

1MCo4 Main Works - Contract Lot S2

Noise and Vibration Management
Plan - Western Mound - Ruislip
Northern Sustainable Placement S2

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1 Definitions and abbreviations

1.1.1 The tables below outline abbreviations and technical terms used within this management plan.

1.2 Abbreviations

Table 1 - Abbreviations

Abbreviation	Definition
BPM	Best practicable means
CoCP	Code of Construction Practice
CoPA	Control of Pollution Act
EMRs	Environmental Minimum Requirements
EMS	Environmental Management System
ES	Environmental Statement
EWC	Early Works Contract
GPCN	General Principle Compliance Notes
HORACE	HS2 Online Reporting, Assurance, COSHH and Environment Reporting System
HS2	High Speed 2 Ltd
ITT	Invitation to Tender
LA	Local authority
LBH	London Borough of Hillingdon
LEMP	Local Environmental Management Plan
MWCC	Main Works Construction Contract
NVMP	Noise and Vibration Management Plan
PQQ	Pre-qualification Questionnaire
RAMS	Risk Assessment Method Statements
S61	Section 61 of the Control of Pollution Act 1974
SCSJV	Skanska Costain Strabag Joint Venture
SSECP	Site Specific Environmental Control Plan

1.3 Technical Definitions

Table 2 - Technical Definitions

Term	Definition
Noise	Is defined as unwanted sound and will generally radiate in all directions from a construction noise source and will find its way (curve) around and over walls, buildings and fencing. Sound waves will also deflect from solid surfaces like walls. Noise causes more complaints than any other environmental topic and can result in working hours being restricted, community relations ruined, a notice to stop work being served or possibly a prosecution or fine.
Section 60	A Section 60 is an abatement or improvement notice that is served by the Local Authority on the person responsible for the noise requiring specific controls to be put into place to minimise noise and vibration.
Section 61	Section 61 of the Control of Pollution Act 1974 allows a contractor to approach the Local Authority to gain consent to carry out construction works. If work is carried out in accordance with the Consent, then noisy or out of hours working is unlikely to be stopped due to noise nuisance. Having a Section 61 in place reduces the risk of being issued with a Section 60 to stop work, potential fines and convictions..
Sound	Any pressure variation (in air, water or other medium) that the human ear can detect.
Vibration	Is oscillation of a body around its point of rest and is therefore measured in terms of acceleration (m/s ²). Vibration levels that may result in building damage can be expressed in terms of the Peak Particle Velocity (PPV), which is the maximum velocity measured over the measurement period. Where the effect of vibration on humans is assessed, and the source of vibration is of an intermittent nature, vibration levels may be expressed in terms of the Vibration Dose Value (VDV).

2 Introduction

2.1 Background

- 2.1.1 Phase One of HS2 will provide dedicated high speed rail services between London, Birmingham and the West Midlands. It will extend for approximately 230km (143 miles). Just north of Lichfield, high speed trains will join the West Coast Main Line for journeys to and from Manchester, the North West and Scotland. Phase One of HS2 is the first phase of a new high speed railway network proposed by the Government to connect major cities in Britain. It will bring significant benefits for inter-urban rail travellers through increased capacity and improved connectivity between London, the Midlands and the North. It will release capacity on the existing rail network between London, Birmingham and the West Midlands and so provide opportunities to improve existing commuter, regional passenger and freight services.
- 2.1.2 HS2 Ltd has developed an integrated design approach that uses excavated material to satisfy the engineering and environmental mitigation earthworks material requirements to reduce the need for imported materials and reduce the amount of excavated material requiring offsite disposal.
- 2.1.3 Where it is not feasible or reasonably practicable to use excavated material in the construction of the HS2 scheme, the excavated material should either be used beneficially at third party sites or disposed of off-site as a waste (i.e. surplus excavated material). Where the transportation of excavated material would result in significant environmental effects, i.e. the potential environmental impact of transporting the material is likely to be greater than the benefit of reuse, then sustainable placement of inert soils is an option
- 2.1.4 Sustainable placement is the local on-site disposal of surplus excavated material to avoid causing environmental effects associated with the transportation of that material. Local sites for sustainable placement have been selected by HS2 Ltd on the basis of their suitability for the disposal of surplus excavated material and will require an environmental permit.
- 2.1.5 A number of sites were originally identified as areas that could accommodate sustainable placement for Phase 1 of the High Speed 2 project, and provisions were included within the High Speed Rail (London – West Midlands) Act 2017. However, sustainable placement of surplus excavated inert material is considered to be a disposal activity and requires an environmental permit from the Environment Agency.

2.2 Purpose

- 2.2.1 The environmental permit application comprises a suite of supporting documentation of which this Noise and Vibration Management Plan (NVMP) is a part as required by the Environment Agency. The NVMP provides a summary of the Noise Impact Assessment undertaken for the site (Included in Appendix C) and details how the operator (Skanska

Costain STRABAG Joint Venture (SCSJV)) and its supply chain will manage potential noise and vibration impacts from the operation of the Western Mound of the Northern Sustainable Placement Area and how this will be managed in accordance with relevant legislation, regulations and HS2 Project Requirements Specification for Phase One.

2.2.2 The NVMP defines how SCSJV intend to:

- Meet the requirements of both the Works Information and Environmental Minimum Requirements (EMRs);
- Comply with relevant legislation, regulation (Environmental Permitting (England and Wales) Regulations 2016) and HS2 Company Standards;
- Comply with permits/consents/licences or obligations related to the work;
- Record how all significant environmental aspects and impacts will be dealt with;
- Compliance with the undertakings and assurances detailed in the register;
- Achieve a high level of environmental performance; and
- Detail how environmental performance will be monitored and reviewed.

2.2.3 The noise and vibration management plan shall outline the responsibilities assigned to SCSJV that specifically relate to noise and vibration. It shall also act as an assurance document for the Client, providing detail in response to how SCSJV intend to manage these responsibilities on behalf of HS2 Ltd.

2.2.4 The Noise and Vibration Management Plan is a live document and will be reviewed and updated every six months or when deemed necessary.

2.2.5 This document will be kept on site along with the other suite of permit documents.

2.3 Associated Documents

2.3.1 This report should be read in conjunction with the following documents which have been submitted as part of the permit application:

- Environmental Permit Application Forms;
- Environmental Setting and Site Design Report;
- Site Operating Plan;
- Environmental Monitoring Plan;
- Dust and Emission Management Plan;
- Hydrogeological Risk Assessment;

- Stability Risk Assessment.
- Management Systems and Procedures
- Noise Impact Assessment - Area West, northern Sustainable Placement Area (NSPA) Compounds - Material Treatment (included as Appendix C).

2.4 Relationship with other documents

- 2.4.1 This NVMP has been written to support the permit application for the Western Mound of the Northern Sustainable Placement Area. This document is intended to be a stand-alone document for the management of noise and vibration at the sustainable placement area and as such it is consistent with the overarching requirements of other relevant HS2 specific legislation and guidance, including:
- Code of Construction Practice (CoCP) [R1]
 - Local Environmental Management Plan (LEMP) – London Borough of Hillingdon [R2]
- 2.4.2 In November 2013, HS2 Ltd deposited a hybrid Bill with Parliament to seek powers for the construction and operation of Phase One of HS2. The Secretary of State has published draft Environmental Minimal Requirements (EMRs), which set out the environmental and sustainable commitments that will be observed in the construction of the Phase One of Hs2. To explain the commitments made in the Bill and EMRs, information papers have been produced which detail how the commitments will be applied to the design and construction of Phase One. The following Information Paper has been referred to in the production of this NVMP:
- High Speed Two Phase One Information Paper E23: control of construction noise and vibration. [R12]

2.5 Environmental Management System

- 2.5.1 The noise and vibration Management Plan is drafted in line with Costain's EMS, certified to BS EN ISO 140001:2015.

3 Roles and Responsibilities

- 3.1.1 There are three key parts to the SCSJV's organisational structure critical to the delivery of the noise and vibration management requirements of the MWCC. These are:
- Environmental Managers/Advisors;
 - Construction Teams; and
 - Noise and Vibration Specialists.
- 3.1.2 The overarching noise and vibration management roles for the wider project and therefore the operation of the Western Mound of the Northern Sustainable Placement Area are summarised below in Table 3.

Table 3 - Roles and Responsibilities

Role	Responsibility
SCSJV Environmental Managers and Advisors	<p>Develop scopes of works incl. provision of required technical standards, Pre-qualification Questionnaire (PQQ) and Invitation to Tender (ITT) questionnaires and ultimately instruct the noise and vibration specialist work package.</p> <p>Ensure the appointed noise and vibration Specialist meets the appropriate competencies and can meet the resourcing needs to deliver contract Topic requirements</p> <p>Review requirements of the Environmental Minimum Requirement (EMRs) and specifically the CoCP to identify Topic management commitments relevant to the MWCC.</p> <p>Communication of the noise and vibration management related requirements in the CoCP and HS2 Technical Standards to construction teams and the noise and vibration specialist.</p> <p>Assurance activities such as audit and inspection of work sites (for CoCP, EMR, EMP, HS2 Technical Standards and other control plan conformance).</p> <p>Lead, support and advise the construction team to ensure they have the required training, competences and resources and that they are suitably deployed for the successful delivery of the noise and vibration management Plan.</p> <p>Support site meetings as required.</p> <p>Review/ QA and agree scope of works within noise and vibration deliverables prior to submission to HS2.</p> <p>Consultation on Local Environmental Management Plans (LEMPs).</p> <p>Support complaint and incident investigation and closeout within 5 working days (using the HS2 On-line incident reporting system (HORACE)).</p>

	<p>Support all site meetings and regular monthly (or when required) meetings with HS2 (including Local Authorities other HS2 Contractors).</p> <p>Sharing of good practice and noise and vibration related innovations with other sites and HS2 contracts.</p> <p>Provide support and direction to Stakeholder manager to ensure compliance with Undertakings and Assurances is achieved</p>
Environmental Team	<p>Responsible for working collaboratively through-out design and construction to advise the Project Team and monitoring compliance, for obtaining and managing consents, the provision of training, and for managing communications with each of the appropriate local authority</p> <p>(variations); Lead on the investigation of any breaches of s61 consent or Trigger Action Levels and report to the local authority/HS2. This will include maintaining overall assurance of the works anticipated on both Lot S1 and S2, this includes, but not limited to: -</p> <p>Ensuring Contractors and Specialist Consultants have the required competences and resource. Undertaking site inspections and audits to ensure the adoption of Best Practical Means.</p> <p>Liaison with local authorities.</p> <p>Review and assurance of design and construction works to assure compliance with Best Practical Means (BPM), Environmental Minimum Requirements (EMRs), Undertakings and Assurances (U&As) etc.</p> <p>Preparation and submission of s61 consent applications for works packages.</p> <p>Identification and evaluation (in conjunction with NV Specialists) potential NITR qualification. Specific training to Construction disciplines</p> <p>Develop scopes of works incl. provision of required technical standards, PQQ and ITT questionnaires and ultimately instruct the noise and vibration specialist work package.</p> <p>Ensure the appointed noise and vibration Specialist meets the appropriate competencies and can meet the resourcing needs to deliver contract Topic requirements</p> <p>Review requirements of the Environmental Minimum Requirement (EMRs) and specifically the CoCP to identify Topic management commitments relevant to the MWCC.</p> <p>Communication of the noise and vibration management related requirements in the CoCP and HS2 Technical Standards to construction teams and the noise and vibration specialist.</p> <p>Assurance activities such as audit and inspection of work sites (for CoCP, EMR, EMP, HS2 Technical Standards and other control plan conformance)</p> <p>Lead, support and advise the construction team to ensure they have the required training, competences and resources and that they are suitably deployed for the successful delivery of the noise and vibration management Plan.</p>

	<p>Support site meetings as required.</p> <p>Review/ QA and agree scope of works within noise and vibration deliverables prior to submission to HS2.</p> <p>Consultation on Local Environmental Management Plans (LEMPs).</p> <p>Support complaint and incident investigation and closeout within 5 working days (using the On- line incident reporting system (HORACE)).</p> <p>Support all site meetings and regular monthly (or when required) meetings with HS2 (including Local Authorities other HS2 Contractors).</p> <p>Sharing of good practice and noise and vibration related innovations with other sites and HS2 contracts.</p>
Construction Managers, Supervisors and Engineers	<p>Responsible for managing construction and producing Method Statements which include information and requirements, covered by Site Environmental Control Plans and the approved Section 61 consent. They have the responsibility for the management of construction activities and for ensuring Best Practicable Means (BPM) are identified and implemented, including; -</p> <p>Responsible for the day-to-day implementation of the BPM mitigation measures required to minimise the impact arising from the works.</p> <p>Development of work methodologies and mitigation in accordance with best practicable means (BPM) to control noise and vibration. Implementation of control measures in accordance with s61 consent requirements.</p> <p>Undertaking incident/complaint investigation and resolution, in conjunction with the Environment and Stakeholder Interface teams.</p> <p>Implementation and delivery of the necessary roles/ resourcing/ meetings to ensure adherence to the HS2 Technical Standards as listed in this document and the requirements of the CoCP</p> <p>Attend site inspections and meetings with Noise & Vibration Specialist and Environmental Managers/ Advisors as requested, to identify any issues and reduce risks, including technical issues (surveys / monitoring); access; risks; good practice; and H&S issues.</p> <p>Seek Environmental Manager/ Advisor approval for Environment sections of risk assessments and method statements (RAMS).</p> <p>Daily records of operations undertaken, together with noise and vibration conditions. Self-certification of site activities.</p> <p>Provide site supervision/ support through site inspections, identification and delivery of environmental tool box talks (TBTs).</p> <p>Attendance at community meetings as required.</p> <p>Undertake investigation of complaints or incidents (actions commenced within 2 hours during core working hours, within 12 hours outside these times) and implement additional mitigation measures as required.</p>

	<p>Production of incident investigation report and submission to S1/ S2 Environmental Manager/ Advisors (within 5 working days).</p> <p>Production of complaint investigation report (to Community Liaison Manger) and closeout (within 5 working days).</p>
Site Managers	<p>responsible for communicating the Noise and Vibration Plan requirements to subcontractors and the effective management of the works in line with the Noise and Vibration Plan and consent requirements outlined within each of the appropriate local authority Section 61 Consents.</p>
Noise and Vibration Specialist (General)	<p>Provide technical expertise and competence for project advice and guidance on noise and vibration related matters through-out design and construction to ensure works are delivered in accordance with the HS2 contractual and legal requirements.</p> <p>Lead on the development Noise and Vibration designs solutions suitable to relevant work activities and construction methodologies.</p> <p>Support the development and review of this Noise and Vibration Management Plan (NVMP), including regular updates and revisions to reflect changes and developments of the project.</p> <p>Provision of specialist noise and vibration services and management support to the MWCC:</p> <p>Modelling of noise and vibration from construction works (including cumulative impacts from other HS2 works) for section 61 consent applications and noise insulation / temporary rehousing assessment.</p> <p>Installation (or adoption), set-up, maintenance and reporting of continuous real time monitoring of noise and vibration around project work sites</p> <p>Advise construction and consents teams on how to meet legal and contractual requirements;</p> <p>Check all results for compliance with requirements and advise construction teams on actions required and follow-up;</p> <p>Assist Environmental Manager /Advisors with data gathering for reporting purposes in advance of deadlines;</p> <p>Review, update and report to Environment Team on noise and vibration performance;</p> <p>Provide reports on progress and any problems with noise and vibration management on site to Environmental team and Construction teams.</p> <p>Deliver TBT/training (as required) to construction teams; Attendance at community meetings as required.</p> <p>Provide input with investigation of complaints of incidents and with the production of incident investigation reports (where required)</p> <p>Provide support and direction to Stakeholder manager to ensure compliance with Undertakings and Assurances is achieved.</p>

Noise and Vibration Specialist (Construction N&V – S61 Applications)	<p>Advise and instruct construction teams on how to meet noise and vibration requirements, including Section 61 consents and the HS2 Noise and Vibration Mitigation Scheme, including potential changes in eligibility for Noise Insulation or Temporary Relhousing;</p> <p>Work closely with construction teams, particularly the construction planning team; Undertake all assessments and prediction for Section 61 consent applications and produce the consent application;</p> <p>Work with Environmental Team and other contractors to ensure that potential cumulative noise issues are considered;</p> <p>Identify and undertake baseline noise and vibration surveys (where required); Locate, set-up and oversee permanent noise and vibration monitoring stations;</p> <p>Train nominated staff to undertake basic monitoring tasks correctly, such as downloading data and undertaking initial checking of results for compliance with requirements;</p> <p>Check all results for compliance with requirements and advise construction teams on action required and follow-up;</p> <p>Provide reports on progress and any problems with noise and vibration issues;</p> <p>Liaise with Local Authorities as necessary and in conjunction with the Project Manager and Stakeholder Interface Manager including providing them with Section 61 consent applications on time and monitoring results in any timescales agreed with them.</p>
Noise and Vibration Specialist (Construction N&V Monitoring)	<p>Undertake attended monitoring of noise and vibration to demonstrate compliance with consented s61 applications.</p> <p>manage the installation of permanent monitoring equipment and complete weekly monitoring reports (either adopted equipment or installation of additional monitoring equipment).</p> <p>Advise and instruct construction teams on how to meet noise and vibration requirements, including Section 61 consents. BPM checks will be carried out during attended monitoring.</p>
All project staff	<p>Responsible for complying with Risk Assessment Method Statements Risk (RAMS) Environmental Control Plans and instructions given by supervision in relation to the work they are undertaking and for reporting and responding to ANY incident.</p>

4 Requirements and Obligations

4.1 Legislation and Policy

- 4.1.1 The Costain EMS (adopted for the HS2 MWCC by SCSJV) includes a legal register which is a live document maintained by the Costain corporate head office. The MWCC Aspects and Impacts Register identifies which sections of the legal register are applicable to this project and these are shown in the HS2 MWCC Legal Register.

Control of Pollution Act 1974 (CoPA)

- 4.1.2 CoPA gives Local Authorities (LAs) powers for controlling noise and vibration from construction sites and other similar works. These powers may be exercised either prior to, or during the works.
- 4.1.3 Under Part III of the Control of Pollution Act 1974 [R8], Section 71 requires the Secretary of State to approve a code of practice for the execution of works which come within the scope of Section 60. The Control of Noise (Code of Practice for Construction and Open Sites) (England) Order 2015 [R9], approves the following guidance for this purpose:
- BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites –Part 1: Noise [R13]
 - BS 5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites –Part 2: Vibration [R14]
- 4.1.4 SCSJV will seek to obtain prior consent from the relevant local authorities (LB Hillingdon) under Section 61 (of the CoPA) - The Contractor can apply for prior consent for carrying out construction activities through a Section 61 consent. A Section 61 Application describes the plant, methodology, location of construction work, hours of work, best practicable means and predicts construction noise levels for the works. This provides a defence against prosecution under Section 60 (see below) of the Act, providing that the contractor is working within the consent conditions.
- 4.1.5 **Prior Consent** - The Local Authority, if in agreement with the application, issues a Prior Consent under Section 61 for the work to take place as described in the application. Consent is a legally binding document which carries financial penalties, as a minimum, for breach of Consent Conditions.
- 4.1.6 **Best Practicable Means (BPM)** as defined in Section 72 of the CoPA, will be applied during construction works to reduce noise and vibration impacts as far as is reasonably practicable, CoPA defines BPM as:
- 4.1.7 'practicable' means reasonably practicable having regard among other things to local conditions and circumstances, to the current state of technical knowledge and to the financial implications;

- 4.1.8 The means to be employed include the design, installation, maintenance and manner and periods of operation of plant and machinery, and the design, construction and maintenance of buildings and structures.”
- 4.1.9 **Section 60 (of the CoPA)** - A Section 60 is an abatement or improvement notice that is served by the Local Authority to the person responsible for the noise requiring specific controls to be put into place to minimise noise and vibration.
- 4.1.10 **Local Authority (LA)** - Noise disturbance and complaints by the public can be upheld if the LA deems that construction work has taken place without employing BPM to control noise and unsociable hours are being worked, such as night time and weekends.

The Noise Insulation (Railways and Other Guided Transport Systems) Regulations 1995

- 4.1.11 The Noise Insulation (Railways and Other Guided Transport Systems) Regulations 1995 [R11] give a discretionary power to railway authorities to provide insulation or grant for insulation where noise from the construction of a new or altered railway is expected seriously to affect residential and other buildings for a substantial time. Schedule 1 to the Regulations sets out construction and performance specifications for the noise insulation package. SCSJV will have regard to these specifications in implementing the HS2 noise insulation and temporary rehousing policy as set out in the CoCP. Please refer to 4.1.11 for further information.

High Speed Rail (London – West Midlands) Act 2017

- 4.1.12 On 23 February 2017, Royal Assent was granted for Phase One of HS2. The High Speed Two Bill is now an Act of Parliament (law) i.e. High Speed Rail (London - West Midlands) Act 2017 [R3] including its Environmental Minimum Requirements (EMRs).
- 4.1.13 The EMRs set out the high level environmental and sustainability commitments and are contained in the EMR General Principles document supported by a series of papers:
- Annex 1: Code of Construction Practice (see below) [R1]
 - Annex 2: Planning Memorandum [R4]
 - Annex 3: Heritage Memorandum [R5]
 - Annex 4: Environmental Memorandum [R6]
 - Register of Undertakings and Assurances [R7]

Environmental Minimum Requirements - General Principles

- 4.1.14 The Environmental Minimum Requirements - General Principles require that the controls to be implemented in delivering the scheme (including the EMRs, powers contained in the Act and Undertakings) will ensure that impacts which have been assessed in the ES will not be

exceeded. If the significant adverse impacts identified in the ES are likely to be exceeded, all reasonable steps will be taken to minimise or eliminate those additional impacts.

- 4.1.15 Annex 1 to the EMRs comprises a Code of Construction Practice (CoCP), which shall be adopted and implemented by the SCSJV and its Contractors in delivering the works, the high-level requirements of which are set out below.
- 4.1.16 In developing the scheme through the Parliamentary process and beyond into the detailed design stage, site specific control measures are being developed in conjunction with local authorities. Such measures are to be set out in each of the Local Environmental Management Plans (LEMPs) and shall be implemented in delivering the works. The high-level requirements of the LEMP for the London Borough of Hillingdon [R2] are set out below.

Code of Construction Practice (CoCP)

- 4.1.17 The CoCP sets out the general control measures to be implemented and the standards to which the nominated undertaker and its contractors will comply in delivering the scheme. Its aim is to ensure that likely significant construction effects that are reported in the Environmental Statement will either be avoided or mitigated. Notwithstanding this, SCSJV and its Contractors will adopt appropriate measures to design and construct the scheme so that noise and vibration from the construction does not give rise to adverse effects, as identified in the ES. Where reasonably practicable, environmental mitigation will be integrated within the design and implemented by the contractors within the works.
- 4.1.18 This approach is considered to align with the noise policy aims set out in the Noise Policy Statement for England and the principles of Best Practicable Means.
- 4.1.19 The general control measures and monitoring arrangements for noise and vibration identified in the CoCP have been considered in the development of this management plan and, where appropriate, are incorporated in section 5.
- 4.1.20 Site specific controls are to be developed in conjunction with local communities, local authorities and other stakeholders and will be captured in assets specific control plans and as part of section 61 consent applications (please refer to 1.1).

Local Environmental Management Plan – London Borough of Hillingdon (LEMP – LBH)

- 4.1.21 Further to the CoCP, the LEMP for LBH sets out the site specific control measures to be adopted by SCSJV that will be developed further following consultation with relevant stakeholders. The requirements of the LEMP and the CoCP will be implemented through SCSJV's Environmental Management System (EMS), which will be certified to BS EN ISO 14001.
- 4.1.22 The HS2 Environmental Memorandum [R6] identifies key worksites along the route of HS2 Phase One that are environmentally sensitive. SCSJV will prepare site-specific management

plans for these identified key environmentally sensitive worksites, focusing on mitigation, compensation and monitoring requirements, with opportunities for enhancement in relation to the identified environmental topics as outlined within the Environmental Memorandum. There is one such site within the LBH: the Mid-Colne Valley Site of Special Scientific Interest (SSSI).

- 4.1.23 The area specific noise and vibration arrangements identified in the LEMP-LBH have been considered for the development of this management plan and, where appropriate, are incorporated in Section 6.

4.2 Undertakings and Assurances

- 4.2.1 Undertakings and Assurances (U&As) in relation to noise and vibration management plan exist route wide and within the MWCC Lots S1 and S2. Requirements or mitigations needed to meet applicable Undertakings and Assurances will be set out in the site environmental control plans and briefed to site teams to ensure they are met. Evidence of compliance against Undertakings and Assurances will be submitted by SCSJV to HS2 Ltd through commitment compliance plans. Noise and vibration management plan related U&As are captured in Appendix A of this document.
- 4.2.2 The register of undertakings and assurances details all commitments offered throughout the parliamentary process for the High-Speed Rail (London - West Midlands) Bill up until Royal Assent. The Area South MWCC noise and vibration related U&As are detailed in Appendix A.
- 4.2.3 In the summary, the noise and vibration related U&As for MWCC commit to:
- Reducing the impacts and effects of noise and vibration;
 - Implementation of Best Practicable Means in the control of noise and vibration;
 - Section 61 consent applications under the Control of Pollution Act, 1974;
 - Implementation of a noise insulation and temporary rehousing policy, including special cases;
 - Prediction methodologies for noise and vibration;
 - The noise and vibration performance of control measures.
 - Development of site specific noise and vibration management protocols and trigger action plans
 - Further mitigation measures
 - Monitoring of noise and vibration, including reporting
 - Compliance and intervention processes

- 4.2.4 The SCSJV and its Contractors will comply with the requirements and terms of U&AS entered into by the nominated undertaker, as detailed in the "HS2 Register of Undertakings and Assurances" published by the Department for Transport or as otherwise notified. Specific details of such U&As, including requirements and terms, will be identified in the applicable Site Specific Environmental Control Plan.

5 Site Specific Details

5.1 Introduction

5.1.1 The following section presents a summary of the findings of the Noise Impact Assessment for the site (Appendix C) taking into account the BPM mitigation measures adopted as standard by SCSJV as part of their commitments to the measures set out in the relevant undertakings and assurances, CoCP and LEMP. As such the following BS4142:2014 assessment baseline includes all relevant noise and vibration BPM. The assessment has also taken account of the measures included in the HS2 Technical Standard for the Acoustic Design of Stationary Systems (HS2-HS2-EN-STD-000-000004).

5.1.2 The BS4142:2014 assessment of noise impact must include:

- Background noise survey at relevant local receptors
- Specific noise levels at these receptors due to site operations (usually by calculation)
- Assessment of the impact of characteristic features of the site noise (e.g. tonality, irregularity, impulsiveness)
- Comparison of the rating noise level (specific noise level + any feature correction applied) in relation to the background noise level to assess the noise impact.
- General consideration of all of the above in context of the situation in addition to uncertainty to conclude on the overall acceptability of the noise impact.

5.1.3 When assessing the likelihood of complaints determining the differences between the rating level and the background LA_{90,T} noise level is paramount. The Standard states that:

- Typically, the greater this difference, the greater the magnitude of the impact.
- A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context.
- A difference of around +5 dB is likely to be an indication of an adverse impact, depending on context.
- The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact depending on the context.

5.1.4 The rating level (L_{Ar,Tr}) is defined in BS4142:2014 and is used to rate the industrial source (known as the specific noise source) outside residential dwellings. This level is obtained by adding a correction of between 0 and 6 dB, for tonal noise sources, and a correction of

between 0 and 9 dB for impulsive sources. Additionally, corrections of 3 dB can be made for corrections for other sound characteristics, and intermittency of the noise source.

- 5.1.5 Reference time intervals, T_r , of 1 hour and 15 minutes are specified for the determination of rating levels during the day and night, respectively.
- 5.1.6 The BS4142 2014 standard also looks at the local acoustic environment and context into which the sound sources are being introduced.

5.2 Identified Receptors

Amenity (Nuisance Issues)

- 5.2.1 The following amenity receptors have been identified:
- Residential and commercial properties located immediately to the south and south east of the Northern SPA site;
 - The Urban area of West Ruislip located approximately 770m to the east of the Northern SPA site;
 - SSSI Bayhurst wood site located to the north-west of the Northern SPA site;
- 5.2.2 The location of these receptors, as shown on Drawing D-ESSD6 and Drawing D-ESSD 3 included as Appendix B.
- 5.2.3 Distances to selected, representative receptors are shown in Table 4.

Table 4 - Identified Receptors

Direction from boundary	Closest receptor	Approximate distance metres
South and south east	Residential and commercial properties beyond the boundary	20-50
East	Urban areas of West Ruislip	770
North West	SSSI Bayhurst Wood	60

- 5.2.4 The noise emissions from the WET transfer and treatment facility have been assessed at a variety of nearby receptors. For the purposes of this document, only the noise levels at the worst-affected receptors have been reported.
- 5.2.5 Although there are a number of receptors in the area, Pond Farm and No.9 Newyears Green Lane are likely to be the worst affected due to relative proximity to the NSPA's. As such these

receptors will be considered representative locations for the basis of the noise impact assessment. Figure 1 illustrates the receptor location in relation to the NSPA's.

- 5.2.6 For the purposes of the noise assessment, it is important to note that a solid timber site boundary fence of 2.4 metre height, approx. 28 metres distance from nearest façade runs parallel to Newyears Green Lane.
- 5.2.7 No off-site buildings are considered to screen, reflect or diffract sound, as there is a clear line of site between the receptors and the WET compound.
- 5.2.8 Grid references for the noise monitoring data used for this assessment are as follows:
- Monitoring Position 1 (MP1) - Representative of both No.9 Newyears Green Lane, - 51.580804242907334, -0.46144237843024083 (GPS) & Pond Farm 51.582086845489805, -0.4569649962993398 (GPS);
 - 28m to No.9 Newyears Green Lane - 51.580611033871655, -0.46101588453215;
 - 35m from No.9 to closest operational plant, predicted noise levels for the use and operation of the NSPA compounds treated as a cumulative level, for all items of plant active during the Daytime working hours (including Saturday and Sunday).

5.3 Site Procedure

- 5.3.1 The following sections provide an overview of the operating procedure at the site in relation to activities that may generate noise and/or vibration which will require specific mitigation measures.
- 5.3.2 The site will operate 07:00-18:00 Monday to Friday, 07:00-13:00 Saturday. No operation shall take place on Sundays or Public Holidays unless previously agreed with Hillingdon Council.
- 5.3.3 Inert soils from the HS2 Copthall Tunnel worksite will be brought to the site via a conveyor system. The conveyor system will be fed via a hopper to the south of Newyears Green lane, material will then be transported by the conveyor over Newyears Green land where it will be deposited in a stockpile at the Western Mound.
- 5.3.4 Material will be loaded from the stockpile onto ADTs for further transport to the working area of the Western mound.
- 5.3.5 Further details of the process (including processed for quarantined wastes) are included in the Site Operating Plan (1MCo4-SCJ-EV-PLN-SSo5_SL07-000001).

5.4 Likely Noise and Vibration Sources

- 5.4.1 On the basis of the Aspects and Impacts Register (Appendix A2), site procedures outlined in summary in Section 5.3 and in detail in the Site Operating Plan (1MCo4-SCJ-EV-PLN-

SSo5_SL07-000001), the following sources of noise and vibration are anticipated at the facility:

- Noise and vibration from the construction of the site compound, haulage route, location of equipment and other ancillary aspects of site set up.
- Noise and vibration from the delivery of construction plant, mobile working plant, materials at site set up and during the operation of the site.
- Noise and vibrations from the conveyor system and tipping of material, haulage vehicles operating at the site, idling or manoeuvres (i.e. Tipping loads in quarantine area) at the site compound and reception, movement within the site via dedicated haulage route and tipping waste (increased throttle);
- Noise and vibrations from earthworks machinery operating at the filling area;
- Noise from the operation of non-mobile plant such as generators for electricity at the site compound areas, hand-held tools within the site compound, or elsewhere on site where needed (e.g. unplanned servicing of vehicles at worksite, maintenance of site);
- Noise from the tipping of materials at the filling area (e.g. that generated from the materials itself);
- Noise from site staff during operational hours (including start up and shut down periods).

- 5.4.2 The data and sources for the noise levels assumed in the Noise Impact calculations that this assessment is based on are included in the Impact Assessment included as Appendix C. The plant included in the assessment has been processed and through using noise modelling software (Soundplan 8.1)) the receptor associated Sound Pressure Level has been determined.
- 5.4.3 The background sound levels ($L_{A90,T}$) used in the assessment has been taken from the semi-permanent unattended noise monitoring systems, for the period from 25th November to 3rd December 2020. Grid references for the monitoring points are detailed in Section 5.2.8.
- 5.4.4 The $L_{A90,T}$ levels presented in this document were recorded during the Covid-19 pandemic, during a government lockdown. It is considered that this may have led to an unusually low weekend $L_{A90,T}$ daytime level, as road traffic reduces due to people staying at home. Businesses in the area were also noted as closed during the survey duration, which may have led to limited commercial use of the Newyears Green Lane through road during the weekend period.
- 5.4.5 In order to ensure a worst-case assessment, these lowest background L_{A90} noise levels measured have been used in the analysis (See Appendix A). However, it should be noted that the baseline noise levels used in previous assessments undertaken for the Environment

Statement used baseline levels of 47bn for both Pond Farm and No. 9 Newyears Green Lane for daytime weekend periods.

- 5.4.6 The NSPA will be operational during daytime hours only, s Monday to Friday 07:00-18:00, Saturday 07:00-13:00. No operation shall take place Sundays or Public Holidays unless previously agreed with Hillingdon Council.. Therefore, only daytime hour $L_{A90,T}$ have been used in the assessment.

5.5 Noise Impact Assessment Findings

- 5.5.1 The calculated sound pressure levels ($L_{Aeq,T}$) at 1m from the facades of Pond Farm and No. 9 Newyears Green Lane have been calculated using Sound Plan 8.1 which allows a three-dimensional noise model to be generated and automatically calculates screening effects, ground absorption, atmospheric absorption and reflections from surfaces. Predictions of airborne sound from construction activities have been made at all building floors, and the results for the worst affected floors are presented. Calculations have been carried out for based upon machinery operating on a reasonable worst case on any given day (16hr period). Calculations include all the construction activities required for the operation of the NSPA compounds.
- 5.5.2 The following assessment includes the incorporation of BPM mitigation measures as they are adopted as standard by SCSJV as part of their commitments to the measures set out in the relevant undertakings and assurances, CoCP and LEMP.
- 5.5.3 Mitigation Measures implemented within the noise level calculations:
- Noise and vibration control at source: for example, the selection of quiet plant and low vibration equipment, review of construction programme and 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 vehicles reversing warnings;
 - Screening: for example, local screening of equipment, perimeter hoarding.
 - Surround the plant on one side (the nearest side to the receptors) assuming that this is safe to do so.
 - Be constructed with a mass per unit of surface area greater than 10 kg/m² and no gaps at any joints/ junctions.
- 5.5.4 The modelling results indicate that if the plant operates continuously the noise levels at the façades of the semi-detached houses opposite the Pond Farm entrance gate equates to 47dB $L_{Aeq,T}$ & No.9 Newyears Green Lane would be approximately 51dB $L_{Aeq,T}$ with no mitigation in place.

5.5.5 An acoustic character correction has been applied in the assessment as the octave band data specified in BS 5228 suggests certain items of plant may have a slight perceivable tonality. Therefore a +2dB correction has been applied to the specific noise level in the assessment. Reversing alarms are expected to comprise of broadband 'white noise', and not have tonal characteristics such as standard reversing alarms. It has been determined that no other characteristic correction needs to be applied.

5.5.6 Assessment in accordance with BS4142:2014 to assess the likelihood of complaints from the nearest residential properties was undertaken and is summarised below:

Table 5 - Lar, T dB Rating Levels - Pond Farm

Sep-20		Pond Farm	BS4142 Specific Noise Level L _{ar,T} dB	Character Correction dB	BS4142 Rating Noise Level L _{ar,T} dB	BS4142 Assessment Level dB
		Representative L ₉₀ , T				
Hours	Period					
0700-2300	Daytime*	50	47	2	49	-1
* Note - 0700-2300 is based on BS4142 assessment of daytime noise - this does not reflect actual operating hours of the site (see Section 5.3 for site operational hours)						

Table 6 - Lar, T dB Rating Levels - No 9 Newyears Green Lane

Sep-20		No.9 NyGL	BS4142 Specific Noise Level L _{ar,T} dB	Character Correction dB	BS4142 Rating Noise Level L _{ar,T} dB	BS4142 Assessment Level dB
		Representative L90, T				
Hours	Period					
0700-2300	Daytime*	50	51	2	53	+3
* Note - 0700-2300 is based on BS4142 assessment of daytime noise - this does not reflect actual operating hours of the site (see Section 5.3 for site operational hours)						

5.5.7 On the basis of the BS4142 assessment the overall noise impact of the specific sound source is predicted of having an insignificant impact, given the absolute cumulative level.

6 Noise and Vibration Control Measures

6.1 Introduction

- 6.1.1 Section 5.3 provides a summary of activities (as identified in the Environmental Aspects Register) which potentially could give rise to noise and vibration during the operation of the Western Mound of the Northern Sustainable Placement Area. Section 5.5 presented the findings of a site specific Noise Impact Assessment undertaken in line with BS4142. This concluded other than the BPM adopted standard by SCSJV no specific mitigation measures would be required to reduce the impact to the receptors assessed.
- 6.1.2 The following section provides details of the proposed mitigation measures which will be adopted as part of the SCSJV commitment to the relevant undertakings and assurances (Refer to Appendix A1), CoCP and LEMP.
- 6.1.3 In order to successfully manage the noise and vibration impacts of the Western Mound of the Northern Sustainable Placement Area, management of noise and vibration will be addressed at the earliest stage of design and will continue for the duration of the works.
- 6.1.4 Specific controls to be implemented in the management of noise and vibration as part of the Western Mound of the Northern Sustainable Placement Area are identified and detailed in the following sections.

Section	Controls in the management of noise and vibration
6.2	Best Practicable Means (development of noise and vibration control measures)
6.6	Site Specific Mitigation
6.3	Noise insulation and temporary rehousing
6.4	Innovation and Best Practice
8.1.11	Community notification
8.1.11	Commencement
6.5	Inspection and audit
7	Noise and vibration monitoring and reporting
8.2	Complaint and incident management
	Training and awareness
8	Communications
	SCSJV Project Team, Contractors, HS2 local authorities and local communities

6.2 Best practicable means

- 6.2.1 Best Practicable Means (BPM) will be applied during construction works to reduce noise (including vibration) at neighbouring residential properties and other sensitive receptors (including local businesses and any quiet areas designated by the local authority) arising from construction activities. BPM are defined in Section 72 of the Control of Pollution Act 1974 [R8] and Section 79 of the Environmental Protection Act 1990 [R10] 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”.
- 6.2.2 SCSJV and its contractors will consider mitigation in the following order:
- Evaluation of design to identify potential for reduction in construction impacts through modifications
 - BPM, including: noise and vibration control at source e.g. the selection of quiet and low vibration equipment, review of construction programme and 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; screening: e.g. local screening of equipment, perimeter hoarding or the use of temporary stockpiles;

- 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. The requirements and control measures set out within the CoCP will also be implemented by the SCSJV and its Contractors in delivering the scheme.

6.3 Noise insulation and temporary rehousing

- 6.3.1 As identified in the CoCP (section 13.2.12) and High Speed Two Information Paper E23: Control of Construction Noise and Vibration (R12), HS2 are required to operate a noise insulation and temporary re-housing policy with the aim that noise and vibration from the construction of the scheme does not give rise to significant adverse effects on health and quality of life. In order to do so, where noise or vibration from the construction of the scheme is found to exceed the significant observed adverse effect levels set out in Appendix A of Information Paper E23, noise insulation or temporary re-housing is to be offered to the occupiers of eligible properties. In the first instance, however, the SCSJV and its Contractors will implement BPM to minimise the extent to which noise insulation or temporary re-housing of occupiers will be required.
- 6.3.2 Eligibility and qualification criteria for noise insulation and temporary re-housing is detailed within Appendix B of Information Paper E23, including consideration of special cases.
- 6.3.3 No eligible properties have been identified in the vicinity of the site.

6.4 Innovation and Best Practice

- 6.4.1 Throughout the design phase and the development of construction methodologies, consideration will be given to the environmentally sustainable solutions. Design will be developed with consideration to cost, fitness for purpose, aesthetics, buildability and maintainability. This will include, as a minimum, a regular environmental design review against the HS2 Environmental Minimum Requirements.
- 6.4.2 In addition to this SCSJV Environmental and Construction team will work collaboratively to identify best practices opportunities and innovation to enhance the implementation of BPM the noise exposure exceeds the criteria defined in the CoCP, in particular where the works have activated the requirement to offer noise insulation or temporary rehousing.

6.5 Noise and vibration monitoring and reporting

- 6.5.1 SCSJV and its Contractors will undertake noise and vibration monitoring (as well as acquiring weather data) as necessary to comply with the requirements of the CoCP, s61 consents and applicable U&As. Such monitoring will be undertaken for the following purposes:
- monitoring the impact of construction works;

- to investigate noise complaints, incidents and exceedance of trigger levels;
- monitoring the effectiveness of noise and vibration control measures; or
- collection of additional baseline data.

6.5.2 Reporting of resulting noise and vibration data shall be carried out in accordance with the requirements stated therein, in addition to the requirements of the EMRs, s61 consent conditions or U&As. All data reports issued to HS2 shall be uploaded to the electronic document management system.

6.5.3 In addition to the foregoing requirements, SCSJV and its Contractors will support HS2 in the provision of noise and vibration monitoring data and other related information to the local community, as necessary under the Community Engagement Framework.

6.6 **BS4142:2014 Assessment and Site Specific Mitigation**

6.6.1 The BS4142 assessment has shown that overall noise impact of the specific sound source is predicted of having an insignificant impact, given the absolute cumulative level. As such other than the BPM adopted standard by SCSJV no specific mitigation measures would be required to reduce the impact to the receptors assessed. The following section sets out in detail what specific BPM measures will be adopted on site as part of SCSJVs commitment to the relevant undertakings and assurances (Refer to Appendix A2), CoCP and LEMP.

6.6.2 In relation to the Western Mound of the Northern Sustainable Placement area, the following BPM will be adopted:

- Within the site, internal haulage will be restricted to clearly delineated routes, generally on a prepared surface and at low level where possible. The haul routes will be compacted, graded and maintained to provide a smooth running surface and will be designed to avoid sharp changes in gradient or alignment.
- Location of haul route to the north of the mound area to maximise distance between higher traffic areas and local receptors.
- Location of compounds, offices (with generation plant), delivery, parking and welfare areas away from sensitive receptors.
- Selection of modern quiet/low vibration equipment, equipped with silencers and operated in accordance with the manufactures specifications and maintained in good working order;
- Equipment will be located on site in order to reduce noise and vibration impact to identified receptors as much as possible.
- Drop heights from conveyors will be kept to the reasonably practical minimum to prevent excessive noise from falling soils.

- Where practicable, mobile plant will not be left idling when not mobile;
- All SCSJV site vehicles will use smart alarms, which use a white noise system which can only be heard over short distances. Waste vehicles will be directed around the site in such a way to minimise the necessity for reversing
- Control of working hours in line with the CoCP and Section 61 process (See Sections 6.6.3 to 6.6.13)
- Use of hoardings where practicable to do so (see section 6.6.15 to 6.6.16);
- Localised screening of plant and equipment to mitigate noise at source;
- Use of noise insulation for identified receptors (see section 6.3).
- Real time monitoring of noise and vibration at areas to be confirmed (via Section 61 consent).
- Training for the SCSJV team to ensure appropriate monitoring and response to alerts and triggers.

Working hours (Open Surface Worksites)

6.6.3 Core working hours will be as follows:

- 08:00 to 18:00 on weekdays (excluding bank holidays)
- 08:00 to 13:00 on Saturdays

6.6.4 The SCSJV and its Contractors shall adhere to the core working hours for each site as far as is reasonably practicable to do so. Hours of working for each site will be agreed through the S.61 process.

6.6.5 Except in the case of an emergency, any work required to be undertaken outside core hours (not including repairs or maintenance) shall require approval from the local authority, either under a S.61 consent or by Statement of Intent for low risk sites.

Start-up and close-down periods

6.6.6 To maximise productivity within the core hours, the SCSJV and its Contractors will adopt a start-up and close-down period for activities of up to one hour before and up to one hour after normal working hours. This period will include (but not be limited to):

- deliveries,
- movement to place of work,
- unloading,
- Non-intrusive surveys

- Site meetings and inductions
- maintenance and
- general preparation work.

6.6.7 This will not include operation of plant or machinery likely to cause a disturbance to local residents or businesses and these periods will not be considered an extension of core working hours.

Additional working hours

6.6.8 All works undertaken outside of core working hours will be agreed with the relevant local authority through an application for prior consent or via a dispensation or variation to a Section 61 consent.

6.6.9 Certain operations such as earthworks are season and weather dependent. In these instances, and where other construction methods have been explored, the SCSJV and its 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.

6.6.10 Certain other specific construction activities will require extended working hours for reasons of engineering practicability. Surveys (e.g. for wildlife or engineering purposes) may also need to be carried out outside core working hours.

6.6.11 Repairs or maintenance of construction equipment will be carried out within core working hours, or offsite where practicable. Where it these works are required to be carried out outside of core working hours this will be carried out on Saturday afternoons between 13.00 and 18.00 or Sundays between 10:00 and 17:00. Only essential repairs or maintenance works will be undertaken on Sundays.

6.6.12 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, the public or the local environment, the relevant local authority will be informed as soon as reasonably practicable of the reasons for the works and their likely duration. This information will also be made available to the HS2 helpline. Examples of the type of work envisaged include where unexpectedly poor ground conditions, encountered while excavating, require immediate stabilisation.

Abnormal deliveries

6.6.13 Abnormal loads, or those that require a police escort may be required to be delivered outside core working hours, subject to the requirements and approval of the relevant authorities.

Construction site layout and good housekeeping

6.6.14 To reduce the likelihood of noise and vibration incidents or complaints, the following control measures will be implemented by SCSJV and its Contractor:

- the use of less intrusive noise alarms that meet the particular safety requirements of the site, such as broadband reversing warnings, or proximity sensors to reduce the requirement for traditional reversing alarms;
- management of staff congregating outside the site prior to commencing or leaving work;
- avoidance of the use of loudspeaker or loudhailer devices.

Hoardings, fencing and screening

6.6.15 As part of the BPM mitigation measures identified in the Section 61 consent, the following measures will be applied, as appropriate:

- use of different types of fencing, including hoardings used for noise control;

6.6.16 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.

7 Complaints and incident management

7.1 Incident Response

7.1.1 The SCSJV has adapted its incident management procedures to align with the HS2 incident management process which, in summary includes:

- A three-tier response command structure (Gold, Silver, Bronze) to manage an incident;
- A single process for the management of all events that constitute an incident, with defined levels to help frame the response – Levels 1 to 4 (Level 1 being the most serious incidents);
- A 24 hour, 365 day Help Desk, operated by HS2, to start the co-ordination of HS2's response to an incident and to support the SCS JV where appropriate. The help desk is the first point of contact (08081 434 434) to HS2. for all Level 1 and 2 incidents on the programme; and
- An on-line incident reporting system (HORACE) that records the details of an incident and supports communications, investigation and follow-up activities to avoid a recurrence.

7.1.2 The Environmental Incident Control Plan (R5) is consistent with the requirements, definitions and terminology used in W1600: Incident Management.

Pollution Incident Control Plan

7.1.3 SCSJV will implement the Pollution Incident Control Plan, aligned with the HS2 Ltd incident management process which, in summary includes:

- a three-tier incident response command structure (Gold, Silver, Bronze) to manage an incident;
- a single process for the management of all events that constitute an incident, with defined levels to help frame the response – Levels 1 to 4, with Level 1 being the most serious incidents;
- a 24-hour, 365-day Help Desk, operated by HS2Ltd, to start the co-ordination of HS2 Ltd's response to an incident and to support the SCSJV where appropriate. The help desk is the first point of contact (08081 434 434) to HS2 Ltd. for all Level 1 and 2 incidents on the programme; and
- an online incident reporting system (HORACE) that records the details of an incident and supports communications, investigation and follow-up activities to avoid a recurrence.

Exceedance of noise and vibration trigger levels

- 7.1.4 As part of the assurance process, the SCSJV will be undertaking extensive noise and vibration monitoring throughout the duration of works. Amongst other reasons, this monitoring will be used to demonstrate compliance with the EMRs, section 61 consents and specific requirements of U&As (most notably, compliance with Trigger Action Plans prepared for the protection of certain sensitive receptors).
- 7.1.5 Long term noise and vibration monitoring (at locations to be agreed with HS2, local authorities and other stakeholders, as necessary) will be configured to provide real time access to data and allow alerts (by text, email or other means) to be sent to designated recipients when levels approach or exceed predetermined thresholds. These thresholds are will be based upon predicted noise levels within Section 61 consents or vibration thresholds for the protection of building occupants or building damage (as defined at 13.2.21 et seq. of the CoCP). Through this process any exceedance, or potential exceedance, of noise and vibration thresholds will trigger an alert and subsequent investigation.
- 7.1.6 Following the exceedance of an agreed trigger levels HS2 and the relevant local authority shall be notified within 24 hours, or as soon as practicable thereafter. SCSJV will coordinate investigation of any exceedances, with the SCSJV contractor being required to consider the immediate cause of any exceedance and, where necessary, implement suitable control measures. The Specialist NV Consultant shall provide monitoring data and interpretation to support the investigation.
- 7.1.7 The monthly noise and vibration monitoring report to be provided to HS2 will include a summary of agreed trigger level, the measured exceedance level, the likely causes of the exceedance, a description of relevant on-site activities, actions taken for verification/remediation, weather data and comparison with the baseline monitoring data recorded at prior to the start of works.

7.2 Complaints

- 7.2.1 HS2 operate the HS2 Public Help Desk 24 hours per day, 7 days a week, to manage all complaints, handle enquiries and co-ordinate incident response. The SCSJV community engagement team will maintain a 24/7 contact with the helpdesk and be available to answer any queries or liaise with site supervisors for investigation and resolution of complaints.
- 7.2.2 All complaints received will be recorded, investigated and corrective actions implemented and feedback given to the complainant. The local authority will be advised of any complaint and the actions taken to investigate the validity and, any actions which have been put in place to rectify the situation if this is found necessary. Where appropriate any noise complaint will be referred to the Site Manager for investigation to check whether all BPM are being used to control noise and vibration and to assess whether any corrective action taken was sufficient.

- 7.2.3 This will be achieved on site through the use of a complaints tracker by the Community Relations Representative (CRR). They will pass on any environmental (including noise and vibration) related complaints to the Environmental Team who will investigate the complaints and report back to the CRR to provide feedback to the complainant. The Environment Team will use the assistance of the Noise and Vibration Specialists to investigate and effectively resolve any complaints and will also keep a tracker of complaints related to noise and vibration which will be provided on a monthly basis to the appropriate local authority, the Project Manager and the HS2 Noise Specialist.
- 7.2.4 The CRR will manage and resolve complaints or enquiries directed to the Community Relations Representative from the HS2 Public Helpdesk or Project Manager, and advise of the outcome of action taken within 24 hours.
- 7.2.5 SCSJV shall respond promptly to emergencies, complaints or other contacts made via the HS2 Helpdesk or any other recognised means and if possible, the SCSJV staff shall rectify the problem directly. SCSJV cooperates with and provides information to the HS2 Community Relations Team to resolve enquiries and complaints. In all cases, the HS2 Community Relations Team and the Project Manager shall be kept fully informed of actions taken.

Response time to complaints

- 7.2.6 The following timescales will be adhered to when responding to complaints:
- Initial response to complainant by phone or email within 24 hours.
 - Written response within 5 working days unless a lengthy investigation is required. Then the response time will be extended to 5 days after completion of the investigation.
- 7.2.7 SCSJV will implement the MWCC Community Engagement Strategy, which requires the development of Local Community Engagement Plans. All community relations issues will be managed in accordance with the principles of the strategy and local plans, and be led by the Community Relations Manager in collaboration with HS2.
- 7.2.8 Section 8.1.12 contains further information regarding community notifications, and Section 7.2.1 contains further information on the handling of complaints.

8 Communication

8.1 Site Specific Environmental Control Plans

- 8.1.1 Site specific environmental control plans (**SSECP**) will set out the procedures to be followed for construction activities which will address, amongst other matters the noise and vibration control measures necessary to comply with the requirements of the EMRs and U&As. Prior to commencement of works activities, the SSECP will be approved by the Environmental Manager and briefed to the site team
- 8.1.2 The SCSJV Noise & Vibration Specialist, along with other members of the SCSJV Project team will work closely with the Contractors on a day to day basis to ensure the contract requirements are suitably addressed. Site inductions, Work Package Plans and task briefing documents will be used to communicate key noise and vibration requirements to the Contractors, as appropriate.

Communication between SCSJV and Contractors

- 8.1.3 The contents and requirements of this Noise and Vibration Management Plan (NVMP) will be communicated to the SCSJV Project team and its Contractors. Site inductions, Work Package Plans and task briefing documents will be used to communicate key noise and vibration requirements to the Contractors, as appropriate.
- 8.1.4 The SCSJV Noise & Vibration Specialist, along with other members of the SCSJV Project team will work closely with the Contractors on a day to day basis to ensure the contract requirements are suitably addressed.

Communication with HS2

- 8.1.5 The SCSJV Noise & Vibration Specialist will maintain day to day communications with counterparts in the HS2 Environment Team at both strategic and operational levels. More formal arrangements in the shape of monthly meetings will be implemented to ensure effective management of ongoing noise and vibration matters and continual improvement.
- 8.1.6 In addition, joint meetings will be held between HS2, SCSJV, relevant local authorities and other HS2 Contractors. The frequency of these meetings will be determined by the nature and extent of works.
- 8.1.7 Other formal communications will relate to deliverables, including s61 consents, noise insulation and temporary rehousing, noise and vibration monitoring reports, incident, and complaint investigation / close-out.

Local authorities

- 8.1.8 Local authorities and in particular their environmental protection teams, have a key involvement in specific noise and vibration aspects of the Area South MWCC. Local authorities will be responsible for determining prior consent for works under Section 61 of the Control of

Pollution Act, but will also have an interest in community liaison. In order to build trusted relationships, the SCSJV will undertake full and early engagement with relevant local authorities on noise and vibration related matters, including advanced discussion of proposed construction and engineering works, the methodologies and control measures to be implemented.

- 8.1.9 Joint meetings will also be held between HS2, SCSJV, the local authority and other HS2 Contractors, the frequency of which will be determined by the nature and extent of works.

Liaison with the Local Community

- 8.1.10 SCSJV will implement the MWCC Area South Community Engagement Strategy which requires the development of Local Community Engagement Plans. All community relations issues will be managed in accordance with the principles of the strategy and local plans, and be led by the Community Relations Representative in collaboration with HS2.

Community engagement

- 8.1.11 The Project Management Team recognises the importance of maintaining good relations with the local community. SCSJV will undertake frequent inspections of the site to ensure that it remains in a good state, with all housekeeping issues under control resulting in the development of a positive perception of the public in respect to the project. As part of this process SCSJV has developed an SCSJV MWCC Interface Management Plan (R6) provides details on key contract contacts and information on the local catchment area in relation to construction works.

Community notification

- 8.1.12 A proactive approach to the management of noise and vibration requires appropriate coordination with community relations activities. Local stakeholders and local authorities will be kept informed of site activities prior to and over the course of the works. A general project update of works will be sent out periodically to inform the residents and businesses in the area of upcoming works and what to expect over a 3-month period (or more, where necessary for specific stakeholders).
- 8.1.13 More locally to work sites, information will be communicated to the residents and businesses, through information sheets, including as a minimum, the start date, a site plan, nature and duration of the works, and will specify occurrences of night and weekend works, and the HS2 Ltd helpline details. Such information sheets will be distributed at least 2 weeks prior to commencement of works and will extend to a catchment area of up to 300 metres from worksites (radius of catchment may vary depending on location).
- 8.1.14 In the case of work required in response to an emergency, local residents and businesses will be advised as soon as practicable that emergency work is taking place. This will be done by the Community Relations Representative.

8.2 Training and Awareness

Project and site inductions

- 8.2.1 All staff will receive a HS2 MWCC Induction. SCSJV and HS2 staff and operatives engaged on-site will undertake a site specific health, safety and environmental management induction prior to visiting or commencing work on site.
- 8.2.2 The induction will include the main requirements of the Overarching EMP or SSECP respectively and inform staff and operatives of the main environmental risks and controls to be implemented on site. Where relevant this will include identification of specific noise and vibration risks.

Specific noise and vibration training

- 8.2.3 Where specific high noise and vibration risks are identified, site specific training modules will be delivered that are relevant to operatives' roles and responsibilities.

Start of Shift Briefings

- 8.2.4 Site Supervisors/Managers will hold daily start of shift briefings to ensure suitable coordination of site activities. Relevant noise and vibration risks and control measures identified in the Environmental Control Plans will be communicated as required.

Work Package Plans / Risk Assessment Method Statement

- 8.2.5 Having regard to the information contained in SCSJV EMPs and s61 consents, SCSJV and its Contractors will set out the procedures to be followed for construction activities in Risk Assessment Method Statements (RAMS) which will address, amongst other matters, noise and vibration control measures necessary to comply with the requirements of EMRs, U&As and s61 consents. Prior to commencement of works activities RAMSs developed by the WP Contractor will be approved by SCSJV.

Toolbox Talks

- 8.2.6 Environment related Toolbox Talks will be delivered at least once a month to highlight and maintain awareness about relevant topics. Toolbox talks will, on occasion, address key noise and vibration risks and control measures associated with certain site activities. A record of attendance at these toolbox talks will be kept and used to update the site personnel training records.

8.3 Interface

- 8.3.1 Each work site has individual sensitivities and different levels surrounding stakeholders and residents. Under stage 2 of the MWCC, construction activities are programmed to commence in late 2020, at this time SCSJV will become the Principal Contractor for the majority of the work areas where they will be undertaking activities. However, as part of the design development there are some locations where SCSJV require to work collaboratively with

- 8.3.2 Other HS2 contracts, in particular the EWC to provide access for surveys, site familiarisation and undertake the impact of overlapping scopes of works. At these worksites, liaison to implement a site-specific Interface management to facilitate an integrated approach towards the requirements of both the SCSJV and Other Employer's contractors as defined within the SCSJV Interface Management Plan (IMP) (R6) and its associated documents.
- 8.3.3 Interfacing will include the exchange of information between SCSJV and other HS2 subcontractors relating to the design process, access and egress and collaborative working.
- 8.3.4 SCSJV will also interface with third parties including, but not limited to Local Authorities, Consenting Bodies (e.g. Environment Agency) and Stakeholders. This may include, but not limited, timely updates on design progress and options, land quality management and mitigation measures.

9 Assurances

9.1 Document Review

- 9.1.1 This NVMP will be reviewed as often as is necessary to include significant changes in risk, scope of works, circumstances or personalities. As a minimum, this NVMP will be reviewed every six months and changes recorded.
- 9.1.2 The suitability of, and performance against, the LQMP will be reviewed to ensure that it remains valid and reflects the arrangements for managing current activities onsite.
- 9.1.3 Following revision, copies of amendments will be forwarded to the HS2 Project Manager for acceptance via SCSJV document control process. Once accepted by HS2 the revised EMP will be formally issued to the project sub-contractors.

9.2 Compliance Audits

- 9.2.1 The NVMP will be audited at least annually as part of the Internal Audits programmed throughout the year and detailed in the SCSJV Audit Plan (R7)

10 References

10.1.1 The following documents are client and industry related documents from which the above information is drawn or to be referred to

Table 6 Reference documents

Reference	Title	Document Number
R1	HS2 Environmental Minimum Requirements Annex 1: Code of Construction Practice	LWM-HS2-EV-STA-000-000107
R2	Local Environmental Management Plan - London Borough of Hillingdon	P1S-HS2-EV-REP-S000-000007
R3	High Speed Rail (London - West Midlands) Act 2017	http://www.legislation.gov.uk/ukpga/2017/7/contents/enacted
R4	HS2 Environmental Minimum Requirements Annex 2: Planning Memorandum	HS2-HS2-EV-STD-000-000003
R5	HS2 Environmental Minimum Requirements Annex 3: Heritage Memorandum	HS2-HS2-EV-STD-000-000001
R6	HS2 Environmental Minimum Requirements Annex 4: Environmental Memorandum	HS2-HS2-EV-STD-000-000004
R7	Register of Undertakings and Assurances	https://www.gov.uk/government/publications/high-speed-rail-london-west-midlands-bill-register-of-undertakings-and-assurances
R8	Control of Pollution Act 1974	https://www.legislation.gov.uk/ukpga/1974/40
R9	The Control of Noise (Code of Practice for Construction and Open Sites) (England) Order 2015	https://www.legislation.gov.uk/uksi/2015/227/made?view=plain
R10	The Environmental Protection Act 1990	https://www.legislation.gov.uk/ukpga/1990/43/contents
R11	The Noise Insulation (Railways and Other Guided Transport Systems) Regulations 1995	http://www.legislation.gov.uk/uksi/1996/428/contents/made
R12	High Speed Two Information Paper E23: Control of Construction Noise and Vibration	LWM-HS2-HY-PPR-000-000057
R13	Code of practice for noise and vibration control on construction and open sites –Part 1: Noise	BS 5228-1:2009+A1:2014
R14	Code of practice for noise and vibration control on construction and open sites –Part 2: Vibration	BS 5228-2:2009+A1:2014

Appendix A1 - Undertakings and Assurances

The following U&As have been identified as being applicable to this discipline topic and will be managed through the mitigations detailed in this management plan.

Reference	To Whom	Detail
U&A_9554	General	The Promoter will ensure that all noise mitigation measures, both at Sedrup and elsewhere along the line of route, are designed in a manner that is sensitive to the local area.
U&A_9524	General	The Promoter has committed to minimising impacts at residential properties and their external amenity spaces, in accordance with Planning Practice Guidance. The lead contractors' Environmental Management System will include measures and processes for managing noise and vibration during construction, including any steps that would be taken when measured levels are greater than predicted.
U&A_9522	General	The Promoter can confirm that it will conduct an assessment of compliance with noise thresholds six months after the start of main construction works. Furthermore, the Promoter will commence a survey within six months of the start of the works to consider health impacts experienced by residents that are attributed to noise from the construction of HS2. The results of this latter survey may be used to review the criteria of noise mitigation, noise thresholds and construction hours.

Appendix A2 - Noise Aspects and Impacts Register

The Asset Specific Aspects Register represents an overview of the typical environmental risks associated with the operation of the permit										
Operation	Environmental Aspect (Activity)	Environmental Impact	Category	Significance (before management)			Management (reference to site Management Plan, Method Statement or RAMS)	Revised Significance (managed)		
				Severity	Likelihood	Risk		Severity	Likelihood	Risk
2. Site Mobilisation										
Site set up	Construction of site infrastructure, location of Plant, Equipment etc..	Nuisance - noise and vibration	Nuisance	-2	2	-4	Refer to Section 5 (specifically 5.3.11 to 5.3.30)	-2	1	-2
Site set up	Site traffic access and egressing site causing nuisance to local stakeholders	Noise and vibration generation causing disruption to	Nuisance, traffic and transport	-3	2	-9	Refer to Section 5 (specifically 5.3.11 to 5.3.30)	-3	2	-6

		residents, causing disruption to traffic and transport.								
Plant and equipment	Delivery and movement of oversize plant and equipment.	nuisance to local residents	noise and vibration, traffic	-4	3	-12	Refer to Section 5 (specifically 5.3.11 to 5.3.30)	-4	2	-8
3. Site Activities										
Material transfer	Arrival to site, inspection at gate, travel to working area and site egress.	Disruption of local residents	noise and vibration, traffic	-4	3	-12	Refer to Section 5 (specifically 5.3.11 to 5.3.30)	-4	2	-8
Traffic	Traffic Management	Nuisance to residents	Traffic, noise	-3	3	-9	Refer to Section 5 (specifically 5.3.11 to 5.3.30)	-3	2	-6

Plant and equipment - maintenance and use	Movement of mobile plant. Audible reversing warnings on vehicles	Noise nuisance	Noise and vibration	-2	2	-4	Refer to Section 5 (specifically 5.3.11 to 5.3.30)	-2	1	-2
Plant and equipment	Unplanned repair of maintenance of plant and equipment.	nuisance to local residents	noise and vibration	-3	2	-6	Refer to Section 5 (specifically 5.3.11 to 5.3.30)	-3	1	-3

Appendix B - Drawings

Title	Reference
Drawing D-ESSD 3 – Cultural and Heritage	Drawing D-ESSD 3 – Cultural and Heritage
Drawing D-ESSD6 – Receptors and Pathways	Drawing D-ESSD6 – Receptors and Pathways

Appendix C - RNSP Site Specific Noise Impact Assessment