

1EW02 Enabling Works – Area South Land Quality Management Plan

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STAKEHOLDER REVIEW REQUIRED (SRR)

- COUNTY/DISTRICT/LONDON BOROUGH COUNCIL
- LOV
- LUL
- NRL
- TFL
- UTILITIES COMPANY
- OTHER

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PURPOSE OF SRR

- ACCEPTANCE
- APPROVAL
- NO OBJECTION
- CONSENT

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REVISION CHANGES, AUTHORISATION & ISSUE RECORD

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List of Abbreviations

Abbreviation	Definition
CL:AIRE	Contaminated Land: Applications in Real Environments
CLEA	Contaminated Land Exposure Assessment
CLR11	Contaminated Land Report 11: Model Procedures for the Management of Contaminated Land
CLO	Contaminated Land Officer
CMO	Contract Management Organisation
CoC	Contaminant(s) of Concern
CSM	Conceptual Site Model
CoCP	HS2 Code of Construction Practice
CSjv	Costain Skanska joint venture
C4SL	Category 4 Screening Levels
DWS	Drinking Water Standards
DQRA	Detailed Quantitative Risk Assessment
EA	Environment Agency
EMP	Environmental Management Plan
EMR	Environmental Minimum Requirements
EMS	Environmental Management System
EPA	Environmental Protection Act
EQS	Environmental Quality Standards
EWC	Enabling Works Contract
GQRA	Generic Quantitative Risk Assessment
HS2	High Speed Two
LA	Local Authority
LEMP	Local Environmental Management Plan
LQMP	Land Quality Management Plan
LQ	Land Quality
PAoC	Potential Areas of Concern
ROA	Remediation Options Appraisal
SiLC	Specialist in Land Contamination
SGV	Soil Guideline Values
SoBRA	Society of Brownfield Risk Assessment
SQP	Suitably Qualified Person
SSAC	Site Specific Assessment Criteria
SuRF UK	Sustainable Remediation Framework
U&A	Undertakings and Assurances
UXO	Unexploded Ordnance
WP	Work Package
WPP	Work Package Plan

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1 Introduction

1.1 Purpose of the Land Quality Management Plan

1.1.1 The Area South Land Quality Management Plan (LQMP) details how the Costain-Skanska Joint Venture (CSjv) and its supply chain will deliver the land quality management requirements of the High Speed 2 (HS2) Area South Enabling Works Contract (EWC). It details how potential contaminated land impacts and effects of the Area South EWC will be managed in accordance with relevant legislation, regulations and HS2 Ltd Project Requirements Specification. It will be reviewed and updated every 6 months, or in the event of a significant change to the works by the CMO.

1.1.2 The LQMP defines;

- Roles and responsibilities at CMO and Works Package level;
- Environmental Management Systems & key CSjv Documents;
- Requirements and Obligations;
- Consultations and Consents;
- Land Quality Management (Framework for Assessment);
- Communication;
- Reporting (including data management); and
- Assurance (audit, quality and competency) procedures.

1.2 Roles and Responsibilities

1.2.1 There are three key parts to the CSjv organisational structure critical to the delivery of the land quality management requirements of the Area South EWC:

- Contract Management Organisation (CMO); (Role: Assurance - CSjv Environment Team, Land Quality Specialist (LQS));
- Work Package Contractor(s) 1; (Role: Delivery - typically demolition and construction contractors, civils contractors); and
- Work Package Consultant(s) 2, (Role: Specialist Support - Land Quality Consultant (LQC) working across the Area South EWC). Note: For specific ground remediation work packages (e.g. Old Oak Common) this role may be delivered by the WP Contractor 1.

- 1.2.2 Throughout the document the land quality management roles and responsibilities have been explicitly defined within tables at key stages of the project; or specific land quality related activities or deliverables of the project.
- 1.2.3 The overarching land quality management roles of each organisational part are summarised below in Table 2.1.

Table 2.1: CSJV Overarching Land Quality Management Organisational Roles and Responsibilities

CSJV (Assurance)	WP Contractor 1 (Delivery)	WP Consultant 2 (Specialist Support)
CSJV Environment Team, Land Quality Specialist (Area Wide) & Work Package Specialist	Demolition, Remediation and Construction Contractors	Specialist Land Quality Consultant (area wide)
<p>Overall assurance, audit and inspection of Area South EWC work packages.</p> <p>Ensuring WP Contractors and WP Consultants have the required competence and resources and that they are suitably deployed for the successful delivery of the land quality management project requirements</p> <p>Review and assurance of land quality data and reports produced by the WP Consultant 2</p> <p>Provide Specialist training to WP Contractors (Delivery).</p>	<p>Implementation and delivery of the work package with due regard to the land quality management project requirements of the Area South EWC.</p> <p>Implementation of control measures across site to protect water and soil resources and minimise the risk of contamination.</p> <p>Undertake consultation with statutory consultees and stakeholders where bespoke permits, licences or agreements are required to undertake land quality assessment and remediation works.</p>	<p>Provision of specialist land contamination support to the Area South EWC.</p> <p>Liaison with statutory consultees.</p> <p>Undertake Land Quality Risk Assessments and provide design support to the WP Contractor 1 in accordance with CLR11 procedures.</p> <p>Verification of works undertaken by the WP Contractor 1.</p>

- 1.2.4 The overarching environmental management roles, responsibilities and competencies of key individuals are detailed in the Area South EMP. Specialist Land Quality related individual roles within the CMO (CSJV), WP Contractors, and WP Consultants are defined in Tables 2.2, 2.3 and 2.4 respectively below.

Table 2.2 - Key CSJV Land Quality Roles and Responsibilities

Role	Summary of responsibilities with respect to the Package Management Plan	Competency
CMO Land Quality Specialist	<p>Provide area-wide advice and guidance on land contamination related matters to ensure work packages are delivered in accordance with the requirements of the Area South LQMP.</p> <p>Lead implementation of the LQMP in all relevant work packages.</p> <p>Support the development of WP EMP's drafted by CSJV Environmental Manager.</p>	<p>Essential</p> <p>Experience in land quality assessment (contaminated land) on major infrastructure / construction projects including site management experience.</p> <p>Minimum Level 4 (technical) of National Brownfield Skills Framework - e.g Chartered Member of a relevant professional body (C Env, SiLC, SoBRA, SQP) or equivalent.</p>

	<p>Responsible for assurance and overseeing compliance of construction works with HS2 works information, EMRs and technical standards relevant to land quality.</p> <p>Engage with relevant local authorities on all Area South EWC land quality related matters.</p> <p>Carry out inspections and audits to ensure best practice is being employed on all work packages /sites.</p> <p>Identify and share land quality related innovations and best practices across all Area South EWC work packages and with HS2</p>	<p>Qualified to degree level in an Environmental / Contaminated Land related discipline.</p>
<p>CMO Land Quality Work Package Specialist (requirement for this role to be determined dependant on duration and complexity of works).</p>	<p>Provide Work Package Area advice and guidance on land contamination related matters, to ensure the work package is delivered in accordance with the requirements of the Area South LQMP.</p> <p>Support the Land Quality Specialist in the implementation of the LQMP for a defined work package area.</p> <p>Contribute to the development of WP EMP drafted by CSjv Environmental Manager.</p> <p>Support the Land Quality Specialist in the assurance and compliance of construction works with HS2 works information, EMRs and technical standards relevant to land quality.</p> <p>Communicate land quality risks and requirements to WP Contractors.</p>	<p>Essential</p> <p>Experience in land quality assessment (contaminated land) on major infrastructure / construction projects including site management experience.</p> <p>Minimum Level 4 (technical) of National Brownfield Skills Framework - e.g Chartered Member of a relevant professional body (C Env, SiLC, SoBRA, SQP) or equivalent.</p> <p>Qualified to degree level in an Environmental / Contaminated Land related discipline.</p>

Table 2.3 -Key WP Contractor Roles and Responsibilities

Role	Responsibility	Competency
<p>WP Contractor Project Manager</p>	<p>Ensure adequate on-site resourcing and competency to ensure the delivery of the Work Package environmental requirements as detailed in the WP EMP and LQMP.</p> <p>Engage with the CSjv Environment Team prior to and during work package delivery to ensure environmental requirements of the WP EMP are delivered.</p> <p>Implementation of land quality assessment (site investigation) and remediation works in accordance with all relevant legislation and technical standards.</p>	<p>Essential</p> <p>Site Environmental Awareness Training Scheme (SEATS) within last 5 years</p> <p>Experience of land quality management on major infrastructure / construction projects including site experience.</p>
<p>WP Contractor Environmental</p>	<p>Engage with the CSjv Environment Team prior to and during work package delivery to</p>	<p>Essential</p>

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<p>Manager /Advisor</p>	<p>ensure environmental requirements of the WP EMP are delivered.</p> <p>Provide on-site support to the site Work Package team through site inspections, identification and delivery of environmental awareness training.</p> <p>Identify and implement general and specific deliverables specified in the Area South LQMP.</p>	<p>Associate Member of the Institute of Environmental Management and Assessment (AIEMA) (or equivalent).</p> <p>Experience in environmental management on major infrastructure / construction projects including site investigation and activity specific experience e.g. remediation.</p>
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Table 2.4 - Key WP Support LQ Consultant Roles and Responsibilities

Role	Responsibility	Competency
<p>WP Consultant-Principal Land Quality Consultant</p>	<p>Project manage the delivery of risk assessments, investigations and remediation strategies necessary as per the LQMP and CLR11 (Model Procedures for the Management of Contaminated Land).</p> <p>Support the delivery of the requirements of the Area South LQMP.</p> <p>Authority to sign reports for QA/QC purposes.</p>	<p>Essential</p> <p>Qualified to Degree level in environment management/ assessment related discipline.</p> <p>Experience in land quality management on major infrastructure / construction projects including site experience.</p> <p>Minimum Level 4 (technical) of National Brownfield Skills Framework - e.g Chartered Member of a relevant professional body (C Env, SiLC, SoBRA, SQP) or equivalent.</p>
<p>WP Consultant-Senior Land Quality Consultant</p>	<p>Implement the procedures as per CLR11 to manage land contamination and ensure that environmental impacts are mitigated.</p>	<p>Essential</p> <p>Qualified to Degree level in environment management/ assessment related discipline.</p> <p>Experience in land quality management on major infrastructure / construction projects including site experience.</p> <p>Minimum Level 3 (technical) of National Brownfield Skills Framework.</p>

1.3 Environmental Management Systems (EMS)

- 1.3.1 CSjv aims to deliver the Area South EWC in a manner that protects the environment by preventing or mitigating adverse land quality impacts whilst maximising the opportunities to enhance the environment and contribute to sustainable development in accordance with the HS2 Environmental Policy (HS2-HS2-EV-POL-000-000024) and Costain-Skanska's Environmental Policy, see Area South EMP (1EW02-CSJ-EV-PLN-S000-000001).
- 1.3.2 CSjv, WP Contractor and WP Consultant will comply with the requirements of the Costain Group Environmental Management System (EMS) which is certified to ISO14001: 2015 and has been adopted and will be made bespoke for the Area South EWC. The LQMP forms a constituent part of the project EMS.

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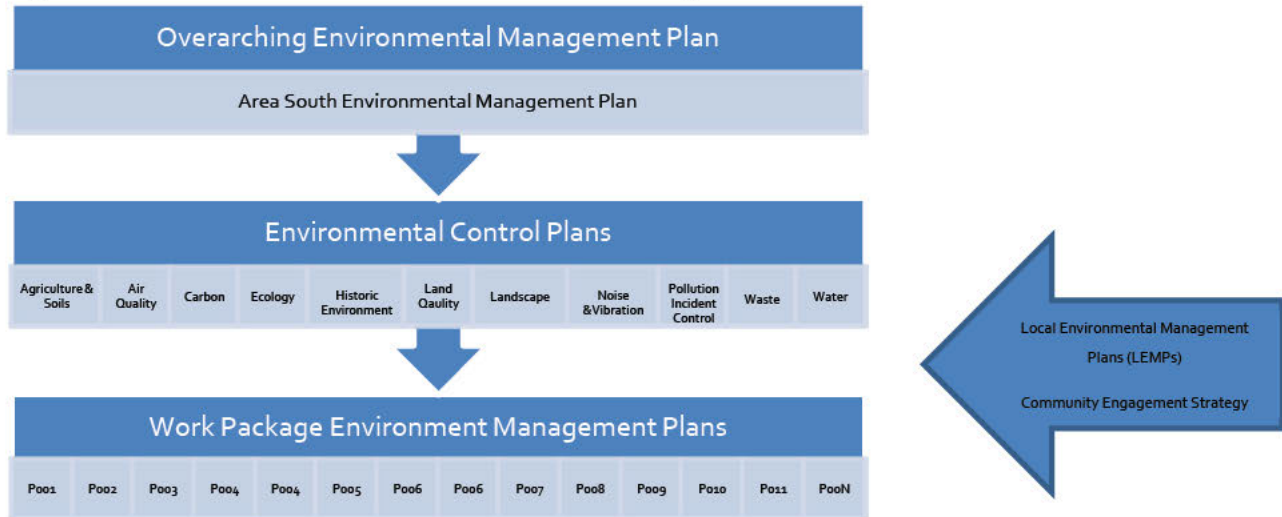
1.4 Links to other Management Documents

1.4.1 The LQMP is not a standalone document and must be read in conjunction with the:

- Area South EMP (1EW02-CSJ-EV-PLN-S000-000001);
- Local Environmental Management Plans (LEMPs) (x7 in Area South);
- Area South Pollution Incident Control Plan (1EW02-CSJ-EV-PLN-S000-000009); and
- Area South Community Engagement Strategy (1EW02-CSJ-SE-STR-S000-000001).

1.4.2 The LQMP and Area South EMP are to be applied across the Area South and used to inform and produce the Work Package EMPs which are tailored to address site specific environmental requirements.

Figure 2.1 Links between Area South Environmental Management Documentation



Area South Environmental Management Plan

1.4.3 This LQMP has been produced by the CSJv in support of the Area South EMP and to inform each of the WP EMPs as required. This LQMP sets out the land quality specific management measures to be considered and where relevant, applied area wide and to each of the work packages. The Area South EMP details how CSJv and its supply chain will deliver the environmental and sustainability requirements of the Area South EWC.

Local Environmental Management Plan (LEMP)

1.4.4 All local authorities have been issued with LEMPs. These will be reviewed and updated every 6 months, or in the event of a significant change to the works by the CMO. The LEMPs focus on the area specific sensitive receptors, local control measures; and monitoring procedures by topic (including land quality) as relevant to construction works within the relevant local authority area. The measures described will be applied by CSJv for the duration of the Area South EWC to reduce the potential environmental and community.

1.4.5 The relevant LEMPs for the Area South EWC cover the following local authority areas:

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- London Borough of Camden (P1S-HS2-EV-REP-S000-000006);
- London Borough of Hammersmith and Fulham (P1S-HS2-EV-REP-S000-000005);
- London Borough of Brent (P1S-HS2-EV-REP-S000-000002);
- London Borough of Ealing (P1S-HS2-EV-REP-S000-000004);
- City of Westminster (P1S-HS2-EV-REP-S000-000003);
- London Borough of Hillingdon (P1S-HS2-EV-REP-S000-000007); and
- Royal Borough of Kensington and Chelsea (P1S-HS2-EV-REP-S000-000008).

Work Package Environmental Management Plan (WP EMP)

- 1.4.6 The WP EMPs shall include measures to address and manage work package site specific and local environmental risks and opportunities.
- 1.4.7 The development of each WP EMP will be informed by the:
- Area South EMP;
 - Relevant Environmental Management Plans including the LQMP;
 - Health Hazard Evaluation Risk Assessment; and
 - LEMPs.
- 1.4.8 The roles and responsibilities of each part of the CSJv structure with respect to WP EMPs are defined in table 2.5 below.

Table 2.5 - LQ Roles and Responsibilities relating to WP EMP's

CSJv (CMO)	WP Contractor 1	WP Consultant 2
CSJv Environment Team, Land Quality Specialist (Area Wide) & Work Package Specialist	Demolition, Remediation and Construction Contractors	Specialist Land Quality Consultant (area wide)
Identification of significant aspects and impacts associated with the work package. Production of the draft WP EMP. Communication of the land quality management related requirements of the WP EMP to the WP Contractor(s). Production of final draft of the WP EMP in collaboration with the WP Contractor. Assurance and audit of the implementation of work package specific land quality related WP EMP requirements.	Review of Draft WP EMP and contribute to the final draft WP EMP. Implementation of the WP EMP relating to implementing CLR11 procedures. Implement procedures as per LQMP and CLR11 to manage, through assessment and remediation, any land contamination issues on the WP sites.	Support the WP Contractor in implementation of the WP EMP relating to implementing CLR11 procedures.

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2 Requirements & Obligations

2.1 Introduction

The HS2 Land Quality Technical Standard (HS2-HS2-EV--STR-000-000027) sets out the key policy and legislative drivers for the management of land quality relevant across Phase One HS2 route.

2.2 Land Quality Management in the Area South EWC

2.2.1 The HS2 Phase 1 Information Paper E7: Land Quality (Contamination) outlines HS2's approach to the assessment and treatment of contaminated land affected by Phase 1 of the proposed scheme. This identifies two distinct stages which are, management during design and management during construction. With reference to CLR¹¹, these stages comprise the following tasks;

Management during design

2.2.2 The Land Quality assessment process at this stage follows the sequence of preliminary risk assessment, site investigation, quantitative risk assessment, options appraisal and remediation design (strategy).

2.2.3 At each stage of the assessment, a project milestone shall be included within the process to determine whether or not the assessment advances to the next phase.

2.2.4 If remediation is required, the Remediation Strategy must be integrated within the design of construction works. It is expected that the enabling works design and construction programme will have a significant influence over the selection of remediation strategy. As such, a high degree of co-operation and communication shall be necessary between the various stakeholders involved.

Management during construction

2.2.5 It is expected that remediation (if required) will be undertaken prior to, or during construction. During the implementation of remedial works, the Contractor will be responsible for recording their works, the Consultant will be responsible for verifying the works, and CSJv will inspect and assure the works.

2.2.6 Throughout the construction process, the Work Package Contractor shall be required to treat any unexpected contamination encountered during the works.

2.2.7 All Work Package areas where ground disturbance works will be undertaken shall have a plan in place to deal with unexpected contamination if encountered.

2.3 Legislation, Guidance and Standards

- 2.3.1 The Costain EMS (adopted for the HS2 Area South EWC) includes a legal register which is a live document maintained by the Costain corporate head office. The Area South EWC Aspects and Impacts Register (1EW02-CSJ-EV-REG-S000-000002) identifies which sections of the legal register are applicable to this project and these are shown in the HS2 Area South Legal Register (1EW02-CSJ-LE-REG-S000-000001).

Environmental Protection Act 1990 - Part 2a Contaminated Land Statutory Guidance (2012)

- 2.3.2 HS2 Land Quality Technical Standard states that the Environmental Protection Act 1990, Part 2a Contaminated Land Statutory Guidance (2012), takes precedence over all other documents.
- 2.3.3 This legislation provides a legal framework for identifying and remediating land that poses a significant risk to health or the environment. It also works alongside planning rules to help ensure that land is made suitable for use following redevelopment.

Pollution Prevention and Control Act 1999

- 2.3.4 The Pollution Prevention & Control Act 1999 and Environmental Permitting (England and Wales Regulations) 2010 which together govern the Environment Agency Integrated Pollution Prevention and Control and Local Authority Pollution Prevention and Control.
- 2.3.5 Land quality related construction (remediation) activities which will fall within environmental permitting requirements will include onsite waste treatment and recovery operations (mobile plant deployment licences).
- 2.3.6 Reference will also need to be made to Noise and Vibration and Air Quality Management Plans when managing the operation of mobile plant.

High Speed Rail (London - West Midlands) Act 2017

- 2.3.7 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 including its Environmental Minimum Requirements (EMRs).
- 2.3.8 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);
 - Annex 2: Planning Memorandum;
 - Annex 3: Heritage Memorandum; and
 - Annex 4: Environmental Memorandum.

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Code of Construction Practice (CoCP)

- 2.3.9 The CoCP details a range of control measures and the standards to be implemented during construction works across Area South (and all of Phase 1 Areas) to protect communities and the environment.
- 2.3.10 Section 11 of the CoCP stipulates the land quality management controls necessary to assess and potentially undertake remediation of contaminated land.
- 2.3.11 The CoCP makes reference to key land quality related HS2 documentation and industry good practice guidance:
 - CLR11 - Model Procedures for Management of Land Contamination (2004);
 - Sustainable Remediation Forum (SuRF): Framework for Assessing the Sustainability of Soil and Groundwater Remediation, CL:AIRE (2010);
 - Technical Standard - Land Quality (HS2-HS2-EV-STR-000-000027);
 - Strategy – Construction, Demolition and Excavation Waste Strategy (HS2-HS2-EV- STR-000-000004);
 - Technical Standard – Materials Management Plan Framework (HS2-HS2-EV-STD-000-000006); and
 - Technical Standard – Earthworks (HS2-HS2-GT-STD-000-000001).

Table 3.1 LQ Roles and Responsibilities relating to the CoCP

CSjv (CMO)	WP Contractor 1	WP Consultant 2
<p>Communication of the land quality management related requirements in the CoCP to the WP Contractor(s) and WP Consultants using the WP EMPs and LQMP.</p> <p>Assurance and audit of the implementation of area-wide and work package specific land quality management related to the CoCP.</p>	<p>Implementation of requirements of the CoCP in relation to land quality commitments.</p>	<p>Implementation of requirements of the CoCP in relation to land quality commitments.</p>

Undertakings and Assurances

- 2.3.12 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. A review of the register has been completed, and there are no land quality related U&As within the Area South EWC.

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2.4 HS2 Technical Standards

- 2.4.1 CSjv will ensure that all works relating to land contamination and remediation will be managed by the Contractor in accordance with the requirements of the High Speed Two Technical Standard, Land Quality (HS2-HS2-EV-STR-000-0000027), High Speed Two, Information Paper, E7: Land Quality (Contamination); COCP, section 11 and CLR11 - Model Procedures for Management of Land Contamination.
- 2.4.2 HS2 Technical Standard - Land Quality, states that 'when assessing sites through the CLR11 process, every effort shall be made to show where it is possible that sites are not contaminated, rather than that they are'.
- 2.4.3 Land contamination risk assessments and remediation techniques will be managed in accordance with Model Procedures for Management of Land Contamination (CLR11).
- 2.4.4 The assessment and remediation design works shall adopt the use of SuRF-UK 'Framework for Assessing the Sustainability of Soil and Groundwater Remediation', CL:AIRE (2010).
- 2.4.5 Where contamination is suspected on adoptable highway land, or for any new adoptable highway elements of the Proposed Scheme, the requirements of HA73/95 (Site Investigation for Highway Works on Contaminated Land) shall be implemented.

Table 3.2 LQ Roles and Responsibilities relating to Technical Standards

CSjv (CMO)	WP Contractor 1	WP Consultant 2
<p>Communication of the requirements of the Technical Standards to the WP Contractor(s) and WP Consultants using the WP EMPs and LQMP.</p> <p>Assurance and audit of the implementation of area-wide and work package specific land quality management requirements of the Technical Standards and report to HS2 Ltd.</p>	<p>Implementation of requirements of the Technical Standard</p>	<p>Implementation of requirements of the Technical Standard</p>

BREEAM Infrastructure

- 2.4.6 The design, construction and operation of the HS2 scheme will evaluate its environmental performance and attain a rating against the standards set out within the BREEAM New Construction: Infrastructure scheme (HS2-BRE-SU-GDE-000-000004). The BREEAM assessment for design and construction is to be sought by the High Speed 2 (HS2) Area South Main Works Contract (MWCC), taking into consideration the design and construction activities associated with the Enabling Works Contract (EWC).
- 2.4.7 In order to encourage the appropriate use of land affected by contamination and to promote sustainable land and groundwater remediation, the BREEAM New Construction: Infrastructure scheme identifies credits and necessary standards within section LUE03 Remediation of Land Contamination. There are no strategic assessment credits available, however there are two

credits available as part of the project detailed assessment. The scope of the BREEAM assessment for EWC will therefore relate to the project detail assessment for construction, including the Pre-requisite and the 1 (one) credit for verification of site investigation and risk assessment and 1 (one) credit for sustainable remediation.

2.4.8 Project detail assessment criteria relating to this scope, include:

- Prerequisite - Land contamination site investigation and risk assessment
- One credit - Verification of site investigation and risk assessment
- One credit - Sustainable remediation

2.4.9 Specific requirements under these criteria (which are elucidated further through a series of Compliance Notes within the BREEAM New Construction: Infrastructure Technical Manual) are detailed below:

Table 3.3 BREEAM Infrastructure - Project Detail Assessment Criteria

LUE 03 - Remediation of Land Contamination - Project Detail Assessment Criteria
<p>This stage of the issue is split into three parts:</p> <ul style="list-style-type: none"> Land contamination site investigation and risk assessment (prerequisite) Verification of site investigation and risk assessment (one credit) Sustainable remediation (one credit) <p>The following is required to demonstrate compliance:</p> <p>Prerequisite - Land Contamination site investigation and risk assessment</p> <p>1 - An appropriate site investigation and risk assessment has been undertaken which shows that land within the site is 'land affected by contamination' (refer to CN1).</p> <p>One credit - Verification of site investigation and risk assessment</p> <p>2 - Criterion 1 is achieved.</p> <p>3 - A land contamination specialist (see relevant definitions) verifies the site investigation and risk assessment (refer to CN1 and CN2).</p> <p>One credit - Sustainable remediation</p> <p>4 - Criterion 1 is achieved.</p> <p>5 - A land contamination specialist verifies that the remediation techniques used in the project are the most sustainable solutions based on an appropriate assessment of the sustainability of potential remediation options for the project (refer to CN3).</p>

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2.5 Consultation and Consents

- 2.5.1 At any stage in the Land Quality Assessment process where regulatory consultation is required in order to determine the appropriate next steps or gain tacit approval of a proposed scheme of remediation, this shall only be undertaken with the prior approval of HS2 and CSjv.
- 2.5.2 Consents and agreements associated with the assessment of contaminated land and remediation design shall be progressed by the CMO and/or the WP Consultant 2 undertaking the works, depending on the contractual and programme requirements stated in the Work Package Brief.
- 2.5.3 All bespoke licences, consents and permits required for remedial activities undertaken during the construction phase (such as asbestos and mobile deployment licences) shall be applied for by, and held in the name of the Work Package Contractor undertaking the works.

Table 3.3 LQ Roles and Responsibilities relating to Consents, Licences & Agreements

CSjv (CMO)	WP Contractor 1	WP Consultant 2
The CSjv LQ Specialist shall obtain all consents and agreements associated with the assessment of contaminated land and remediation design.	The WP Contractor (1) shall obtain any bespoke permits, licences or agreements required to undertake land quality assessment and remediation works.	Depending on the contractual and programme requirements stated in the Work Package Brief, the responsibility for obtaining consents and agreements associated with the assessment of contaminated land and remediation design maybe delegated by CSjv to the WP Consultant (2).

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3 Land Quality Management

3.1 Introduction

- 3.1.1 Within the Area South EWC, a significant number of Work Package sites will be located on previously developed land, and as such will have the potential for contamination to be present. As part of the Work Package Plan (and ITT), CSjv will undertake an assessment of land quality, and implement via its supply chain, appropriate mitigation (if required), in accordance with the requirements of CLR11.
- 3.1.2 The HS2 Environmental Statement identified a number of sites within Area South EWC which pose a potential risk from contamination, and to date HS2 have instructed preliminary assessment works within some of these areas. These sites, along with others which have not yet been assessed, will require further investigation as part of the EWC in order to establish the extent of any remediation works required. The design of these assessment works will need to include a high degree of co-ordination with other stakeholders in order to deliver a remediation design which meets the overall construction programme and objectives.
- 3.1.3 The HS2 CoCP prescribes a host of control measures which shall be implemented in order to mitigate the potential risks from contaminated land to the environment and controlled waters. Details of these measures are given in sections 11 and 16 of the CoCP. Each work package or cluster of sites will have their own site specific WP EMP to encompass key land quality related risks and opportunities and shall demonstrate how the work package plans will implement the requirements of the CoCP to mitigate environmental impacts.

3.2 HS2 Land Quality Management & CLR11 (Model Procedures)

- 3.2.1 The process of Land Quality Management as defined in the HS2, Information Paper, E7: Land Quality (Contamination), will follow the flow chart presented as Appendix 1. The flowchart describes the process of managing risk from contamination, in accordance with the CLR11 sequence of works (as well as specific HS2 and CSjv project requirements) and defines the assurance procedure for each work stage output.
- 3.2.2 The assessment and mitigation of potentially contaminated land will vary for each Work Package depending on a range of factors, such as previous use, surrounding land use and the environmental setting of the site(s). It is necessary therefore to have a risk-based framework (such as CLR11) which is flexible enough to accommodate both simple and complex sites.
- 3.2.3 The deliverables required, which reflect the steps in CLR11, are defined in section 5 of HS2 Technical Standard - Land Quality. The stage at which these are produced, and the responsibilities of the various parties in relation to these deliverables is described below.
- 3.2.4 The HS2 Land Quality Information Paper refers to the CLR11 process in defined stages in relation to the overall project lifecycle. These include pre-appointment, pre-construction and commencement stages, as follows;

3.3 Pre-Appointment

WP Contractor / WP Consultant Competence & Resourcing

3.3.2 During the project procurement stage it is essential to ensure that the WP Contractor (1) and WP Consultant (2) have the required competency in terms of both qualifications and experience as well as resourcing levels in order to successfully deliver the land quality management requirements of the Area South EWC.

Table 4.1 LQ Roles and Responsibilities during the Work Package Procurement Stage

CSjv (CMO)	WP Contractor 1	WP Consultant 2
Provision of Environment and Sustainability (E&S) specific Invitation to Tender (ITT) Information Pack. Information Pack to include specific reference to land quality requirements contained within Information Paper E7; CoCP and the land quality Technical Standard. Provision of an E&S Questionnaire to accompany ITT for completion by potential WP Contractors and WP Consultants. Ensure the appointed WP Contractor(s) and WP Consultant(s) meet the appropriate competency and can meet the resourcing needs to deliver contract WP requirements.	Demonstration of broad environmental and sustainability competence at the individual and organisational level and commitment to suitable levels of resourcing to manage land quality requirements of the contract (Competence Requirements are defined in table 2.3 of this report, and further details of the assessment process are given in Appendix 2).	Demonstration of specialist land quality competency at both the individual and organisational level. (Competence Requirements are defined in table 2.4 of this report, and further details of the assessment process are given in Appendix 2).

3.4 Pre-Commencement (Management during Design)

Phase 1a - Existing Data Review and Gap Analysis

3.4.2 Existing information shall be reviewed by the Land Quality Consultants (WP Consultant 2) to provide an early indication of the potential for contamination to be present on Work Package Sites, and to identify any data gaps. This will determine whether Work Package areas (or individual sites within WP areas) have the potential to be contaminated and require further assessment, or whether there is sufficient information to demonstrate that no further assessment is required.

3.4.3 If the data review determines that a site is suitable for use in its present condition then, subject to consultation with HS2 and the Regulatory Authorities, analysis may stop at this point and no further assessment shall be required.

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Table 4.2 LQ Roles and Responsibilities at the Data Review and Gap Analysis Stage

CSjv (CMO)	WP Contractor 1	WP Consultant 2
Review of initial Work Package Strategy. Completion of initial screening assessment for all works packages and submission to HS2. Regular review of the scope and number of work packages. Assurance of WP Consultant report deliverables. Determine requirements for, and scope of subsequent works (if required).	n/a.	Completion of data review and gap analysis report.

Phase 1b - Preliminary Risk Assessment

3.4.4 If the Data Review identifies a requirement for further assessment, or if there is sufficient information to determine the Land Quality condition of a Work Package area, then a Preliminary Risk Assessment (PRA) shall be undertaken.

3.4.5 The PRA will comprise site reconnaissance, establish the context and objectives for the risk assessment, an outline Conceptual Site Model (CSM) and identification of any Potential Areas of Concern (PAoC). Regulatory and Stakeholder consultation will also be undertaken. This will then inform what if any, further assessment is required.

If following completion of this assessment, there is still uncertainty with respect to soil and groundwater quality, or if potentially unacceptable risks have been identified then the works shall progress to generic quantitative risk assessment (GQRA) and site investigation.

Table 4.3 LQ Roles and Responsibilities during the Preliminary Risk Assessment Stage

CSjv (CMO)	WP Contractor 1	WP Consultant 2
Arrange Site Access for Walkover. Review work package plan(s) to determine scheme requirements, and inform CSM. Facilitate liaison between WP Consultants and EWC Design Team. Assurance of WP Consultant report deliverables. Determine requirements for, and scope of subsequent works (if required).	n/a.	Complete Site Walkover. Regulatory Consultation. Complete PRA, including QRA and CSM.

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Phase 2 - Detailed Site Assessment

Site Investigation

- 3.4.6 Where the need has been identified through the Phase 1 Preliminary Risk, Phase 2: Site Assessment work will be progressed. The main activities, standards, reports, quality assurance and quality control procedures and inter-disciplinary/third party liaison that will form Phase 2: Site Assessment and their interrelationships are summarised in the flow chart in Appendix 1. The Site Assessment will be carried out in accordance with the principles outlined in CLR11.
- 3.4.7 As can be seen in the flow chart in Appendix 1 the activities within Phase 2 may include, where a risk has been identified in Phase 1, additional surveys for UXO, archaeology and invasive plant species. These interrelated surveys are likely to be required to satisfy other facets of the EWC and effective management will be required to allow co-ordination and eliminate the potential for duplication or conflict.
- 3.4.8 The site assessment shall be carried out on a site-by-site basis and, therefore, specific investigation design will be required for each site, based on previously identified, or suspected soil and/or groundwater risks. The site investigation design will require liaison with a number of related disciplines which, depending on risks identified, will include ecology, archaeology and hydrology and hydrogeology disciplines. Early engagement with relevant disciplines will allow determination of investigation constraints and re-design where necessary.
- 3.4.9 Works shall be undertaken in accordance with the requirements set out in HS2 document, Schedule 1 Specification for Ground Investigation (HS2-HS2-GT-SPE-000-000001), which shall be designed and specified by the Land Quality Consultant(s). The investigation design shall be submitted to the relevant regulatory authorities for approval. The design will set out the aims and the objectives of investigation for each Work Package Area.
- 3.4.10 Site investigations will be subject to monitoring and where necessary inspections by the Land Quality Consultant to ensure that the requirements of the investigation are met and the Site Investigation Contractor completes the works in accordance with the specification and design.
- 3.4.11 On completion of the Site Investigations data, will be reviewed by the Land Quality Consultant(s). The assessment will enable the CSM to be updated and will inform whether it is necessary to undertake a DQRA and produce SSAC for use in any subsequent Remediation Strategy. Further close co-operation with the enabling works and infrastructure design teams, ecology, hydrology/ hydrogeology and historic environment teams will be required to inform the ROA.
- 3.4.12 All investigations and assessment works completed within Phase 2 will be presented within a single Geo-Environmental Assessment report, which where necessary will confirm the requirement for remediation and will be reviewed and approved by a Suitably Qualified Person under the Land Forums' National Quality Mark Scheme. This report will be assured by the CSjv Land Quality Specialist, and forwarded to the Client for acceptance and to the regulatory authorities for comment.

Table 4.4 LQ Roles and Responsibilities during Detailed Site Assessment

CSjv (CMO)	WP Contractor 1	WP Consultant 2
<p>Facilitate liaison between WP Consultants and EWC Design Team.</p> <p>Assurance of WP Consultant report deliverables.</p> <p>Determine requirements for, and scope of subsequent works (if required).</p>	<p>Completion of site investigation works, and provision of all factual information required by the specification.</p>	<p>Develop a Site Investigation Strategy and Specification, and obtain regulatory agreement of strategy.</p> <p>Liaise with EWC Environmental Specialists, to identify site specific constraints or requirements, which may affect SI works.</p> <p>Prepare Interpretative Site investigation report (including DORA) and Geotechnical Risk Register.</p> <p>Obtain regulatory acceptance of interpretative report.</p>

Remediation Options Appraisal

- 3.4.13 Where remediation is required, a remediation options appraisal will be undertaken to examine different remedial techniques. The ROA will examine remediation techniques based on clearly defined remediation objectives and will assess their suitability with consideration given to effectiveness, cost, practicability, timescales for implementation and completion, sustainability, durability and the overall benefits. The appraisal will be undertaken with reference to CLR11 and wherever possible shall integrate the guiding principles of Sustainable Remediation Framework (SuRF UK).

Table 4.5 LQ Roles and Responsibilities in preparing a Remediation Options Appraisal

CSjv (CMO)	WP Contractor 1	WP Consultant 2
<p>Facilitate liaison between WP Consultants and EWC Design Team.</p> <p>Assurance of WP Consultant report deliverables.</p>	<p>Early Contractor Involvement may be sought to provide technical support to WP Consultant in identifying and confirming remediation techniques.</p>	<p>Liaise with EWC Design Team, to identify site specific constraints or requirements, which may affect selection of Remediation Options.</p> <p>Prepare Remediation Options Appraisal.</p>

3.5 Commencement (Management during Construction)

Phase 3 - Remediation Implementation, Validation and Verification

- 3.5.2 The main design activities, standards, milestones and inter disciplinary/third party liaison that will form Phase 3 are summarised in the table below, and also in Appendix 1.

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- 3.5.3 Activities within Phase 3 will comprise the preparation of a site specific Remediation Strategy based on the Remediation Options Appraisal presented as part of Phase 2. Following the production of a Remediation Strategy a specification for the Remediation will be produced which will address the remediation objectives and any earthworks required to address issues raised by the Geotechnical Risk Register within the context of the EWC programme, CLR11 and the principals of the Sustainable Remediation Framework (SuRF) UK. The Remediation Specification will be produced to enable a Remediation Contractor to design and successfully implement the remediation.
- 3.5.4 The Remediation Strategy and Remediation Specification for each site where remediation is required will be subject to Client acceptance and regulatory authority engagement.
- 3.5.5 The tender process for selection of the Remediation Contractor shall be supported throughout and, as an element of QA/QC, remediation contractors engaged on each project will need to demonstrate familiarity and experience with the chosen method of remediation.

Table 4.6 LQ Roles and Responsibilities during Remediation Implementation, Validation and Verification

CSjv (CMO)	Work Package Contractor 1	WP Consultant 2
Assurance and audit of the implementation of remediation work package specific requirements (reports and activities at various stages) of both the WP Contractor and WP Consultants, and report to HS2 Ltd.	<p>Preparation of remediation method statement detailing specific methods and working practices to ensure delivery of the Remediation Strategy.</p> <p>Obtaining the necessary licences and permits.</p> <p>Undertake the remediation and meet the remediation objectives.</p> <p>Provide regular Remediation Progress Reports.</p> <p>Provide a verification report at the conclusion of the works.</p> <p>Completion of any post-remediation monitoring addendum reports (if required).</p>	<p>Ensure compliance with the remediation method statement and all Technical Standards and Client Requirements.</p> <p>Monitoring and auditing environmental compliance of the works.</p> <p>Provide regular Remediation Progress Reports to CMO.</p> <p>Provide a Remediation Verification Report at the conclusion of the works.</p> <p>Provision of an up-to-date Geotechnical Risk Register, describing hazards present, encountered or remaining following remediation.</p>

3.6 Discovery of Unexpected Contamination

- 3.6.1 If the Contractor identifies material believed to be contaminated, they will immediately notify the CSJV Environmental Manager and Works Package Manager. They will then notify the CSJV Land Contamination Specialist and HS2 representative.

3.7 Visual Inspections

- 3.7.1 On all work package sites, regular inspections shall be carried out by the WP Contractor Project Manager/Environment Manager (or site nominated representative) and any evidence of land contamination will be recorded and actioned accordingly.

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- 3.7.2 Monthly environmental inspections will assess the site in more detail and the CSjv environmental advisor/ manager will be accompanied by the work package manager.

3.8 Incident Management

Incident Response

- 3.8.1 The CSjv has adapted its incident management procedures to align 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 24hour, 365 day Help Desk, operated by HS2Ltd, to start the co-ordination of HS2 Ltd.'s response to an incident and to support the CSjv where appropriate. The help desk is the first point of contact [REDACTED] to HS2 Ltd. for all Level 1 and 2 incidents on the programme; and
 - an on-line incident reporting system (OIRS) that records the details of an incident and supports communications, investigation and follow-up activities to avoid a recurrence.
- 3.8.2 The Area South Pollution Incident Control Plan (1EW02-CSJ-EV-PLN-S000-000009) is consistent with the requirements, definitions and terminology used in W11600: Incident Management.
- 3.8.3 The Work Package Contractor(s) will be expected to develop a site-specific Pollution Incident Control Plan (PICP) as part of their WP EMP. The contents of the PICP will fulfil the requirements of section 5.12 of the CoCP. Work Package Contractors will be expected to carry out periodic tests of the plan, and shall be audited on the outcomes by the Land Quality Specialist (on behalf of CSjv).

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4 Communication

Communication between CMO, WP Contractors and the WP Consultants

- 4.1.2 The contents and requirements of this LQMP will be communicated to the CMO Work Package team and WP Contractors (both Delivery and Specialist LQ Consultant). Site inductions, Work Package Plans and task briefing documents will be used to communicate key land quality requirements to the WP Contractor, as appropriate.
- 4.1.3 The CMO LQ Specialist, along with other members of the CMO team will work closely with the WP Contractor Project Manager, Environmental Manager / Advisor and WP Consultants on a day to day basis to ensure the contract requirements are suitably addressed.

Table 5.1. Roles and Responsibilities for Communication between CMO and WP Contractors

CSjv (CMO) Land Quality Specialist	WP Contractor 1	WP Consultant 2
Regular meeting with Work Package Contractor and WP Consultants to discuss progress (frequency to be defined in Work Package Brief dependant on stage of works and programme duration).: Technical Issues; Sharing of good practice with other work packages.	Weekly meeting with the works package manager. Works Package Plans for approval by CMO. Weekly site inspection checklist to CMO.	Attendance at meetings as requested. Regular correspondence with CMO and WPC as required.

Communication with HS2

- 4.1.4 The CMO LQ 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 land quality matters and continual improvement.
- 4.1.5 In addition, joint meetings will be held between HS2, CMO, Environment Agency, relevant local authorities and other HS2 Contractors, their frequency of which will be determined by the nature and extent of works.

Table 5.2 – Key roles and responsibilities for formal communication with HS2

CSjv (CMO)	WP Contractor 1	WP Contractor 2
Regular meetings (including local authorities and other HS2 Contractors). Monthly meeting. Notification and close-out of incidents and complaints. Consultation on LEMPs.	Provision of works information to CMO to facilitate dialogue with HS2.	Provision of LQ reports and ad hoc support to facilitate dialogue with HS2.

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Communication with local authorities

- 4.1.6 Local authorities, and in particular their contaminated land officers, have a key involvement in the regulation of land quality aspects within the Area south EWC.
- 4.1.7 Local authorities have particular responsibilities under Part 2A of the Environmental Protection Act 1990 to review and inspect sites within their administrative areas, and to provide comments and advice on remediation strategies. They will also have an interest in community liaison.
- 4.1.8 The CSjv (and where appropriate the WP Contractors) will undertake early engagement with the Environment Agency and relevant local authorities on land quality related matters, including advanced discussions of any land quality site investigation and risk assessment reports, any proposed remediation strategy, and the methodologies and control measures to be implemented.
- 4.1.9 Joint meetings will be held between HS2, CSjv, relevant local authorities and other HS2 Contractors, the frequency of which will be determined by the nature and extent of works.

Table 5.3 Roles and Responsibilities for Formal Communication with local authorities

CSjv (CMO)	WP Contractor 1	WP Contractor 2 (Specialist LQ Consultant)
Early engagement meetings. Regular meetings (including other HS2 Contractors). Monthly meeting. Notification and close-out of incidents and complaints. Consultation on LEMPs.	Provision of works information to CMO to facilitate local authority liaison.	Provision of LQ reports and ad hoc support to facilitate local authority liaison.

Liaison with local community

- 4.1.10 The CSjv will implement the Enabling Works Area South Community Engagement Strategy (1EW02-CSJ-SE-STR-S001-000001), which requires the development of Local Community Engagement Plans. All community relations issues will be managed in accordance with the principals of the strategy and local plans, and be led by the Community Relations Manager in collaboration with HS2.

Table 5.4 Roles and Responsibilities for Formal Communication with the local community

CSjv (CMO)	WP Contractor 1	WP Contractor 2
LQ Specialist attendance at community meetings as required.	Provision of works information to CMO for community correspondence.	Ad hoc support for community engagement as required.

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5 Reporting Requirements

5.1 Information Management

- 5.1.1 All project records and data shall be collated and reported in a format compatible with HS2 requirements (AGS4 and BIM).

5.2 Report Deliverables and Project Milestones

- 5.2.1 The scope of Land Quality Management will vary depending on Work Package Requirements (and site specific conditions). It is not expected that Site Investigation, Risk Assessment and Remediation shall be required on all Work Packages.
- 5.2.2 At any stage where the Land Quality Assessment process is curtailed prior to the completion of a Remediation Verification and Completion Report, the decision that further assessment or remedial action is not required shall be agreed with CSjv and notified to HS2 and the relevant stakeholders.
- 5.2.3 A schedule of the report deliverables required at each works stage, and the role of the Work Package delivery team at each of those stages is shown in Appendix 3.

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6 Assurance

6.1 Quality Monitoring

- 6.1.1 All works shall be undertaken in accordance with HS2 document 'Enabling Works Information WI600: Contractors Design and Assurance Document' (1E001-HS2-PR-ITT-000-000047). This defines a number of specific design activities related to Ground Remediation (section 6.7), as well as the assurance procedures required by HS2. These mandatory requirements are in addition to those defined in this plan which are specific to the individual Contaminated Land Assessment stages and deliverables.
- 6.1.2 The Work Package Contractor (1) shall as part of their Work Package Plan, prepare a quality control plan which identifies the steps and processes for self-checking of works, and those of the Work Package Consultant (2). The plan should cover the type of testing, frequency, control requirements, and assigned responsibility for inspections and testing. CSJv (The CMO) shall use this plan as the basis for assurance of the works.
- 6.1.3 All report deliverables shall be checked and approved by the Work Package Consultant, in accordance with the Quality Plan and inspection and test plan (ITP).
- 6.1.4 Deliverables will then be subject to review & acceptance by the CSJV Land Quality Specialist. This process shall be evidenced by;
- 6.1.5 Completion of Comments Review Sheets and traceable revisions to reports using the document control system (0.1, Co1 etc) which shall be saved on sharepoint and aconex.
- 6.1.6 The Land Quality Specialist will then sign a CSJV Acceptance Decal on the deliverable and upload it to aconex for Document Control to transmit to HS2.

6.2 Reports

- 6.2.1 All activities and deliverables undertaken by the CMO, WP Contractor (1) or WP Contractor (2) shall be supervised by, or be approved by persons with the relevant competencies and experience, (level 4+) as defined by the National Brownfield Skills Framework (NBSF) Toolkit.
- 6.2.2 Detailed Quantitative Risk Assessment (DQRA) reports shall be reviewed by a Suitably Qualified Person (SQP) or Registered Risk Assessor with Society of Brownfield Risk Assessment (RSoBRA), a level 4+ competency as defined by the National Brownfield Skills Framework (NBSF) Toolkit.
- 6.2.3 CMO Assurance of reports will be undertaken by appropriately qualified subject matter experts (level 4+ NBSF), who shall review the contents of reports against recognised industry guidance, regulatory and HS2 requirements.

6.3 Regulatory Approvals

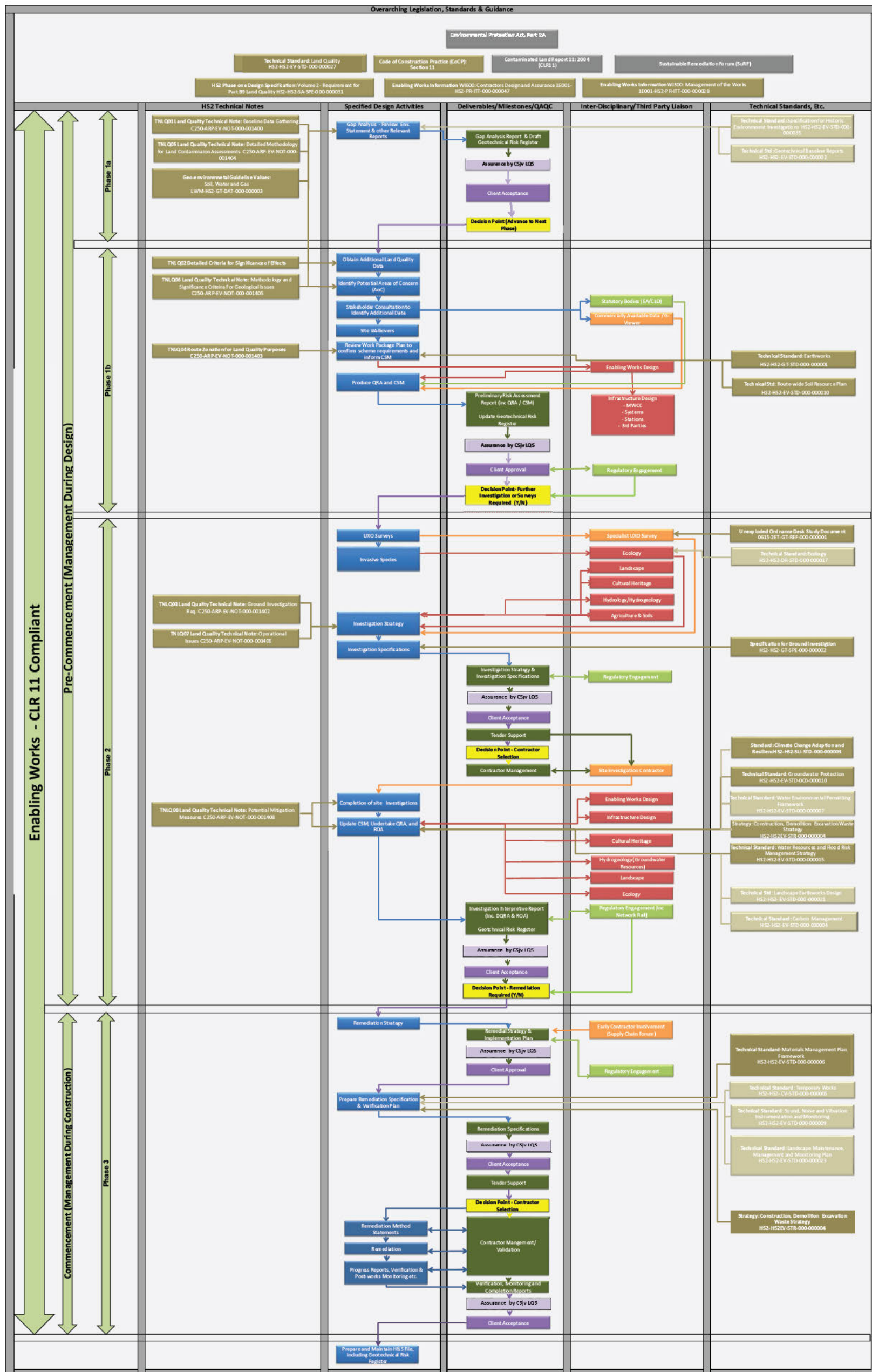
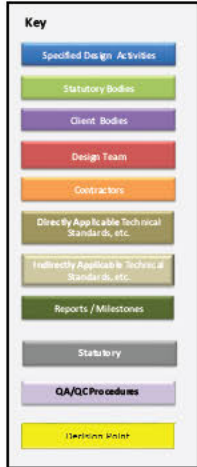
- 6.3.1 Following acceptance by the CMO, all report deliverables (as defined by the CLR11 output stages and Appendix 3 of this document) shall be submitted to HS2 and the relevant regulatory authorities prior to the commencement of the next stage of Land Quality Assessment.
- 6.3.2 The Work Package Contractor (1) and Work Package Consultants (2) shall address any comments raised by the Regulators and if required, amend and resubmit their reports for approval.

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Appendix 1

Contaminated Land Route Map

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Appendix 2

Competency Matrix - Land Quality Management Team

National Brownfield Skills Framework Tool

[click here for the tool in Excel: silc-nbsf-tool-beta-v3](#)

[click here for the Skills Framework: silc-nbsf-2016-version-3](#)

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Appendix 3

Report Deliverables and Project Milestones Table

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Appendix 3 - Contaminated Land Assessment Process

Design Activities, Deliverables & Assurance	Responsibilities by Work Stage (Delivery / Assurance) *				
	Pre-Appointment	Pre-Commencement			Commencement
	Work Package Brief	Phase 1a	Phase 1b	Phase 2	Phase 3
Data Review & Gap Analysis	LQS	WPC ₂ / LQS	-	-	-
Preliminary Risk Assessment	-	-	WPC ₂ / LQS	-	-
Site Investigation, GQRA & DQRA	-	-	-	WPC ₂ & WPC / LQS	-
Remediation Options Appraisal	-	-	-	WPC ₂ / LQS	-
Remediation Strategy	-	-	-	WPC ₂ / LQS	-
Remediation Specification	-	-	-	WPC ₂ / LQS	-
Remediation Method Statement	-	-	-	WPC ₁ / WPC ₂ / LQS	-
Remediation Progress Report(s)	-	-	-	-	WPC ₁ / WPC ₂ / LQS
Remediation Validation Report (Factual)	-	-	-	-	WPC ₁ / WPC ₂ / LQS
Remediation Verification Report (Interpretative)	-	-	-	-	WPC ₂ / LQS
Remediation Completion Report	-	-	-	-	WPC ₂ / LQS
Geotechnical Risk Register	LQS	WPC ₂ / LQS	WPC ₂ / LQS	-	WPC ₂ / LQS

* all activities and deliverables shall be undertaken under the supervision of and approved by, persons with the relevant competencies (level 4+) as defined by the National Brownfield Skills Framework

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