gas migration and ground movements in order to identify appropriate measures required to mitigate potential environmental impacts and health and safety risks.

11.2.3 Measures to be implemented will include, as appropriate, undertaking ground investigation work, risk assessments, monitoring groundwater levels and undertaking structural or condition survey of buildings or structures adjacent to the works where there may be potential settlement risks or a risk of lateral ground movements which may damage structures (as set out in Section 10 of this CoCP).

11.2.4 An assessment of soils to be reused will be undertaken in order to identify potential risks posed to the water environment, human health and crops/livestock.

Construction on or adjacent to land affected by contamination

11.2.5 Where land affected by contamination is identified, the Nominated Undertaker will require its contractors to comply with relevant legislation. Any remediation plan will comply with HS2 Ltd's sustainability policy. This may include considering the relative benefits of removal of contamination to enable re-use of the land for agriculture, ecological or amenity enhancements. Alternatively material could be treated and retained for re-use as noise and visual mitigation bunds.

11.2.6 For land affected by contamination, control measures will be implemented for construction activities on or adjacent to the land. This will include the following, as appropriate:

- appropriate site investigations to determine the extent and type of contaminants present;
- identification of potential sources of contamination, pathways connecting contamination sources and receptors capable of being harmed, and assessment of the risk of harm to receptors;
- appropriate remedial treatments to contaminated soils and controlled waters;

- procedures including watching briefs, to identify areas within the Project where land contamination may be unexpectedly encountered;
- sealing of existing pathways through services/service trenches (e.g. land drains) affected during construction;
- lining of drainage trenches to prevent the ingress of contaminated groundwater or lateral migration through granular backfill;
- consultation with the relevant local authorities and EA regarding control or protection measures to be implemented to deal with identified risks, including appropriate techniques for excavating contaminated material and the control of contaminants and discharges in their in situ or mobilised form, for solids, liquids, gas and leachate;
- monitoring of groundwater prior to, during and post construction;
- validation testing of remediated ground and/or groundwater; and
- post remediation permit to work system to protect remediated areas.

11.2.7 Any remedial action undertaken in relation to land affected by contamination will be carried out under the appropriate remediation permitting system.

11.2.8 Where piling works are undertaken in areas of land affected by contamination, appropriate guidance will be adhered to including the *Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution Prevention, National Groundwater and Contaminated Land Centre Report NC/99/73 (2001).*

11.2.9 *The measures will apply equally to land used for the construction and land used temporarily, for example for site offices and works compounds.*

Site investigation

11.2.10 For the purpose of the development, detailed site investigation work will be undertaken, if necessary and this will include the following, as appropriate:

- historical and current land uses;
- historical and current activities, processes and waste products;
- geological and hydrogeological setting;
- soils, gas, surface water and groundwater sampling; and
- appropriate risk assessments.

11.2.11 Site investigations and risk assessments will be undertaken in accordance with the following, as appropriate:

- the requirements of the National Planning Policy Framework;
- BS 10175: Investigation of potentially contaminated sites. Code of practice;
- BS 5930: + A2: Code of practice for site investigations;
- the Site Investigation Steering Group publication, Guidelines for the safe investigation by drilling of landfills and contaminated land (1993).
- relevant EA and Defra guidance; and
- relevant new guidance or legislation published prior to construction.

11.2.12 Relevant local authorities and the EA will be consulted regarding site investigations for areas of land affected by contamination and, where appropriate, the risk to ground and surface water resources, processes and abstractions will be assessed.

11.3 Monitoring

11.3.1 A gas monitoring procedure will be implemented as appropriate due to the presence of areas of landfill, made ground, industry sites, quarries and naturally occurring gassing strata.

11.3.2 Groundwater and surface water monitoring plans will be prepared, as appropriate, by the principal contractors as part of their EMS, in the vicinity of contamination remedial works, or where piling may affect below ground contamination.

11.3.3 Monitoring of any works which will impact geological or geomorphological resources will be carried out in accordance with any agreed procedures outlined in Section 11.2 above.

11.3.4 Appropriate health, safety and environmental monitoring will be set out to support adherence to the procedures relating to working on or adjacent to land affected by contamination.

11.4 Interface between adjacent construction areas

11.4.1 Details regarding the management of remedial actions undertaken or planned to be undertaken on adjacent construction zones will include, but will not be limited to:

- ensuring that remediation actions are compatible between zones;
- allowing the 'chasing out' of contamination to an extent agreed by the Nominated Undertaker, which may be, for example, either present in old pipe runs, or that which may extend outside the boundary of the works and will need to be fully removed to prevent the site being affected again in the future;
- additional supplementary site investigation, if cross boundary migration is envisaged;
- installation of additional monitoring wells; and
- provision of clear reference data.

12 Landscape and visual

12.1 Landscape management – general provisions

12.1.1 Appropriate controls will be put in place to protect the visual amenity in rural and urban areas from construction activities including designated landscape areas, parks and open spaces and smaller green spaces in urban areas. Controls will include, as appropriate:

- the sustainable management of landscape issues;
- a plan showing areas of existing trees and vegetation within the construction site to be retained (and protected), and those to be removed;
- the involvement of an ecological specialist as required, in relation to vegetation clearance, tree works and the creation of new wildlife habitats;
- provision of appropriate protective fencing to reduce the risks associated with vehicles trafficking over root systems or beneath tree canopies;
- a schedule of plant species and planting mixes to be used and provision of sufficient stock of specified species and provenance that typify the local area, including details of plant suppliers to be used;
- a programme for undertaking planting works;
- protection of existing and new areas of planting;
- inspection, maintenance and management of existing and new planting;
- prevention of damage to the landscape and landscape features adjacent to the construction site by movement of construction vehicles and machinery;
- removal, handling, storage and transplanting of any vegetation which is to be reused, relocated or transplanted;
- adoption of other procedures set out in this CoCP so far as they are relevant for the protection of the landscape;
- provision of suitable specialist landscape management staff with specific responsibility for monitoring and supervising the landscape works, i.e. works in relation to the clearance of vegetation, topsoil and subsoil stripping, handling, storage and replacement, works to trees, grass seeding, protective fencing, the planting of trees and shrubs and the creation of new wildlife habitats;
- use of appropriate lighting; and
- use of well maintained hoardings or fencing, as described in Section 5.

12.2 Protection of trees

12.2.1 The Nominated Undertaker will require its contractors to employ an arboricultural consultant to oversee works relating to the protection of trees.

12.2.2 Retained trees will be protected in line with the recommendations in *BS 5837: Trees in relation to design, demolition and construction.*

12.2.3 The following measures will be implemented, as appropriate:

- provision of appropriate protective fencing to reduce the risks associated with vehicles trafficking over root systems or beneath canopies;
- measures to prevent compaction of soils;
- maintenance of vegetation buffer strips, where reasonably practicable;
- selective removal of lower branches to reduce the risk of damage by construction plant and vehicles;

- standard guidance for working within root protection zones (RPZs) including procedures to follow in the event that significant roots are uncovered during work;
- provision of contractor guidance for working in close proximity to retained aged and veteran trees and areas of retained ancient woodland, and watching briefs as appropriate; and
- maintenance of trees on highways which are temporarily stopped as a result of the HS2 works prior to re-opening (e.g. selective branch removal) following consultation and agreement with relevant local authority.

12.2.4 Any tree surgery and felling operations will comply with the recommendations in BS 3998: *Tree work. Recommendations,* as appropriate.

12.2.5 Where individual stands of trees require felling and the requirement for felling was not identified with the ES, the Nominated Undertaker's contractor will undertake an arboricultural assessment by appropriately qualified specialists and where necessary, appropriate mitigation shall be employed.

Tree planting and replacement

12.2.6 Trees intended to be retained which may be accidentally felled or die as a consequence of construction works will be replaced. Where reasonably practicable, the size and species of replacement trees will be selected to achieve a close resemblance of the original trees most effectively using locally occurring native species of local provenance and taking cognisance of any management plans for immediately adjacent areas of woodland.

12.2.7 The supply, storage, handling, planting and maintenance of new planting will be undertaken in accordance with appropriate British Standards, including *BS 5837 Trees in relation to design, demolition and construction; BS 3998 Tree Work. Recommendations and BS 4428 Code of practice for general landscape operations (excluding hard surfaces) and other appropriate guidance including the UK Forestry Standard and the UK Woodland Assurance Standard.*

12.3 Measures to reduce potential impacts on landscape and visual features

12.3.1 Planting and other landscape measures will be implemented as early as is reasonably practicable where there is no conflict with construction activities or other requirements of the project. The Nominated Undertaker will require its contractors to consider where measures can be implemented early and programme the landscape works accordingly. Locations for landscape measures will relate to the findings of the ES, and will be aimed at the protection and mitigation of adverse effects on sensitive and valued landscape features and characteristics.

12.3.2 A record of how the implementation of the works meets control measures, relevant to protection of the landscape and key landscape features, will be maintained and regularly reviewed.

12.3.3 Relevant local authorities, Natural England, English Heritage, National Trust and other bodies (where they have an interest) and adjacent landowners will be consulted, as appropriate, regarding the landscape and planting proposals.

12.3.4 Access to the construction site will be controlled in accordance with the requirements of Section 14 of this CoCP. Potential impacts on trees or other mature vegetation will be considered, seeking to avoid unnecessary impact, when positioning site access and egress points.

12.3.5 Reusable excavated material will be handled in an appropriate manner to ensure it is of sufficient quality to be used for either structural embankments, environmental mitigation earthworks or agreed third party use. Appropriate construction good practice in handling all material re-use will be followed, and controls set out in Sections 7.2 and 9 of the CoCP will apply.

12.3.6 The procedures set out in Section 6 of this CoCP relating to the handling of agricultural soils will be applied equally in relation to soils used in areas to be seeded or planted. The sourcing, testing, stripping, handling, storage and spreading of site-won and imported topsoil will comply with *BS 6031: Code of practice for earthworks. Imported topsoil will comply with the BS 3882: Specification for topsoil and requirements for use.*

12.3.7 The following measures will be implemented:

- compliance with the requirements of Section 9 of this CoCP in relation to preventing the spread of invasive and non-native species;
- avoidance of unnecessary tree and vegetation removal and protection of existing trees in accordance with BS 5837: Trees in relation to design, demolition and construction;
- protection of habitat areas and ecological features;
- procurement, movement, handling, storage, planting and maintenance of plant material in accordance with BS 3936-1: Nursery stock specification for trees and shrubs; and
- maximising use of plant material salvaged during enabling works, and of plant material propagated from flora on the site prior to commencement of the works.

12.3.8 Planting, seeding, wildflower seeding and other landscape works will consider the recommendations of the latest version of the following standards. Alternatively, where a British Standard does not exist, works will follow industry best practice and agreement will be sought from the local authority:

- BS 3936-1: Nursery stock. Specification for trees and shrubs, British Standards Institution;
- BS 3936-4: Nursery stock. Specification for forest trees, poplars and willows, British Standards Institution;
- BS 3882: Specification for topsoil and requirements for use, British Standards Institution;
- BS 3998: Tree Work. Recommendations, British Standards Institution;
- BS 5837: Trees in relation to design, demolition and construction, British Standards Institution;
- BS 6031: Code of practice for earthworks, British Standards Institution; and
- CAP772: Bird Strike Risk Management for Aerodromes, Civil Aviation Authority.

12.3.9 The protection of habitats and ecological features will be integrated with the landscape works and will follow appropriate British Standards and agreement will be sought from the local authority. Reference should be made to Section 9 of this CoCP.

12.4 Monitoring

12.4.1 Appropriate inspection, monitoring and maintenance of landscaping and planting and seeding works provided as part of the Project, will be undertaken by the contractor(s) throughout the construction period.

12.4.2 The Nominated Undertaker will supply its contractors with information prior to construction to verify the landscape planting and seeding design and arboricultural requirements as set out in the ES, on drawings and in the specification. This will allow the contractor(s) to fully understand the required mitigation measures.

12.4.3 The Nominated Undertaker will require its contractors to undertake appropriate maintenance of planting and seeding works and implementation of management measures, through the construction period as landscape works are completed. The contractor will monitor the progress of new landscape works through the construction period. Any failures of landscape planting and seeding will be managed via the specification and works requirements. This will ensure annual replanting and reseeding works are undertaken (as required) to achieve successful establishment of the landscape mitigation proposals at completion of the construction works.

13 Noise and vibration

13.1 Noise and vibration management

13.1.1 Best Practicable Means (BPM) will be applied during construction works to minimise noise (including vibration) at neighbouring residential properties and other sensitive receptors (including local businesses and quiet areas[2] designated by the local authority) arising from construction activities.

13.2 Measures to reduce potential noise and vibration impacts

Best Practicable Means

13.2.1 BPM are defined in Section 72 of the Control of Pollution Act 1974 and Section 79 of the Environmental Protection Act 1990 as those measures which are 'reasonably practicable having regard among other things to local conditions and circumstances, to the current state of technical knowledge and to financial implications'.

13.2.2 The Nominated Undertaker will require its contractors to consider mitigation in the following order:

- BPM, including:
  a. Noise and vibration control at source: for example the selection of quiet and low vibration equipment, review of construction methodology to consider quieter methods, location of equipment on site, control of working hours, the provision of acoustic enclosures and the use of less intrusive alarms, such as broadband vehicle reversing warnings;
  b. Screening: for example local screening of equipment or perimeter hoarding;
- then, where despite the implementation of BPM the noise exposure exceeds the criteria defined in this CoCP, the contractors may offer:
  c. Noise insulation; or ultimately
  d. Temporary re-housing.

13.2.3 The recommendations of *BS 5228:Code of practice for noise and vibration control on construction and open sites parts 1 and 2, will be implemented, together with the specific requirements of this CoCP.*

Noise and vibration management

13.2.4 The effects of noise and vibration from construction sites will be controlled by introducing management and monitoring processes to ensure that BPM are planned and employed to minimise noise and vibration during construction. As part of the principal contractor's EMS, a noise and vibration management plan will be prepared and will set out these processes. The plan will include management and monitoring processes to ensure as a minimum;

- integration of noise control into the preparation of method statements;
- ensuring proactive links between noise management activities and community relations activities (see section 5);
- preparing details of site hoardings, screens or bunds which will be put in place to provide acoustic screening during construction, together with an inspection and maintenance schedule for such features;
- developing procedures for the installation of noise insulation or provision of temporary re-housing and to ensure such measures are, where required, in place as early as reasonably

[2] As defined under the Environmental Noise Regulations (England) 2006.

practicable;

- preparing risk assessments to inform structural surveys of buildings and structures which may be affected by vibration from construction;
- developing a noise and vibration monitoring protocol including a schedule of noise and vibration monitoring locations and stages during construction of the Project when monitoring will be undertaken;
- preparing and submitting Section 61 consent applications (see Section 13.2.5 below);
- undertaking and publishing all monitoring required to ensure compliance with all acoustic commitments and consents; and
- implementing management processes to ensure ongoing compliance, improvement and rapid corrective actions to avoid any potential non compliance.

Section 61 consents

13.2.5 The Nominated Undertaker's contractors will seek to obtain consents from the relevant local authority under Section 61 (s.61) of the Control of Pollution Act 1974 (CoPA) for the proposed construction works, excluding non-intrusive surveys. Applications will normally be made to the relevant local authority for a s.61 consent at least 28 days before the relevant work is due to start.

13.2.6 Details of construction activities, prediction methods, location of sensitive receivers and noise and vibration levels will be discussed with the relevant local authority, or authorities, both prior to construction work and throughout the construction period. Since final detailed construction programmes are only likely to be available a short time in advance of work starting on site, prediction, evaluation and assessment of noise and vibration as well as discussion between the Nominated Undertaker and its contractors and the relevant local authority will, by necessity, continue throughout the construction period.

13.2.7 Annex 1 BS5228 provides a flow diagram demonstrating the process of a s.61 application. The Nominated Undertaker will seek to agree with local authorities a common format and model consent conditions for s.61 applications or any dispensations and variations to an existing consent.

13.2.8 The application for a s.61 consent will require noise assessments to be undertaken and BPM measures set out to minimise noise associated with construction of the Project. The Nominated Undertaker's contractors will submit the assessment initially to the Nominated Undertaker for approval, prior to submission to the relevant local authority (refer to section 13.2.5).

13.2.9 The Nominated Undertaker's contractors will carry out noise (and vibration where appropriate) predictions for s.61 applications. An assessment of the predicted levels will be carried out with reference to the EMRs (refer to Section 3.2).

Noise insulation and temporary re-housing policy

13.2.10 The Nominated Undertaker will implement a noise insulation and temporary re-housing policy. The policy is intended to provide additional protection to residents in the event that it is not practicable to mitigate airborne noise, or reduce its exposure, to levels that are tolerable during certain intensive construction phases. The Nominated Undertaker's contractors will submit a noise insulation/temporary re-housing appraisal at least six[3] months prior to starting that phase of work on site or such time appropriate to the scale and nature of the works. It is essential that the assessment is carried out early enough so that noise insulation can be installed before the start of the works predicted to exceed noise insulation and temporary re-housing criteria.

[3] Where noise insulation is potentially required at listed building the appraisal shall be submitted at least 9 months prior to starting of the phase of work on site.

13.2.11 The contractors will use BPM to minimise the extent to which noise insulation work or temporary re-housing of occupiers of dwellings adjacent to the works needs to be considered.

13.2.12 Notwithstanding the measures set out in this CoCP and any s.61 consents, noise insulation or temporary re-housing will be offered to qualifying parties when:

- noise levels are predicted or measured by the contractors to exceed the relevant trigger level defined in Table 13.1 at that property for at least ten days out of any period of 15 consecutive days or alternatively 40 days in any six-month period;
- the property complies with all other requirements of the Noise Insulation (Railways and other Guided Systems) Regulations 1996;
- the property should be lawfully occupied as a permanent dwelling; and
- in respect of insulation, noise insulation does not already exist that is of an equivalent standard to that which would be allowed for under the Noise Insulation (Railways and other Guided Systems) Regulations 1996.

13.2.13 The relevant trigger levels are shown in Table 13.1.

Table 13.1 Noise Thresholds for Noise Insulation / Temporary Re-housing

Day	Time (hours)	Averaging Period T	Noise Insulation Trigger Level $L_{Aeq,T}$ (dB) */**	Temporary Re-Housing Trigger Level $L_{Aeq,T}$ (dB) */**
Mondays to Fridays	07:00 - 08:00 08:00 - 18:00 18:00 - 19:00 19:00 - 22:00	1 hour 10 hours 1 hour 1 hour	70 75 70 65	80 85 80 75
Saturdays	07:00 - 08:00 08:00 - 13:00 13:00 - 14:00 14:00 - 22:00	1 hour 5 hours 1 hour 1 hour	70 75 70 65	80 85 80 75
Sundays & Public Holidays	07:00 - 22:00	1 hour	65	75
Any day	22:00 - 07:00	1 hour	55	65

*HS2 construction sound only. Trigger levels are defined as 1m in front of the closest facade of a habitable room.

** Where the current ambient noise level is greater than the noise insulation trigger level:
a. the ambient noise level shall be used as the noise insulation trigger level, and
b. the ambient noise level +10dB shall be used as the temporary rehousing trigger level.

13.2.14 The Nominated Undertaker will develop and seek to agree with local authorities a noise insulation and temporary re-housing policy that will set out all roles, responsibilities and actions required in respect of these measures.

13.2.15 The Nominated Undertaker will consider at its discretion applications supported by evidence for noise insulation or temporary rehousing from occupiers who may have special circumstances, such as night workers, those working in home occupations or local businesses requiring a particularly quiet environment and those with a medical condition which will be seriously aggravated by construction noise, and provide noise insulation or temporary housing where it is demonstrated that this is necessary.

Vibration thresholds and actions

13.2.16 Criteria and/or procedures for vibration control are specified for three purposes and assessed using three different sets of parameters:

- to protect the occupants and users of buildings from disturbance, for which vibration dose values are assessed (VDVs are defined and their application to occupants of buildings is discussed in *BS 6472- 1 Guide to evaluation of human exposure to vibration in buildings – Vibration sources other than blasting, 2008);*
- to protect buildings from risk of physical damage, for which peak component particle velocities are assessed in accordance with *BS 7385 - 2 Evaluation and measurement for vibration in buildings. Guide to damage levels from ground-borne vibration, 1993;* and
- to protect particularly vibration-sensitive equipment and processes from damage or disruption, for which peak component acceleration, velocity or displacement are assessed as appropriate to each process or item of equipment.

13.2.17 In some buildings, two or three of the above parameters may apply, and in those cases the Nominated Undertaker will require its contractors to evaluate the criteria separately. In establishing criteria, controls and working methods, the contractors will take account of guidance in *BS6472-1:, BS 5228:, ISO 4866: Mechanical vibration and shock, vibration of fixed structures. Guidelines for the measurement of vibrations and evaluation of their effects on structures and BS 7385-2.*

13.2.18 In the following sections vibration thresholds are set out. The thresholds are trigger levels at which a set of actions will be carried out by the Nominated Undertaker's contractors. Except where stated otherwise, they are not designed to be maximum permitted levels.

Protection of building occupants from disturbance

13.2.19 To protect the occupants and users of buildings from disturbance, BPM will be used to control vibration levels so that the vibration dose values in Table 13.2, as measured in accordance with BS6472-1 are not routinely exceeded as a result of the works:

Table 13.2 Vibration trigger levels for protection of occupants of buildings from disturbance

Building Type	**Period**	**VDV ($ms^{-1.75}$)**
Eligible dwellings[1]	07:00 to 23:00	0.4
	23:00 to 07:00	0.2
Education buildings, offices and similar [2]	Over normal period of use (day-time)	0.8
Commercial[3]	Over normal period of use (day-time)	1.6

Notes:
[1] Measured on a normally-loaded floor of any bedroom or living room. For this purpose, eligible dwellings include dwelling houses, residential institutions, hotels, and residential hostels.
[2] Measured on a normally-loaded floor of areas where people normally work. This category of receiver will include all areas where clerical work, meetings and consultations are regularly carried out e.g. Doctors' surgeries, day-care centres but not shop floors of industrial premises.
[3] Measured on a normally-loaded floor of areas where people normally work. Commercial premises include retail and wholesale shops.

13.2.20 The vibration thresholds in Table 13.2 will be weighted in accordance with BS6472-1.

13.2.21 For application of threshold levels, it will be assumed that people are standing or sitting during daytime, and lying down during night-time hours as defined in the table. The orientation of the person is important as it determines the vibration weighting factor to be applied.

Protection of buildings from damage

13.2.22 To protect buildings from damage, the Nominated Undertaker will require its contractors to use BPM to control vibration levels so that the peak particle velocity in Table 13.3, as measured in accordance with BS6472-1, are not exceeded as a result of the works at the building foundation unless agreement is sought under Section 13.2.26:

Table 13.3 Vibration trigger levels for building damage

Category of building	**Impact criteria: (Peak Particle Velocity - PPV - at building foundation)**	
	Transient vibration	**Continuous vibration**
Structurally sound buildings	≥12 mm/s	≥6 mm/s
Potentially vulnerable buildings[4]	≥6 mm/s	≥3 mm/s

13.2.23 To determine whether a detailed assessment needs to be undertaken to determine whether the levels in Table 13.3 are likely to be exceeded, or that there is a potential for building damage, the Nominated Undertaker's contractors will carry out a scoping vibration assessment.

13.2.24 If predicted vibration levels exceed 1mm/s component particle velocity (PPV) at occupied residential buildings or 3mm/s PPV at occupied commercial buildings more detailed assessment should be carried out in accordance with BS7385-2. If this identifies that people occupying buildings may experience levels in excess of the threshold values in Table 13.3 those potentially affected will be notified as soon as practicably possible in advance of the works. The notification will describe the nature and duration of the works and any associated proposals for vibration monitoring.

13.2.25 The Nominated Undertaker will require its contractors to be cognisant of the advice given in BS ISO 4866 and BS 7385-2.

13.2.26 The Nominated Undertaker will require its contractors to notify and consult it and the relevant local authority regarding any works predicted to generate a PPV above 10 mm/s. Where it is agreed that there is no reasonable or practicable means to reduce predicted or measured vibration then the contractors will:

- agree with the Nominated Undertaker and seek to agree with the local authority under the relevant s.61 consent[5], monitoring for vibration and strain induced in the building during the works;
- seek to agree with occupiers of properties:
    - the surveys to be carried out and any consequent actions;
    - any additional reasonable and practicable mitigation to be provided for occupants;
- carry out a condition survey before and after the relevant works; and
- advise the local authority through the relevant s.61 consent application.

[4] BS7385 highlights that the criteria for aged buildings may need to be lower if the buildings are structurally unsound. The standard also notes that criteria should not be set lower simply because a building is important or historic (e.g. listed). Where information about these structures is not currently known, the more onerous criteria on this row of the table shall be adopted on a precautionary basis until condition surveys have been undertaken.

[5] Also under the Party Wall Act as necessary.

13.2.27 In addition, any old buildings, or buildings that maybe unusually vulnerable to vibration, that are located within 50 m of any activities that may give rise to significant vibration shall be identified.

13.2.28 Where the predicted vibration at the foundations of such buildings exceeds 5 mm/s PPV then the Nominated Undertaker will require its contractors to undertake an initial structural survey of the building. Based on the survey, the level of vibration above which condition surveys and continuous vibration monitoring are required will be confirmed and agreed with the building owner. The local authority will be notified through the relevant s.61 consent application.

13.2.29 Where the condition and vibration monitoring surveys demonstrate that vibration from the HS2 works has given rise to building damage then the Nominated Undertaker will require its contractors to make good that damage.

Protection of particularly vibration-sensitive equipment/processes

13.2.30 The Nominated Undertaker will endeavour to avoid any impact on sensitive equipment. Any actions to control or mitigate impacts will be agreed between its contractors and the operator of the equipment. The local authority will be notified through the relevant s.61 consent application.

13.3 Monitoring

13.3.1 The Nominated Undertaker will require its contractors to undertake and report such monitoring, including real time noise and vibration monitoring, as is necessary to ensure and demonstrate compliance with all noise and vibration commitments and the requirements of this CoCP.

13.3.2 The monitoring and compliance assurance process will be set out in each of the principal contractors' noise and vibration management plans.

13.3.3 Proposals for monitoring locations will be set out in each LEMP.

13.3.4 The s.61 applications will include a detailed description of the monitoring and monitoring locations proposed for the particular works covered by the consent application.

13.3.5 Monitoring data will be provided regularly to and reviewed by the Nominated Undertaker and will be made available to the local authorities.

14 Traffic and transport

14.1 Traffic management – general provisions

14.1.1 The Nominated Undertaker will require during its construction works that the impacts on the local community from construction traffic are minimised by its contractors and that public access is maintained where reasonably practicable. The impact of road based construction traffic will be reduced by identifying clear controls on vehicle types, hours of site operation, and routes for large goods vehicles. Highway works required to accommodate construction traffic will be identified. Where reasonably practicable, the number of private car trips to and from the site (both workforce and visitors) will be reduced by encouraging alternative modes of transport or vehicle sharing. A framework construction workers travel plan will be produced by each principal contractor which will aim to encourage the use of sustainable modes of transport and reduce the impact of workforce traffic on the highway network.

14.2 Measures to reduce potential transport impacts during construction

14.2.1 In order to achieve the above, generic and site specific traffic management measures will be implemented during the construction of the project on or adjacent to public roads, bridleways, footpaths and other public rights of way affected by the proposed scheme as necessary.

Traffic management- generic measures

14.2.2 Generic measures will be discussed with the appropriate authorities and may include:

- measures to ensure the maintenance and condition of public roads, cycleways and public rights of way do not deteriorate due to the construction traffic, including monitoring arrangements with local highway authorities;
- measures to provide for road safety for the public and construction staff during traffic management works and temporary traffic control measures;
- procedures for driver training (e.g. to protect pedestrians and non-motorised traffic) and appropriate use of technology to remove blind spots;
- procedures to be followed for the temporary or permanent closure or diversion of roads, public rights of way or accesses;
- procedures to be followed to obtain consent to work on or over railways and canals;
- measures to be implemented to reduce construction traffic impacts or impacts associated with parking on residential streets;
- permitted access routes and accesses for construction traffic;
- procedures to address any highway incidents or vehicle breakdowns relating to construction traffic, especially at peak times;
- monitoring requirements; and
- requirements relating to the movement of farm animals where farm accesses are affected.

14.2.3 Routes of construction traffic will be subject to approval of the relevant planning authority.

14.2.4 Prior to the commencement of the works, Traffic Management Plans (TMPs) will be produced in consultation with the highway and traffic authorities and the emergency services. The TMP(s) will include, as appropriate:

- site boundaries and the main access / egress points for worksites;
- temporary and permanent closures and diversions of highways and other public rights of way;

and

- the proposed traffic management strategy.

Traffic management – site specific measures

14.2.5 Site specific traffic management measures will include the following, as appropriate:

- phasing of works;
- road traffic management layouts and signage;
- timing of operations;
- the arrangements for liaison with the relevant highway authorities and emergency services;
- a list of roads which may be used by construction traffic in the vicinity of the site including any restrictions to construction traffic on these routes;
- a register of applications for consents associated with temporary traffic management measures;
- emergency access protocols;
- proposals for transport of construction workforce;
- parking controls;
- use of internal haul routes for construction vehicles to minimise the need to use public roads;
- dealing with large goods vehicles and abnormal loads;
- controls on reversing alarms;
- measures to ensure that construction vehicles do not cause damage to grass verges to roads;
- measures to ensure that any damage to grass verges is repaired and reinstated;
- lorry holding areas;
- clear identification for construction heavy goods vehicles under the principal contractors' control;
- weighbridge(s) at a suitable location(s) on site to monitor compliance with vehicle weight restrictions;
- monitoring and penalties for deviation from authorised routes;
- requirements relating to the movement of traffic from business and commercial operators of road vehicles, including goods vehicles;
- measures for highway reinstatement;
- introduction of a GPS vehicle location and tracking system for tipper lorries within the principal contractors' control to be used for the movement of materials and waste in bulk;
- on-site speed limits and controls; and
- co-ordination with utility companies and service diversions.

Road cleanliness

14.2.6 All reasonably practicable measures will be put in place to avoid/limit and mitigate the deposition of mud and other debris on the highway. These measures will have regard to the nature and use of the site(s) in question, and will include:

- hardstanding at the access and egress points will be cleaned at appropriate intervals;
- vehicle wash down points to clean vehicle wheels at each exit point onto the highway;
- the correct loading of vehicles and sheeting of loads where necessary to avoid spillage during their journeys;
- appropriate wheel cleaning measures will be employed to prevent the transfer and accumulation of mud and other granular deposits on the public highway;

- the use of mechanical road sweepers combined with water sprays for the suppression of dust to clean hardstandings, roads and footpaths in the vicinity of the site; and
- the flushing of gullies in the vicinity of the site.

After completion of any works affecting a highway, all surplus materials arising from the works will be cleared from the highway, leaving it in a clean and tidy condition in accordance with the reasonable requirements of the highway authority.

14.3 Monitoring

14.3.1 The Nominated Undertaker will require its contractors to undertake such monitoring as is necessary to ensure compliance with the requirements of this CoCP, and this will include the maintenance of records of traffic management measures. The monitoring programme, the approach to consultation with local authorities and the control processes will be set out in the contractors' EMS.

15 Waste and materials

15.1 Waste management – general provisions

15.1.1 The principle objectives of sustainable resource and waste management are to use material resources more efficiently, reduce waste at source and reduce the quantity of waste that requires final disposal to landfill in accordance with the waste hierarchy. These are translated to the Project as: the application of designing-out waste principles to minimise construction waste; working towards a cut and fill balance in relation to excavation and tunnelling arisings; and the segregation of construction and demolition materials on-site, or through the use of a suitable waste contractor, to maximise diversion from landfill via re-use, recycling and recovery.

15.2 Measures to reduce potential impacts from waste

Minimisation of waste generation

15.2.1 The Nominated Undertaker will require that its contractors will act to minimise the waste generated from their construction activities where reasonably practicable. This will include measures such as 'just-in-time' deliveries, careful storage of materials on-site, minimisation of packaging and use of re-usable packaging etc.

Management of excavated materials and waste

15.2.2 All waste will be managed in accordance with the waste hierarchy (i.e. prevention, preparing for re-use, recycling, other recovery and disposal as set out in the Waste (England and Wales) Regulations 2011) and in such a way as to prevent harm to human health, amenity and the environment. Waste management measures will be prepared that facilitate the re-use and recovery of excavated material and diversion of waste from landfill in line with the waste hierarchy.

15.2.3 The Nominated Undertaker will require its contractors to maintain responsibility for the management of waste generated during the construction. The contractors' staff will be suitably trained to undertake these duties, which will include, but will not be limited to waste management handling, inspection and reporting.

15.2.4 Excavated material that is either uncontaminated or which can be remediated to a suitable standard and can be used for site engineering and restoration purposes will be managed in accordance with the controls specified by the CL:AIRE Definition of Waste: Development Industry Code of Practice[6] and/or in accordance with an appropriate environmental permit or exemption from permitting. Materials management plans (MMPs) will be developed describing the methods for reusing soils at specific sites, or cluster of sites. The movement and placement of materials will be as described in the MMP tracking system and recorded in a verification report for each sites or cluster of sites. This will help to maximise opportunities for re-use of excavated material and comply with the measures set out under CL:AIRE code of practice.

15.2.5 Suitable projects or other opportunities for reuse of excavated material may be identified as the detailed construction planning of the Project progresses.

15.2.6 In addition to excavated materials, construction, demolition and excavation waste (CDEW) will be generated by the construction works. This will include:

- site preparation and demolition works;
- excavation and earthworks (where the material is classified as waste and subject to waste management regulatory controls);

[6] *Contaminated Land: Applications in Real Environments* (2011) *The Definition of Waste: Development Industry Code of Practice* (Version 2, March 2011).

- construction and fit-out of above-ground structures, such as new and redeveloped stations, staff depots and rail maintenance facilities; and
- construction and installation of rail infrastructure components, including tunnelling sections and laying of new tracks.

15.2.7 The management of foul water and surface water, and minimising their impacts, are specified in Section 16 of the CoCP.

Identification and classification of waste

15.2.8 In line with current statutory requirements, a site waste management plan (SWMP) will be prepared and maintained by the Nominated Undertaker's principal contractors. This will be used to identify the specific types and quantities of waste likely to arise during the construction process. Where generated, waste will be classified in accordance with the statutory controls governing the management of inert, non-hazardous and hazardous wastes.

15.2.9 A pre-demolition asbestos survey will be undertaken on all buildings to be demolished or refurbished to identify the presence of any asbestos-containing materials (ACM) that may be present. Where identified, ACM will be removed by a suitability licensed asbestos removal contractor and managed in accordance with the relevant statutory controls governing its disposal.

Segregation and storage of waste

15.2.10 Skips and other storage receptacles used for the containment of CDEW will be colour-coded in line with the generic colour-coding scheme developed by the Institution of Civil Engineers (ICE). They will also have appropriate signage to facilitate separation of waste for re-use, recycling or disposal and the separation of inert, hazardous and non-hazardous wastes. Plastic sheeting will be used to prevent leaching from waste soils and aggregates where these are not contained within skips or other storage receptacles.

15.2.11 Skips and storage receptacles will be sheeted, or otherwise remain lidded or closed, during times when waste is not being deposited into them. They will also be covered to prevent the escape of waste whilst in transit and loaded for maximum payload efficiency.

15.2.12 Skips and storage receptacles shall be inspected on arrival to ensure they are fit for purpose. Skips and storage receptacles that are not fit for purpose will be taken out of use immediately with appropriate signage used to signify that they should not be used.

15.2.13 Mixing of inert, hazardous and non-hazardous wastes, either whilst stored on-site or upon collection will be avoided.

15.2.14 Liquid wastes will be stored on hard-surfaced areas using secondary containment systems to prevent spillages.

15.2.15 Waste will not be stored within 10m of any controlled watercourse, borehole, well, spring, surface water drainage system or foul water drainage system.

15.2.16 The storage and segregation of waste will comply with any air quality management measures outlined in Section 7 of the CoCP that are necessary to prevent harm to human health, amenity and the environment through nuisances such as dust, odour or pests.

15.2.17 Storage receptacles will be used for the collection and storage of waste within site operation facilities to facilitate the segregation of waste for re-use, recycling and recovering.

Duty of care requirements and authorisations

15.2.18 The Nominated Undertaker will require its contractors to maintain a duty of care at all times to ensure that waste generated during the construction period is handled in accordance with the relevant legislation governing its storage, transfer, treatment and disposal.

15.2.19 The Nominated Undertaker will require its contractors to put in place all relevant authorisations prior to the removal of any waste from site and maintain a register of this information. This will be in relation to the transfer of waste (waste carriers), any off-site waste management facilities (permitted or exempt sites) to which waste is taken to and any requirements for hazardous waste premises notification. The contractors will also ensure that an environmental permit or registered exemption is in place prior to any on-site transfer, treatment or disposal of waste being undertaken.

15.2.20 Any waste leaving the site will be accompanied by appropriate duty of care documentation in line with the relevant statutory requirements for waste transfer and hazardous wastes (as appropriate). Duty of care documentation will be retained by the contractors in line with statutory requirements.

15.2.21 Nominated Undertaker will require its contractors to maintain a register of all waste loads leaving the site and / or a tracking system (defined in the materials management plan) for excavated material destined for reuse to provide a suitable audit trail and to facilitate monitoring and reporting of waste and material types, quantities and management methods.

15.3 Monitoring and reporting

15.3.1 The weight of waste generated and managed will be measured and reported in tonnes. Other waste quantities (e.g. where recorded as volume) will be converted and subsequently reported as tonnes along with details of the conversion factor used. Liquid waste will be reported by volume and by mass. Where applicable, conversion factor guidance specified by the Waste & Resources Action Programme (WRAP) should be used (*Guidelines for Measuring and Reporting Construction, Demolition and Excavation Waste)*[7].

15.3.2 Regular audit and inspection of waste management activities will be undertaken on-site to ensure compliance with statutory controls, waste management procedures and other Nominated Undertaker policies and procedures relevant to the management of excavated materials and waste.

15.4 Pollution incident control

15.4.1 Any pollution incident arising from the generation and / or management of waste on-site will be managed in accordance with the pollution incident control measures set out within Section 5.10 of the CoCP.

[7] WRAP (2010) Guidelines for measuring and reporting construction, demolition and excavation Waste. Available at http://www.wrap.org.uk/content/waste-landfill-reporting-portal. Accessed July 2012.

16 Water resources and flood risk

16.1 Surface water and groundwater management – general provisions

16.1.1 The Nominated Undertaker will require its contractors to manage their site activities and working methods to protect the quality of surface water and groundwater resources from other adverse effects, including significant changes to the hydrological regime through controls to manage the rate and volume of runoff. Monitoring systems will be employed during the construction works and emergency procedures in the case of any pollution incidents. BPM will be used (e.g. through the use of silt traps and the re-use of water in wheel washers). Where required, the contractor, will include arrangements to obtain appropriate approval for works from the relevant regulatory body or statutory undertaker, which could affect any surface water or groundwater resource.

16.1.2 Surface water and groundwater control measures will include the following, as appropriate:

- identification of resources:
  - a description of watercourses, surface water bodies, ground water bodies including ground water-dependent ecosystems, and ground and surface water which could be affected during construction (including maps and schedules);
  - plans showing all watercourses, surface water bodies, ground water bodies (including source protection zones), licensed abstractions and unlicensed abstractions within 1 km of the project and at greater distance if necessary, where the route intersects source protection zones or principal aquifers and identify areas at risk of flooding;
  - plans identifying sources of potential pollution;
  - plans showing drainage within the site; and

- a description of the measures to be used to protect surface water and groundwater from pollution, including site good practice and the EA *Groundwater protection: Principles and practice (GP3); and precautions to be taken to prevent damage to services and to avoid pollution during service diversions, excavation ground penetration and tunnelling;*

16.2 Measures to reduce potential impacts

Waste water and groundwater

16.2.1 The Nominated Undertaker will require its contractors to consult with the EA, Internal Drainage Boards and Lead Local Flood Authorities (LLFAs) where required, regarding the measures to be implemented to contain and manage surface water run-off from the construction site. In order to prevent deterioration of the water environment and other adverse impacts including changes to flow volume, water levels and water quality anywhere in the river catchment or groundwater body. Measures to be implemented will include the following, as appropriate:

- procedures for monitoring groundwater levels and quality at abstraction boreholes and wells to enable adverse effects on quality or levels to be identified;
- a description of the response procedures to be implemented in the event of works affecting groundwater levels or quality with subsequent adverse effects on abstractions, watercourses, water bodies or springs;
- methods of dealing with works in areas of potentially contaminated land;
- a method for dealing with intercepted groundwater containing elevated concentrations of contaminants;
- provision of a suitable construction site drainage system including cut-off valves, ditches or drains and sustainable drainage systems, or equivalent, with suitably sized treatment facilities such as settlement or detention basins;

- use of oil interceptors, if required by the EA, at site offices and works compounds;
- use of pollution shut-off valves in compounds with formal drainage;
- obtaining the necessary consents to enable discharge of dewatering, surface water run-off and waste water from the construction site to soakaway or filtration systems, watercourses, foul sewers or disposal off-site;
- appropriate measures such as use of bunds of non-erodible material or silt or sediment fences adjacent to watercourses;
- implementing a surface water or groundwater monitoring plan, particularly in relation to works which may affect aquifers;
- in so far as is reasonably practicable, the good working practices detailed in the EA's pollution prevention guidelines will be adopted;
- temporary construction methods from the following CIRIA publications (including C532: Control of water pollution from construction sites, C648: Control of water pollution from linear construction projects: technical guidance and C649: Control of water pollution from linear construction projects: site guide); and
- approval of the EA and/or the Canal & River Trust will be sought for plans of work likely to affect any surface or groundwater resource.

16.2.2 The measures set out in Section 7 of this CoCP to limit adverse dust and air pollution effects associated with construction works will apply equally in relation to limiting the likelihood of polluted surface water run-off being generated.

16.2.3 The Nominated Undertaker will require its contractors to comply with BS 6031 *Code of practice for earthworks* regarding the general control of site drainage including, for example, all washings, dewatering, abstractions and surface water run-off, unless otherwise agreed by the Nominated Undertaker. Any monitoring stations or boreholes should be protected from physical damage. If boreholes are decommissioned the contractors will follow Good practice for decommissioning redundant boreholes and wells (EA January 2012 or subsequent guidance).

Protection of Surface Water Bodies

16.2.4 Protection measures for works in or adjacent to surface water bodies will be provided in accordance with requirements set out by the EA. Watercourses and associated land drainage within construction sites will be protected to ensure appropriate working conditions at all times. Appropriate precautions will to be taken when working in the channels of or adjacent to watercourses; realigning watercourses; providing new culverts and extending culverts to appropriately manage the potential for deposition of silt or release of other forms of suspended material or pollution within the water column. All measures will be in line with the requirements set out within the EA's *General Guide to Prevention of Pollution (PPG 1)*, *Works and maintenance in or near water (PPG5)* and *Maintenance of structures over water (PPG23)* and *Control of water pollution from construction sites CIRIA 532.*

16.2.5 Measures will also be implemented in relation to construction associated with outfalls, including the following, as appropriate:

- undertake construction of outfalls during periods of low flow to reduce the risk of scour and erosion;
- measures to be provided to prevent run-off and other pollutants being washed into watercourses; and
- restrictions or controls with regard to excavation within watercourses to limit effects on water flow, water quality, sedimentation, fisheries or river ecology.

Control of Pollution, including storage and control of oils and chemicals

16.2.6 In relation to storage of any oil-based materials including petrol, diesel, waste and vegetable and plant oil, and above ground fuel and oil storage tanks, the Nominated Undertaker will require its contractors to comply with the Control of Pollution (Oil Storage)(England) Regulations 2001, as amended, and the EA *Pollution Prevention Guidelines 2: Above ground oil storage tanks (PPG2).* PPG2 sets out requirements including those relating to positioning, specification, capacity, secondary containment and ancillary equipment for storage tanks. Where below ground oil storage is proposed, this must comply with *Pollution Prevention Guidelines 27: Installation, decommissioning and removal of underground storage tanks.*

16.2.7 Stationary plant will be used with secondary containment measures such as plant nappies to retain any leakage of oil or fuel, which will be emptied at regular intervals to prevent overflow.

16.2.8 Spillage kits will be stored at key locations on site as set out in the pollution incident control plan (see Section 5.10) and in particular at refuelling areas. Spillage kits will also be kept with mobile bowsers. Staff will be trained in their use.

16.2.9 The contractors will comply with *Pollution Prevention Guidelines 26: Drums and intermediate bulk containers (IBCs) in relation to chemical storage, handling and use.*

16.2.10 The contractors will consult with the relevant local authorities and the EA regarding specific requirements in relation to establishing and operating concrete batching plants on site. Wash water from any batching plants will not be discharged to the water environment without the approval of the relevant authority.

16.2.11 The contractors will keep a record of all spillage incidents and inform the Nominated Undertaker of any spills which cause land contamination or pollution off-site.

Control and management of foul drainage

16.2.12 The Nominated Undertaker will require its contractors to manage and dispose of foul water and sewage effluents from site facilities, complying with *Pollution Prevention Guideline 4: Treatment and disposal of sewage* where no foul sewer is available, the EA's guidance document GP3 - Groundwater Protection Policy and Practice, other relevant guidance and the following measures, as appropriate:

- containment by temporary foul drainage facilities and disposal off-site by a licensed contractors;
- by preference, connection to the local foul sewer system as agreed with the relevant authorities; or
- where a foul sewer is not present, appropriate treatment and discharge to a watercourse or soakaway with approval from the EA, where required. Any foul drainage discharge to the public sewer will require approval from the EA. If not permitted, provisions need to be adopted to remove the liquid from site for disposal, such as via tanker.

Excavations and dewatering

16.2.13 The Nominated Undertaker will require its contractors to undertake risk assessments as appropriate associated with excavation work and dewatering impacts on surface water, groundwater and abstractions.

Private water supplies

16.2.14 A risk assessment will be undertaken for excavation work associated with impacts on aquifers and private water supplies.

16.2.15 Any water supply pipes damaged during construction will be repaired or replaced as quickly as reasonably practicable and normally within 24 hours. However, the repair of any such damage caused by utility companies working on behalf of the Nominated Undertaker will be the responsibility of that utility company. Until water supplies are reinstated and tested, drinking water will be provided by bottle and/or tanker as a temporary measure as appropriate to affected parties. Provision of an interim water supply will also apply where supplies to livestock are temporarily interrupted.

16.3 Measures to reduce potential flood risk impacts

16.3.1 Construction activities will be undertaken having regard to the requirements to avoid any significant increase of flood risk. Appropriate measures will be implemented by the Nominated Undertaker's contractors to prevent, so far as is reasonably practicable, damage to equipment or the works during potential flooding events. Suitable access and safe refuges are to be identified for use in the event of a flood.

16.3.2 The contractors will consult with the EA, LLFAs and other relevant risk management authorities on areas at risk of flooding and make appropriate use of the EA's Floodline flood warning service for works within areas at risk of flooding.

16.3.3 The contractors will obtain copies of the EA's and LLFAs' flood risk management plans, maps and strategies and prepare site specific flood risk management plans for those areas of the site at risk of flooding. These site specific flood risk management plans need to be compliant and produced in accordance with the appropriate Flood Risk Assessments. These plans would include all areas within Flood Zone 3, areas considered at "more" risk of flooding on the EA's surface water flood map and areas susceptible to groundwater flooding. Other flood risk sources, such as sewer flooding and areas at risk of reservoir flooding, will also be included to ensure all sources of flooding are addressed appropriately.

16.3.4 The contractors will, as far as reasonably practicable, ensure that flood risk is managed safely throughout the construction and implementation period and consider flooding when planning sites and storing materials. A risk based precautionary approach using the source – pathway – receptor concept and will be applied to temporary and permanent works. Designers and contractors will be required to prepare construction and permanent works proposals that are safe and that flood risk (including that to third parties and the proposed works) is managed appropriately. Where necessary this will include the provision of evidence that appropriate flood warning and emergency management measures are established and detailed designs are supported by provision for long term management and maintenance. Where practicable, contractors should avoid locating temporary structures, such as accommodation and stockpiles, and the placing of construction equipment within Flood Zone 3 areas or areas at significant risk of flooding from other sources.

16.3.5 The contractors will submit, where appropriate, a report on flood risk to the Nominated Undertaker every three months. Where appropriate, these reports will summarise:

- any applications made for flood defence consent, where required, for temporary and permanent works and the status of the works;
- any specific requirements or conditions of the consent;
- any flood risk management or mitigation measures implemented in support of temporary and permanent works proposals; and

- a statement on the cumulative flood risk impact of temporary and permanent works with reference to the ES.

16.3.6 The level of detail submitted in the reports must be commensurate with the scale, nature and level of risk associated with the proposed development and the potential impact on third parties. The reports must refer to the compliance of the flood risk assessment.

16.4 Monitoring

16.4.1 Surface water and groundwater monitoring plans will be implemented.

16.4.2 The Nominated Undertaker will require its contractors to consult the EA regarding water quality, flow and level monitoring to be undertaken for watercourses and groundwater that will be affected by construction works or discharge of surface water run-off, which will include the following, as appropriate:

- pre-construction monitoring to establish baseline water quality conditions for watercourses and groundwater;
- monitoring during construction works to enable the effectiveness of mitigation measures to limit pollution risk to be monitored and any pollution incidents to be identified; and
- monitoring of watercourses or groundwater receiving surface water runoff during construction to enable the effectiveness of treatment and other sustainable drainage systems measures to be determined and to ensure that an unacceptable rise in groundwater levels does not occur.

16.4.3 The Nominated Undertaker will require its contractors to carry out appropriate monitoring to identify:

- pollution risks that are unacceptably high;
- spillages and leakages;
- non-compliance with the CoCP; and
- suspected pollution incidences.

16.4.4 Appropriate actions will be taken where pollution risks are unacceptably high, where there is noncompliance with the CoCP, where spillages and leakages are unacceptable or where there are any suspected pollution incidents.

16.4.5 Ground water monitoring will be undertaken at any ground water sensitive areas, as required, to inform the design of the Project and development of construction methods to mitigate potential impacts.

16.4.6 The Nominated Undertaker will require its contractors to describe the monitoring procedures. The contractors will also consult with the EA regarding the Pollution Incident Response Plan which will set out the measures to be implemented to address any adverse findings from the monitoring procedures during and following completion of construction works.

Appendix 1: Glossary of Terms

ACM	Asbestos containing material
BPM	Best Practicable Means – Defined in the Control of Pollution Act 1974 and Environmental Protection Act 1990 as measures which are 'reasonably practicable having regard among other things to local conditions and circumstances, to the current state of technical knowledge and to financial implications'.
BS	British Standard
CCTV	Closed circuit television
CDEW	Construction, demolition and excavation waste
CIRIA	Construction Industry Research and Information Association
CL:AIRE	Contaminated land: applications in real environments – an organisation dedicated to raise awareness of practical sustainable remediation technologies.
CoCP	Code of Construction Practice
Considerate Constructors Scheme	A UK national scheme which promotes good practice on construction sites through its codes of considerate practice, which commit registered sites to be considerate and good neighbours, as well as being respectful, environmentally conscious, responsible and accountable. For more information see: www.ccscheme.org.uk
CoPA	Control of Pollution Act 1974
Defra	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
EA	Environment Agency
EMRs	Environmental Minimum Requirements
EMS	Environmental management system
ES	Environmental Statement
HS2 Ltd	High Speed Two Limited – a company wholly owned by the Department for Transport, established in 2009 to develop plans for a new high speed network and present a proposed route connecting Birmingham and London.
HSE	Health and Safety Executive
ICE	Institution of Civil Engineers
LEMPs	Local Environmental Management Plans

LLFAs	Lead local flood authorities
MAFF	Ministry of Agriculture, Food and Fisheries
NE	Natural England – the Government's advisory body on the natural environment.
Nominated Undertaker	The body or bodies appointed to implement the powers of the hybrid bill to construct and maintain the railway.
NI/TR Policy	Noise insulation and temporary re-housing policy
NPPF	National planning policy framework
PPGs	Pollution prevention guidelines – Environment Agency guidance and advice on the law and good environmental practice
PPV	Peak particle velocity
RIGS	Regionally important geological sites
Rural Payments Agency	The Defra agency that administers payments to farmers and traders
Section 61	Section 61 of the Control of Pollution Act 1974 (which sets out procedures seeking and obtaining local authority consent to measures for the control of noise and vibration on construction sites)
SSSI	Site of Special Scientific Interest
SWMP	Site waste management plan
TA	Transport assessment – The TA will consider all aspects of movements by people and vehicles. It will demonstrate how the proposed scheme will affect demands for travel and how all travel demands and servicing requirements will be met. The TA will assess both the construction and operational stages of the Proposed Scheme.
The Project	The project to which this CoCP relates is the proposed high-speed railway between London and the West Midlands. This is a high speed railway between London and the West Midlands with a connection via the West Coast Main Line at conventional speeds to the North West and Scotland and to the Channel Tunnel via HS1. It includes four high speed rail stations at London Euston, Old Oak Common (West London), Birmingham Airport (Birmingham Interchange) and Birmingham (Curzon Street).
VDVs	Vibration dose value – a measure of vibration used to assess human perception of vibration
WRAP	Waste resource action programme – an organisation dedicated to helping businesses and individuals reduce waste
WSI	Written scheme of investigation (a programme for archaeological investigation works)

Appendix 2: Local Environmental Management Plan Template

The Local Environmental Management Plans (LEMPs) will set out any site-specific local control measures and are expected to follow the layout and cover the broad issues as set out below.

Community forum area: <Insert name>
Local authorities: <Insert name>
Anticipated worksite activities: <e.g. bored tunnels, surface railway, railway viaduct>

General requirements

Community relations – any specific local requirements for the advance notification of construction works.
Working hours – any local variations to core working hours to be agreed under third party consents (e.g. different working hours for works in the vicinity of the operational railway, where possessions may be needed, or where the works are in a commercial/business district).
Site lighting – identifying any sensitive receptors.
Worksite security and hoardings – site specific measures relating to appearance and height of security fencing and hoardings.
Pollution incident control – any local requirements to be included in the contractors' pollution incident control plan.

Agriculture, forestry and soils

Identifying sites of particular interest.

Air quality

Highlight any of the worksites that lie within or adjacent to any sensitive areas for air quality (e.g. air quality management areas) or other sensitive receptors.

Cultural heritage

Known or potential heritage assets (both designated and undesignated) will be identified, and any specific local control measures outlined. These measures will also subject to third party consents.

Ecology

Any local site-specific requirements and protection measures will be set out to avoid or limit the potential impact on ecological resources. Where known invasive, non-native species are known to be present, site specific control measures will be included.

Land quality

Site-specific local controls will be set out as required for any known sites of geological interest (both designated and undesignated), together with any abandoned mine workings and areas of known or potential land contamination.

Landscape and visual

Where landscapes, townscapes or views of particular sensitivity have been identified, local control measures to reduce the impact during construction will be set out.

Noise and vibration

Particularly sensitive receptors to construction noise or vibration will be identified, and any relevant site specific controls proposed.

Traffic and transport

Local proposals for the management of construction traffic, including any required alterations to local roads, proposed access routes for site traffic, and for all heavy vehicle movements. These will also be subject to relevant third party consents and notifications.

Waste and materials

Any local site-specific requirements for the management of construction waste.

Water resources and flood risk

Measures to protect particularly sensitive water resources (watercourses, water bodies, groundwater and abstractions) will be identified. Any site specific measures required to limit the risk of flooding will also be identified. These will also be subject to relevant third party consents & notifications.

Appendix 3: HS2 Ltd Sustainability Policy

Sustainability policy

HS2's purpose is to create a world class high speed rail network to support sustainable growth in the UK. It is a major opportunity to provide greater choice in the way we travel to help deliver a sustainable transport system for the UK.

Our vision is of a high speed railway network which changes the mode of choice for inter-city journeys, reinvigorates the rail network, supports the economy, creates jobs, reduces carbon emissions and provides reliable travel in a changing climate throughout the 21st century and beyond.

This policy sets out HS2 Ltd's commitment to be an exemplar project. Building this network will inevitably cause some local effects on communities, the natural and the built environment. We will strive to limit the negative impacts through design, mitigation and by challenging industry standards and we will look for environmental enhancements and benefits.

Through this policy we aim to support the following Government goals:

- Create a step change improvement in transport links between regional centres and from them to London.
- Enable more equal distribution of opportunity, connect communities and encourage regeneration.
- Stimulate sustainable economic growth through increased capacity and shorter journey times between key cities.
- Support British engineering, create job opportunities and develop skills in the UK.
- Deliver lower carbon long distance travel.
- Maximise integration of HS2 with existing UK and international transport networks.
- Encourage wellbeing and protect the environment.

What we will do

We will promote high speed rail and balance community, environmental and economic issues. We have identified key themes as a focus for our work to:

Growth and regeneration • Support sustainable economic development and the localism agenda for regeneration.

Environmental change • Seek to avoid significant adverse effects on communities, business and the natural, historic and built environment. Minimise impacts where they occur and deliver enhancements as far as practicable to ensure there is no net loss to the natural environment.

Skills and employment • Improve skills, jobs, education and the economy through our investment along the length of the route. Act as a driver for improvements in the sustainability of the engineering and construction sector. Promote diversity, openness and fairness.

Climate change • Minimise the carbon footprint of HS2 as far as practicable and deliver low carbon long distance journeys that are supported by low carbon energy.

Resilience • Build a network which is resilient for the long term and seek to minimise the combined effect of the project and climate change on the environment.

Resources and waste • Source and make efficient use of sustainable materials, maximise the proportion of material diverted from landfill and reduce waste.

Integrated transport • Engage with stakeholders to create seamless transport links with other modes and ensure accessibility for all.

How we will deliver this

To deliver our vision we will embed sustainability in our business at each phase of the project through:

A clear plan • Setting goals relevant to the stage of the project from design, through development, construction, operation, maintenance and renewal which stimulate innovation and ensure enhancements are protected for the long term. Our plan and this policy will be reviewed biennially.

Robust processes • Ensuring sustainability is integrated into our culture, procedures and processes. This will include the development of Sustainable Design and Delivery Principles as part of a process to enable us to balance the sometimes competing elements of sustainability and to understand whole life cost.

Procurement • Ensuring sustainability is integral in our procurement processes and is applied to our entire supply chain.

Innovation • Promoting sustainable construction practices, continually focussing ideas and technologies for improving sustainability.

Engagement and reporting • Engaging in dialogue about the project and working with local communities, key stakeholders and our supply chain. Openly reporting our progress in delivering the commitments we make on sustainability regularly and sharing what we learn.

HS2 is determined to ensure sustainability is embedded in the DNA of this project and that it is integrated into all of our work.

Alison Munro, Chief Executive, HS2 Ltd
April 2013

HS2/HS2/SU/POL/000/000002