



The Coal
Authority

Resolving the **impacts** of mining

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Non-Exclusive Framework Contract for the Provision of Engineering Services

2. Services specification

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Introduction

The Coal Authority was established by Parliament in 1994 to undertake specific statutory responsibilities associated with:

- licensing coal mining operations in Britain
- handling subsidence damage claims which are not the responsibility of licensed coalmine operators
- Dealing with property and historic liability issues, such as treatment of mine water discharges and the remediation of surface hazards associated with former coal mines.
- providing public access to information on past and present coal mining operations

Please refer to the Coal Authority's web site for further detailed information regarding the full range of activities undertaken by the organisation at:

www2.groundstability.com and www.coal.gov.uk

Information on the business areas that will utilise the Contract is detailed below.

During the last financial year the Coal Authority spent approximately £1.5m in total on the lots described in the specification.

Public Safety and Subsidence

During the year 2015/2016 the Authority received in the order of 500 residential, and 500 non-residential property claims, and estimates in the order of 500 claims per year of each going forward. It is for these non-residential claims which require input from specialist consultants that have an in depth understanding of dealing with all issues relating to these claims.

Environment – Development, Property, Build and Operations

The Coal Authority currently operates 75 mine water treatment schemes, treating over 122 billion litres of water per year, in order to remediate existing discharges and prevent new discharges primarily from coal mine workings. This programme prevents ~4,000 tonnes of iron discharging into the nation's water courses every year and has

helped to protect and improve over 350km of rivers and several important regional aquifers.

The Authority has also started working with DEFRA and the Environment Agency (EA) in 2011 to investigate and remediate water discharges from non-coal mine workings. Currently the Authority operates and manages 3 non-coal mine water treatment schemes, remediating mine water from abandoned tin, lead-zinc and ironstone mines.

The programme often requires the acquisition of land to enable schemes to be constructed.

General Specification

The Services of Consultants required under this Framework shall predominantly relate to:

Professional services on an as and when required basis, predominantly in relation to resolving the impacts of past mining activities and other areas of responsibility of the Coal Authority. With regards to public safety & subsidence work this may include; investigation into the causes of failure, condition assessment, damage quantification and solution design for damage to roads, bridges, buildings, drainage & land. For Environmental remediation work this may include investigating minewater discharges, developing remediation options, designs and specifications, investigating and advising on managing site constraints such as ecological & archaeological designations, specifying & developing minewater treatment technologies, advising on operational issues such as waste management, undertaking hydrogeological studies and carrying out cost benefit analysis for proposed & existing schemes. The areas of expertise may include civil, structural, geotechnical, mining, environmental, health and safety, contract procurement, drainage and other specialist service areas such as hydrology, hydrogeology, geochemistry & economic assessment.

Lots may require the following common services/deliverables:

- soundly based technical reports
- support at litigation/arbitration procedures as an expert witness
- contract procurement and production of contract and tender documentation.
- contract management and administration
- management and supervision of contractors
- attendance at meetings

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- working knowledge of relevant legislation and best practice and liaison with relevant statutory authorities
- general advice

Sustainability & Innovation

The Coal Authority expects its suppliers to work collaboratively and be supportive of its approach to continually improve performance, through the selection of sustainable products and solutions, innovative thinking and the employment of best practice to meet its objectives and targets.

The Coal Authority recognises that improving its procurement performance is an ongoing process and that its suppliers are important partners in our aim to become more sustainable.

Details of our approach to sustainability and our overall performance can be found at:

<https://www.gov.uk/government/publications/coal-authority-sustainability-framework>

<https://www.gov.uk/government/publications/coal-authority-sustainability-report-2015-16>

Framework Coverage

The Authority reserves the right to award the Framework Contract to a suitable number of consultants to ensure that geographical areas and each of the areas of expertise stated below have sufficient service coverage.

The geographical scope of these Services includes the former mining areas of England, Scotland and Wales, and the rest of the UK.

The Framework will also be used to support projects not related to coal mining, such as work related to metal mines, and these projects may fall outside of the coalfield regions.

Services will also be required to support delivery of the Authority's commercially focused work that could be undertaken on behalf of other public and privately owned clients.

Please note: there is no guarantee of the value of services which may be required under this framework.

Lot Specifications

Please note:

1. Any reference to 'the Authority/TCA/CA within this specification shall be deemed to refer to the role of the 'Employer' as defined with the NEC3 family of contracts.
2. Any reference to 'consultant', 'supplier', 'contractor' within this specification shall be deemed to refer to the role of the 'Consultant' as defined within the NEC3 family of contracts.

Lot 1 - Civil and Structural Engineering

Investigation of causes of failure, assessment of condition, quantification of damage, provision of cost effective design solutions and the supervision of construction or remedial works relating to:

- public and private infrastructure
- commercial, industrial and residential properties and structures
- tips and spoil heaps
- location, investigation and design of remedial works for shallow mine workings, collapses and damage associated with mine workings and entries, including abandoned mine shafts and adits
- assessment of ground stability, with particular reference to the effects of mining, ground water and surface water
- scope, specify, supervise and interpret site investigations.
- concept, design and supervision of the construction of industrial & commercial structures, & domestic houses

Other services that may also be required:

- design, specification and supervision of foundation works, including piling and underpinning
- Inspections of mining spoil waste tips, including assessment of stability, condition and suitability for future usage. Including design and creation of specifications for remediation and associated maintenance, monitoring and full or part time supervision of the site works
- ad-hoc inputs for the inspection, design, specification and supervision of discrete civil and structural works relating to Coal Authority or third party assets
- ad-hoc independent body / expert witness representation during legal proceedings

Lot 2 - Hydrogeology

Provision of advice & expertise in relation to hydrogeological matters related to the effects of past mining legacy throughout the UK on a local, regional and catchment

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scale. This includes studies linked to mine water rebound, existing polluting discharges and potential contamination sources in the future. The prediction and modelling of future problems such as flows and water quality issues is an important aspect of this.

Assessment and investigation of the environmental impacts from mine water related issues including:

- water flows and discharges
- water chemistry and contamination issues
- waste disposal and colliery spoil sites
- mine gas
- recovery of geothermal energy (ground source heat) from mine workings or other potential uses of mine waste or water

Production of soundly based technical reports to support litigation/arbitration procedures and where appropriate provide an expert witness in respect of hydrogeology matters in reference to all relevant legislation.

Potential for on-site supervision and management of any works.

Lot 3 - Archaeological Services

Provision of advice in relation to the likely archaeological implications of proposed developments/works and develop mitigation strategies and specifications.

Liaise with County Archaeology Officers, Historic England, the planning authorities and other relevant bodies as required.

Provide Environmental Statements, Heritage Management Plans, Heritage Statements, Archaeological Assessments, Conservation Plans and Scoping Studies.

Provide desk-based assessments to include a comprehensive report containing, but not limited to; a detailed breakdown of the known archaeology in the vicinity of site; an assessment of previous land use, compiled from an analysis of historical maps, aerial photographs and other archive materials; a listing of the heritage-related planning constraints that may affect site; a ranking of the potential for archaeology of each of the archaeological periods to be found within site; and, an analysis of previous ground disturbance at site.

Provide the archaeology/heritage element when producing an Environmental Impact Assessment.

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Provide a range of non-intrusive field survey methods and advise on the recommended methods applicable to specific environments, including topographic surveys, earthwork surveys, monument surveys, aerial archaeological assessments, field walking, metal-detector survey and geophysical surveys.

Provide recommendations to target the location of intrusive investigations and advise through the considered use of non-intrusive methods how to minimise archaeological disruption and deliver requirements.

Provide archaeological watching brief services, including preparation and provision of associated reporting and archiving requirements, in accordance with Chartered Institute for Archaeologists (CIfA) Standards and Guidance for archaeological watching brief.

Lot 4 - Ecology & Environmental

Provide advice on ecological and environmental matters in relation to existing operational sites and facilities and proposed developments/works.

Develop mitigation strategies and specifications.

Be competent and qualified to undertake surveys and, where required, to capture and handle 'protected species' - to include but not be limited to the following UK 'protected species':

- bats, all species
- great crested newts
- badgers
- hazel or common dormice
- water voles
- otters
- wild birds
- reptiles
- protected plants
- white-clawed crayfish
- invertebrates
- freshwater fish
- natter-jack toads
- ancient woodland and veteran trees

Prepare and apply for licences and/or permits to allow works where protected species may be present.

Undertake Phase 1 Habitat Surveys, Extended Phase 1 Surveys, and Phase 2 Surveys, and prepare reports capturing results, conclusions and recommendations.

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Undertake invasive species surveys and investigations, prepare mitigation plans and advise upon implementation of recommended measures, including requirements for treatment and disposal where required.

Provide environmental and ecological survey services and assessments required to baseline, monitor and evidence the effectiveness of treatment systems.

Provide assessments relating to the environmental impact of existing operational sites and facilities and proposed developments/works.

To include the following disciplines:

- water
- air
- climatic factors
- land and soil
- urban landscape
- noise and vibration
- odour emissions
- landscape matters
- flora and fauna
- population demographics
- dust emissions
- other specialist input as required

Such assessments may range from high level screening opinions, technical evaluation and reporting, non- technical summaries, through to full Environmental Impact Assessments.

Undertake environmental audits on a variety of sites (including mine-related) and delivery of associated environmental reporting, to include the environmental auditing of operational activities, contractors and consultants.

Prepare management programmes for proposed/existing facilities, aimed at mitigating the environmental impact caused. To include the preparation of estimated residual costs of the proposed mitigation.

Provide impact assessment of the likely environmental effects of closure on mining facilities and preparation of estimated costs of residual liabilities.

Provide the expertise to assess the likely source of gas or water, based on scientific analysis.

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To undertake assessment of the impact of mine and other gas emissions, with particular regard to public safety and environmental problems. Prepare, instigate and monitor remedial schemes to alleviate the problems of gasses. This is to include, but not be limited to, investigating issues relating to odours caused by scheme/treatment processes, such as receptor analysis and dispersion modelling.

Preparation of schemes for the restoration of sites including former mining sites, and design / construction of public open spaces and leisure activities, to include landscaping design and landscape impact assessments where required.

Production of soundly based technical, environmental and ecological reports to support litigation/arbitration procedures and where appropriate, act as an expert witness representing the Coal Authority.

Provide advice in respect of Environmental Permitting requirements and the services of a suitably competent person with WAMITAB Certificate of Competence.

Provide advice on organisational environmental systems and implementation, environmental legislation and best practice.

Lot 5 - Planning Services

General planning advice in relation to mining legacy and our landholdings;

Preparation of planning scoping/feasibility studies for potential future development schemes by the CA, such as coal and non-coal mine water treatment schemes;

Negotiation with local planning authorities regarding planning requirements for CA development schemes, including Permitted Development Rights;

Design and conduct community consultation events on development schemes;

Preparation and submission of planning applications on behalf of the CA, including those requiring Environmental Statements;

Preparation of the necessary written evidence and statements, together with attendance at Planning Appeals and Inquiries;

Preparation and submission of Development Plan representations on behalf of the Coal Authority as a consultee; and

Preparation and submission of consultation responses on planning applications in coalfield areas on behalf of the Authority as a statutory consultee.

Lot 6 – Mine water treatment schemes: scoping, feasibility and design

The framework requires the provision of professional services including but not limited to, input into projects during the scoping, feasibility and design stages, whole life cost assessments, building up indicative and target costs, specification and delivery of pre-construction enabling investigation works and the project management of the construction of mine water treatment projects, including post project review.

Historically the Coal Authority has delivered mine water treatment schemes associated with coal and metal mines costing in the region of £1,000,000 per scheme. With over 70 operational facilities of this type, and a future requirement across the treatment programme, the framework is to provide services to the development and implementation of new schemes as well as the requirement for the delivery of smaller works projects such as refurbishment, improvement and optimisation of the existing mine water treatment schemes.

The objective and deliverables of this framework will be to provide:

- strategic partnering arrangements for the mine water treatment programme
- a collaborative approach to delivery of projects and programmes, including working alongside other framework suppliers on activities such as Early Contractor involvement (ECI), focussing on value, and continuous improvement
- high standards of health, safety and environmental performance
- delivery of a programme of schemes using the NEC3 suite of contracts

The framework will facilitate the successful implementation of sustainable mine water treatment schemes, capitalising on innovation, industry best practice and delivering best value for the public purse.

The Consultant shall be capable of satisfying all requirements of the Construction (Design and Management) Regulations 2007 and Amendments thereof and undertake the role of the Designer.

The Consultant shall also adhere to other legislative requirements such as The Mines Regulations 2014, and the Coal Authority's Safety Health and Environment Guidelines.

Contractors, consultants and other suppliers are required to develop long term co-operative relationships with the Employer and each other.

Each supplier will nominate a Framework Manager to represent their organisation to deal with, and manage, issues at Framework level. The nominated Framework Manager

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should be appropriately experienced in managing programmes of a similar size and nature to the mine water programme, including managing projects and programmes utilising the NEC3 suite of contracts. They should be strategic thinkers with a 'can do' attitude who will actively contribute to the development of the Framework.

The Framework Managers will be proactive in promoting cross partner communication, information and knowledge sharing. The Framework Managers will manage the Framework nationally, including programme review, development of management processes, performance review and dispute resolution.

The Consultant shall produce and administer project programmes in accordance with NEC3 contract requirements. The project programme shall be provided to the Coal Authority for agreement and, once agreed, will be used to monitor the progress of the project. The Consultant shall update the project programme on a monthly basis, or as otherwise stated in individual Contract Data, and submit to the Coal Authority Project Manager.

Information on each project programme will be used to compile the Master Programme covering all Coal Authority mine water projects. This is an essential aspect of facilitating programme-wide collaborative working.

The mine water programme requires studies and reports to identify and implement sustainable, technically robust and cost effective solutions and designs thereof to remediate or prevent pollution from abandoned mines.

These generally could consist of:

Scoping Studies:

Determine and confirm if discharges are considered to be within the remit of the Employer's statutory obligations. Furthermore, should mine water discharges be shown to be within such remit, the studies shall examine and develop potential options for treatment(s).

Studies should typically include technical assessment, copies of relevant information (present and historic), plans or drawings referred to and used to formulate the determination. This will include reviewing and reporting upon available data including, but not limited to, chemical analyses, flow monitoring information and the identification of any data gaps.

Development of options will consider both innovative and tried and tested treatment methods of 'passively' and 'actively' treating discharges. The study will include assessment of project issues such as considerations pertaining to viability of options,

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constraints (including land issues), stakeholder issues, and cost estimations, and it will provide technically robust recommendations for the Employer's consideration.

Feasibility Studies:

Examine and determine the most appropriate solution to the problem caused by a particular mine water discharge(s), with consideration to, effluent quality requirements, environmental and ecology issues, land availability, treatability, cost, operation & maintenance (including sludge disposal).

In order to achieve this the Consultant shall undertake a series of exercises including the collection and review of information including water quality and flow, investigations into mine workings, geology, hydrogeology, ground conditions, historic records and any other data as appropriate. Development of such studies will provide for consultation (Employer, and statutory and non-statutory stakeholders, including the potential requirement to attend community-based project events), site selection, review of treatment processes, development of a series of options, appraisal of these options and identification of the most appropriate option.

A report will be provided incorporating the findings of the study which will include recommendations for further investigative works and estimate of the costs, including whole life costs and 'end of life' considerations, of each option. It is expected that in developing costs the Consultant shall liaise with other contract partners where required.

Post Feasibility/Concept Design:

To investigate and, where possible, resolve issues identified at feasibility stage and develop the preferred treatment scheme.

The Consultant shall consider the methods identified for treatment during feasibility and provide commentary to include likely effectiveness and associated risks. It is anticipated that the Consultant may also identify further options that may be worthy of further examination.

The Consultant shall undertake further review of site constraints and identify where additional investigation may be required to inform the development of a concept design. This could include any further investigatory Works or Services identified as being required to achieve this.

The concept design should be developed such that it provides for:

- Influent pipeline routing, treatment system design and effluent pipeline routing.
- Consideration of utility requirements (power, water etc.)
- Treatment of an agreed volume of water (xx l/s)
- Consideration of construction, operation and of ongoing maintenance requirements, including refurbishment and decommissioning

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- Facilities to enable monitoring, sampling, and testing procedures that would be required to assess and report upon performance of the system(s).
- Inclusion of measures to mitigate potential treatment nuisances, including but not limited to odour control, restricting the development of cyanobacteria, effects of operations (i.e. design to require minimal intervention) etc.
- Welfare facilities
- Health and Safety considerations, including design risk assessments

The outline design should also consider methods of undertaking end of life assessments for the treatment systems. This may include consideration of waste management of exhausted treatment media (to include actual options and indicative costs). It is intended this aspect will allow the Employer to understand the potential longevity and whole life costs of the concept design to allow the project to go forward to detailed design.

Detailed Design:

The detailed design will develop the concept/outline design and technical specifications to include sufficient detail in order to enable the scheme to be safely and efficiently constructed. This will include the development of the design in consultation with the Principal Designer.

Other Activities:

In providing the services the consultant may also be required to undertake some or all of the following, subject to the needs of individual projects:

- Sampling (including field sampling) of water discharges and interpretation of the results.
- Arrange for borehole or shaft investigations and provide interpretative reports on the results.
- Specify and manage ground investigation works
- Provide environmental and ecological survey services and assessments required to baseline, monitor and evidence the effectiveness of treatment systems.
- Liaise with the EA / SEPA as appropriate and apply for and secure consents for the project.
- Liaise with the appropriate Planning Authority and prepare all information necessary to secure planning permission or General Permitted Development Order (GPDO) approval. This may require preparation and presentation of displays at public exhibitions etc.
- Produce a 3D terrain model of the scheme and surrounding area for use during the planning process and for public consultations.
- Provide landscaping assessments and advice
- Secure any necessary permissions and agreements for provision of services to the project e.g. electricity, telephone, water etc. Budget estimates of cost shall be obtained from the statutory undertakers.

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- Assessment of target cost submissions in line with contractors Framework Agreement.
- Provide Planning Services required for mine water treatment schemes: (both preventative and refurbishment) which may include:
 - Planning assessments for sites
 - Submission of planning applications for outline and full consent – general permitted development or full planning submission
 - Attendance at planning inquiries when required

Common Services:

The Consultant shall supply a detailed breakdown of the staff resource (hours and grade) and any expenses to complete that stage of Services, in accordance with the Contract.

This cost breakdown shall form the financial provision against which the Consultant shall monitor and submit costs on a monthly basis

The Consultant must adhere to The Authority's governance procedures known as 'Streamline' which are applied as key milestones/checkpoints at Concept, Feasibility, Detailed Design and Construction to ensure best practice and value for money in delivering its mine water treatment projects.

Value Engineering and innovation shall be applied at all project stages by the Consultant. This will ensure the consideration of functionality, whole life costs, environmental impact and perceived nuisance. The consultant will be actively involved in utilising an ECI contractor at an early stage to ensure buildability and robust cost estimates.

Progress Reports shall be submitted by the Consultant on a monthly basis throughout each stage of a project. Project Risk Registers and Lessons learnt logs shall be provided such that best practice can be highlighted and incorporated into future projects and programmes.

At any stage of a project the Consultant may be required to specify Works or Services by other contractors or consultants to progress the project (e.g. survey works, site investigations, tree clearances).

Approval of the Authority is required before contacting non-term contractors or consultants prior to any discussion with them regarding their interest in the project.

The Consultant may be asked to prepare and evaluate tender documentation.

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The Authority has a number of term contractors. Some of the activities covered by the term contractors are likely to require an interface with Consultants during the Services Contract. The Consultant shall be expected to collaborate and cooperate with other suppliers as required by the needs of the projects and programme.

At the completion of a project or Service the Consultant shall return all correspondence, information and documentation to the Authority.

The Authority will retain the copyright and ownership of any documentation and drawings produced in the course of a mine water project.

Lot 7 - Land Drainage: Agricultural and Specialist

Investigation, assessment of condition and preparation of remedial drainage schemes for agricultural land.

Inspection, assessment of condition, design / supervision of remedial works to pumping stations, including calculation of commuted sums where applicable.

Assessment, design and implementation of construction works for rivers and canals, irrigation and sewage schemes including storm water attenuation.

Inspection, assessment of condition, and maintenance of sedimentation ponds, flow balancing ponds and wetland schemes, and design / supervision of new facilities, where applicable.

Design and supervision of arterial drainage schemes including hydrological and hydraulic studies.

Knowledge of the organisation of DEFRA, Internal Drainage Boards Lead local Flood Authorities

Proven ability to assess the impacts on water regimes following a mine closure.

Assessment of the effects of mining subsidence on surface water courses, lakes, dams and weirs.

Preparation of reports, recommendations and budget cost estimates for remedial works.

Provide on-site supervisory expertise and management of remedial works.

Lot 8 - Safety, Health and Environment (SHE)

The Coal Authority has an in-house SHE team who undertake the following functions:

- Development of SHE policy and management arrangements for the effective planning, organisation, control, monitoring and review of preventive and protective measures in relation to SHE
- Provision of SHE advice and support to business teams and, where required, advice to contractors and the wider supply chain
- Development and implementation of sustainable development strategy

A large proportion of our activities relate to construction work and in accordance with the CDM Regulations 2015 we routinely undertake the statutory role(s) e.g. client, designer, principal designer etc. The team provides specialist internal SHE construction advice and assistance to support the organisation in complying with its duties. Similarly we carry out work in mines that requires the application of mining legislation, notably the Mines Regulations 2014.

The purpose of this Lot is to support the Authority's SHE team as necessary in fulfilling specific duties and providing assistance and advice; this will involve such work as:

- Preparing pre-construction information, undertaking design reviews, reviewing construction phase plans and collating health and safety files in relation to construction works
- Undertaking SHE audits of construction activities to monitor compliance with legal duties and support the development of best practice
- Assessing the competence of mine operators and suitability of health and safety documents prepared for the purpose of undertaking work in a mine
- Providing ad hoc Sustainability and SHE advice and assistance in relation to existing and new activities that the organisation may undertake

Lot 9 - Cost Benefit Analysis

The Authority has a requirement for the completion of cost benefit assessments on a number of sites. The aim of which, is to determine how the benefits of developing or refurbishing a mine water treatment scheme (MWTS), to improve or prevent impacts on the receiving watercourse or water body, compares to the cost of treatment.

The assessments are required to determine the benefits for implementing mine water treatment schemes for both coal and non-coal sites. The assessments will be undertaken using the Authority's methodology for benefits assessments. The cost benefit analyses must follow the Authority's approved methodology, to allow for cross comparisons to previous analyses.

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Full details of the relevant methodologies are contained within the documents:

1. Assessing the benefits of minewater treatment: Methodology document for coal sites (31 March 2015)
2. Assessing the benefits of minewater treatment: Methodology document for non-coal sites (31 March 2015)

There may be other localised benefit categories applicable than those mentioned in the Coal Authority methodology and therefore, for each cost benefit assessment, it is likely a site visit will be required. This must take into account health, safety and environment management, including compliance with the Coal Authority guidance for consultancy and will include preparation of risk assessments and health and safety plans to be approved by the Coal Authority prior to undertaking any fieldwork.

Requirement:

- 1) Project Team and Resources:
 - a. An economist that has undertaken cost benefit analyses before is required.
 - b. The project team proposed to undertake this research study must be suitably qualified and able to demonstrate experience of similar projects.
- 2) Preparation of reports:
 - a. Draft report – submitted 3 weeks before the project end date to allow for review and comments
 - b. Final report – to be submitted 1 week after comments have been issued by the Authority to the Consultant.
- 3) Project management:
 - a. Start-up meeting (telephone meeting is preferred) this will be to clarify and confirm the deliverables. Identification of further information which can be shared.
 - b. Health, safety and environment management including compliance with the Coal Authority guidance for consultancy. This will include preparation of risk assessment and health and safety plan that must be approved by the Coal Authority prior to undertaking any fieldwork
 - c. A project plan must be submitted as part of each quotation submission to include timings of when works are to be undertaken and this will be agreed at the start up meeting for the delivery of the Services for each award

Lot 10 - Treatability

Peer review of suggested mine water treatment options previously issued to the Authority.

Advice on appropriate mine water treatment options known to the specialist, which may include some, but not limited to, the following requirements:

- Summary of proposed treatment methodology(s)
- Metal removal rates in terms of percentages
- Suggested effluent concentrations achievable
- Estimated land area required for treatment
- Overview of any chemical reagent, water flow (including driving head etc.) and power requirements
- Waste characterisation (are any wastes generated hazardous, non-hazardous etc. as classified under current UK waste legislation).
- Waste management and disposal – considering disposal routes and costs, and whether metals can be removed from any waste materials to limit volumes requiring hazardous waste disposal if applicable etc.
- Potential impacts of the scheme on the locality, particularly if it could have planning implications (e.g. visual impact of treatment system, noise, odours, whether the system operates inside a building, in tanks, earthworks etc.)
- Estimated whole life costing of treatment systems – analysis (stating assumptions) of:
 - Estimated capital construction costs
 - Annual operating costs including staff, chemicals, power etc. if applicable.
 - Operating life
 - Potential for resource recovery
 - Decommissioning/refurbishment costs

Design and provide details for appropriate **laboratory trial** methodology

Undertake and manage appropriate **laboratory trials** (UK based) combined with data interpretation and associated reporting (including appropriate sample collection and storage, sample preparation, sample analysis etc.)

Design and provide details for appropriate **field trial** methodology

Deploy, operate, manage and de-commission (including waste management) appropriate **field trials** (UK based) combined with data interpretation and associated reporting (including appropriate sample collection and storage, sample preparation, sample analysis etc.). As part of any field trial, there may be a requirement for the

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specialist organisation to obtain/own the appropriate environmental permit from the relevant UK Environmental Regulatory body; this would not automatically be the responsibility of the Coal Authority.

Provide outline design and provide methodology details for appropriate full-scale **pilot plant** trials.

Undertake and manage appropriate **pilot plant testing**, deployed in the UK at a designated site, combined with data interpretation and reporting (to include system optimisation). The construction of any full-scale pilot system will not form part of this lot, but advice may be required to ensure any specifications are correctly followed or for any construction queries that may arise are answered appropriately. It is currently envisaged that the routine operation and permitting of any full-scale pilot system would sit with the Coal Authority.

Provide expert individuals for secondment to the Coal Authority to provide additional resource for mine water treatment advice/ work as required by the Authority

Provide specialist advice on odour monitoring and management as required by the Authority

Provide specialist advice on cyanobacteria speciation and management as required by the Authority

Provide specialist advice/services on bespoke sampling/monitoring regimes at a catchment scale

It is envisaged that the primary focus for these services will be the Coal Authority's non-coal programme. However, this is not exclusive and work may also be required periodically for the Authority's coal and commercial work streams.

Note: Laboratory, field and pilot trials should ideally be UK based to limit the time water samples spend in storage, which could cause deterioration in sample quality and adversely impact sample representation. If UK-based work is not possible, the supplier must detail how these issues will be overcome to satisfy the Authority that any trials and results are not compromised.

Successful applicants may be invited by the Authority to provide advice on an ad hoc basis at various times in the contract period. Each invitation will be sent with a scope of works tailored to the specific project, and accompanied by information available to the Authority at that time including water quality and flow rates, associated with the project.

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The information provided to the Authority will remain confidential and will not be shared with other research bodies/commercial organisations without prior permission. Please refer to the terms and conditions for details relating to confidentiality and intellectual property.

It is appreciated that it may not be possible to provide definitive costs for some of the waters, however approximate estimations would be acceptable as long as these are clearly marked. It is recognised that some mine waters may be treated most cost-effectively using a series of individual technologies (i.e. “treatment trains”).

Although the Authority has a preference for passive treatment technology, active treatment will also be considered where it can be demonstrated that this is the most cost effective option in terms of whole life costs.

The Coal Authority is keen to include sustainable procurement methods where possible. Whilst it is appreciated that laboratory and field-scale trials are often small scale operations, sustainability should still be considered wherever possible. Considerations such as the use of sustainable sources for treatment media or renewable energy would qualify in this area.

Innovation is also a core area of focus for the Coal Authority. It is recognised that some mine water treatments are in their infancy and therefore are innovative in nature. However, innovation can take many forms, and should be considered wherever possible.

Lot 11 - Waste Characterisation and Waste Services

The framework requires the provision of professional services in the area of waste characterisation and classification, minimisation and disposal - including the potential for material re-cycling and re-use, and the development of sustainable waste management strategies for the various organisational activities. In depth knowledge of the sustainable business practices, the waste hierarchy, the definition and classification of wastes and legislative requirements, such as duty of care, are therefore essential.

The Authority generates several wastes streams as part of its statutory duties. As part of our waste duty of care, we must classify the waste we produce to identify the controls that apply to its collection, movement and re-use or disposal. In addition, due to the Authority's ever expanding remit, there is also the potential for the Authority to generate additional, currently unknown, waste streams in the future.

We employ an in house team of specialist project managers who currently ensure legislative compliance for our project based activities. To provide flexibility and innovation, we require specialist waste classification and management specialists to

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support our project managers in fulfilling our waste management duties and to provide advice under all relevant EU Waste Framework Directive legislation and regulations including The Waste (England and Wales) Regulations (2011) and The Waste (Scotland) Regulations (2014).

The objectives of this Lot will be to provide the Coal Authority with:

- A strategic partnering arrangement for the Coal Authority's following key areas :
 - coal and metal mine programme, including the delivery of specific projects and research into potential value engineering options.
 - innovation programme
 - public safety and subsidence (PS&S) programme
- A collaborative approach to individual project delivery through early involvement at key stages such as scoping, feasibility and design. Projects are likely to be based in the PS&S or Environmental Department and based around site construction activities. However, sustainable business practices with respect to waste minimisation to all of the Coal Authority's activities (facilities management, ICT etc.) should be considered.
- High standards of environmental performance, legislative compliance and health and safety practice.
- Delivery of the organisations regulatory compliance to an exemplary standard.

To achieve the above mentioned objectives, the following areas of investigation and expertise will be required:

- Identification of all waste streams for each activity and the Authority as a whole.
- Characterising the chemical and physical properties of waste
- Classifying waste before it is collected, disposed of or recovered.
- Identifying the controls that apply to the storage and movement of waste
- Identification and completion of waste documents , records and reporting
- Identification of suitable authorised waste management options including re-use, recycling and recovery.
- Knowledge of end-of life requirements and the potential for alternative options to disposal.
- Identification of potential hazards and their mitigation measures to prevent harm to people and the environment
- Waste management systems for recording and reporting the generation, re-use and disposal of waste.

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- Preparation of cost analysis for the various waste management options for the development of a business case. This will be on a case by case basis.
- Material Management Plans (MMP), Site Waste Management Plans (SWMP) and any other Quality Management documentation required for accreditation or certification.
- Provision of a Competent Person for any quality management documentation or permits.
- Preparation, application and management of Environmental Permits
- Waste Management Audits for all stages of the waste life cycle, including final disposal point.
- Extensive knowledge of disposal routes, costs and alternative options for all potential waste classifications.
- Liaison with regulatory authorities to obtain agreement for any modifications to methodology or conventional disposal routes.
- Liaison with haulage companies and waste management companies on the Authority's behalf.
- Secure any necessary permission required by the Authority to manage its waste under the relevant regulations.

Delivery of the above objectives will require both:

1. a long term, high level collaborative approach to the development of cost effective strategic management of the various key waste streams to achieve the Authority's corporate sustainable business targets, and
2. a rapid, focused and specialised investigative approach to short-term project specific issues as they arise.

In addition, we may require general waste management advice on any related issues that may arise both in relation to existing and future safety, health and environmental law.

Due to its diverse nature, we do not expect some of the more specialist organisations to be able to offer all of the services for this Lot. As such, we actively encourage ALL waste industry experts to tender, and would expect to see both generalists and specialists tendering their services.

Lot 12 - Supervisory Services

The provision of Project Manager and / or Supervisor to undertake the duties as defined in the New Engineering Contract (NEC) family of contracts.

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The services could be used across the Authority's entire portfolio of projects, on both new build and refurbishment schemes. The works the Authority undertakes can include civil and structural and/or mechanical and electrical work. Examples of the projects that could be undertaken are:

- Construction of minewater treatment schemes.
- Refurbishment of existing treatment schemes.
- Construction or refurbishment of subsidence pumping stations.
- Public safety works e.g. shaft capping/repair of collapses.
- Works on the portfolio of tips.

The Coal Authority also undertakes work on behalf of other governmental bodies and commercial partners.

Value of the construction works could range from tens of thousands to multi-million pound projects.

The Coal Authority may use any of the contracts available through the NEC. Primarily works are let using the Engineering and Construction Contract (ECC), Engineering and Construction Short (ECSC) Contract or Term Services Contract (TSC).

The requirements will vary. On some schemes both the NEC PM and Supervisor may be required, alternatively either the NEC Project Manager or Supervisor may be required.

Visits to sites are a requirement for both roles. The sites could be throughout England, Scotland and Wales.

In addition the services may include;

- The review or preparation of contract documentation in advance of contract being issued for tender.
- Review of tender submissions prior to award.

Project Manager

The Project Manager requires a strong understanding of the NEC contract clauses and processes and their duties under them.

The Project Manager shall be professionally qualified with at least five years relevant experience and a proven record in acting in a similar role. NEC Project Manager Accreditation is preferred, though not essential provided suitable experience and understanding can be demonstrated.

Supervisor

The Supervisor requires a general understanding of the NEC contract clauses and processes and more detail knowledge of the specific duties of the role.

The Supervisor shall have at least 5 years demonstrable experience in similar site supervisory roles.

Under both roles there will be a requirement to work closely with Coal Authority staff and Framework Contractors.

Lot 13 - Surveying: Topographical & Surface Hazards

The Authority requires site surveys to be undertaken for works on measurement and monitoring of features created by collapsing of underground coal mining, (i.e. crown holes, subsidence etc.), to assist in the design and construction of Minewater Treatment schemes and recording, monitoring and refurbishment of historical liability sites.

1.1 Topographical and detail surveys specification

These surveys included detailed site survey of land (including Tips), detailed levelling surveys around properties, with measurements as necessary. Survey shall pick up all topographical features within the specified area of interest.

Details required include:

- surveys coordinated to Ordinance Survey co-ordinates
- height, nature, condition and ownership where evident of all site boundaries
- location of all trees, bushes and hedges on, and adjacent to the, site, to include description, trunk diameter and accurate canopy spread
- roads, footways, footpaths, bay positions and footway crossings, drives and verges giving construction material and condition
- highway boundaries
- street furniture, public utilities and other services including overhead cables
- ditches, watercourses, gullies, manholes, head walls, drains and sewers, cover levels, invert levels, pipe size and direction of flows (entry into confined space must comply with the Confined Spaces Regulations 1997 (Third edition), The Management and Administration of Safety and Health at Mines Regulations 2014 and/or The Work at Height Regulations 2005.)
- buildings, basements, hard standing areas and evidence of demolished buildings and all buildings within a specified distance of the site boundaries
- spot levels over the survey area based on a maximum 10m grid
- top and bottom of embankments to be recorded
- contours at 1m intervals to be shown, unless another specific interval is requested by the Coal Authority

Some surveys shall also be required in 3 dimensional electronic data capture to allow volumetric analysis to provide cut and fill volumes in design work and will also be required for construction activities. These surveys shall pick up all topographical

features within the area of interest, surveyed in such a way to enable an accurate 3 dimensional ground model to be generated. Such surveys that are required to be used for future setting out (such as for construction of a mine water treatment scheme) the consultant shall ensure they comply with site reference point conditions as stated in section 1.4.

1.2 Building Surveys Specifications

The Coal Authority is required to undertake detailed internal and external building surveys of properties, with measurements as necessary.

Details required in building survey shall be confirmed by employer within the works package order; detail required may include the following:

External elevation surveys including:

- measured elevations drawing of all sides of property
- basic construction of walls (e.g. single leaf brick, brick and block cavity wall) and thickness if apparent
- pitch of roof
- basic roof construction (e.g. clay tiles, bitumen flat) if apparent
- chimneys
- window and door size and location
- pipe work, such as down pipe (including dimensions), guttering
- services (manholes, external taps, telecom entry)

Internal surveys including:

- measured Plan drawings of all storeys
- level of internal floors relative to external levels and OS datum
- height of ceilings
- basic construction of walls (e.g. single leaf brick, brick and/or block cavity wall), indication of load bearing or partition and thickness if apparent
- basic construction of floor (e.g. suspended wood floor, concrete) if apparent
- finishes to rooms, for example carpet, wooden floor, wallpaper (highly pattern), plain wall paper, painted plaster
- locations of electrical sockets, television/communication points, lighting fixtures (strip lighting compared to pendulum light) and switches, including height of switch and number of switches, sockets, etc
- kitchen cabinets layout and bathroom layouts, including height of surfaces, location hidden sockets, built in white goods

Building damage information including:

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- locations and extents of cracking in external walls, including width of cracking
- location and extents of internal cracking, including width of cracking
- location and extents of sagging brickwork

Due to the nature of works undertaken by The Coal Authority on unstable ground 'reflectorless' surveying techniques will be required for survey where direct access to a damaged property is not possible.

1.3 Provision of survey data Specification.

Survey drawing and data set shall include the following information.

- date of survey
- name of Project including The Coal Authority Project Number and The Coal Authority as the *Employer*
- scale of drawing
- OS Grid reference
- name of surveyor who undertaken survey
- name of draftsperson who produce drawing
- reference to any base data or previous survey data used
- survey stations to be clearly identified on the drawing giving X,Y and Z co-ordinates
- north arrow

Completed survey data shall be provided in electronic format compatible with AutoCAD software 2015. (e.g. .dxf or .dwg).

Survey drawing shall also be provided in .pdf format and:

- all drawing objects are to be drawn in model space at scale of 1:1 referenced to the Ordnance Survey National Grid
- all entities are to be in colour BY LAYER and line type BY LAYER
- all entities i.e. contours, level blocks etc. at the correct respective 3d positions
- all entity groups i.e. trees, are to be on separate layers;
- all text to be on a separate layer
- all point data i.e. trees, are to be defined as a block and have attributes assigned;
- all polyline data i.e. filled boundaries are to be one continuous polyline with no slope line shown, i.e. tracks and roads are to be defined by continuous polylines
- features not containing level information should be set to a level of 0.00m AOD
- all redundant or unnecessary entities & layers should be purged from the drawing prior to submission

1.4 Other works may include

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- setting out of site and land ownership boundaries
- establishment of permanent survey stations for re-use as setting out points
- establishing and surveying monitoring points to measure tip movement, and possible subsidence
- setting out proposed locations on site such as borehole locations or fence lines
- precise spatial ground and structural monitoring using electronic instrumentation for the production of electronic spreadsheets of collated data and subsidence contour plans

Whilst performing the initial survey it is imperative that the surveyor sets up and leaves sufficient on site reference points to enable any future surveying or setting out to be carried out to the same co-ordinate system as used for the initial survey (ie – relative to OS).

This would take the form of permanent or semi-permanent survey stations which must:

- be geometrically consistent and accurate within themselves
- fully encompass the area of the works concerned
- be a minimum of 4 in number
- be stable and not liable to damage, movement or subsidence
- be in such a position as to enable a tripod to be set up over them

Lot 14 - Surveying: Tilt Analysis

The Coal Authority is required, on occasions, to provide compensation for diminution in value due to tilt caused by coal mining subsidence. In order to assess that diminution in value, it is necessary to know the magnitude of coal mining induced tilt and when that tilt is likely to have been caused.

Plans of past mine workings are required to be examined in order to identify which mining has affected a property. Calculations are then to be undertaken in order to identify the amount and direction of tilt. These calculations will be undertaken using any site specific models which may be available and historical mining information will be provided by the Authority, where available. Any site specific models derived from knowledge of the behaviour of ground movement in different areas throughout the country may be considered. In addition to the cumulative effects of all relevant mining, calculated values are also to be given for the build-up of tilt through time. This will enable the Coal Authority to identify the tilt for which they have a liability.

Calculated and measured tilts will be compared and where it is believed that tilt in a structure has not been caused by mining then that advice is to be given to The Coal Authority to identify the tilt for which it has a liability. Knowledge of possible abnormal

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movement in an area as a result, for example, of fault movement, should also be reported to the Coal Authority.

Any plans produced shall be correlated to the Ordnance Survey National Grid by the most appropriate means available.

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