Materials testing trials to demonstrate the potential for use of hydrophobic materials or coatings in Mine Water Treatment Schemes

Coal Authority reference CA18/1/10/2538

Document A:

**Project Scope**

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# Overview

## Contractual References

This tender will be associated with Coal Authority reference CA18/1/10/2538

A research contractor will be appointed to undertake laboratory trials on the use of mine water in wastewater treatment.

The conditions of contract are the Coal Authority Works & Services contract (2009).

## Purpose of the Services

Historically, UK coal mine water treatment schemes have been designed based on their overall efficacy at improving mine water quality, primarily through the removal of iron by oxidation and settlement of ochre. Ochre adhesion to surfaces of pipework, pumps, channels and cascades upstream of settlement lagoons presents both operational and commercial issues as it can cause flow restrictions, reducing scheme performance and increasing maintenance costs, as well as reducing the amount of ochre settled out in areas where it can be recovered for re-use. Use of epoxy resin coatings have been utilised on certain schemes to reduce ochre fouling in pumps and pipework. The Coal Authority has identified that the use of hydrophobic coatings or materials could significantly reduce ochre fouling and offer significant benefits in reduced whole-life costs.

The Coal Authority has identified that laboratory studies are required to select and demonstrate the performance of the most promising coatings or materials and to provide recommendations for the field testing of materials/coatings.

The Coal Authority does not currently have suitable laboratory facilities nor expertise to undertake this research task in-house. Therefore we propose appointing a suitable research partner organisation to undertake the laboratory experiments on our behalf.

## Specific Project Objectives

The key project objectives are:

* To determine the performance of a range of coatings and/or materials proposed by the Contractor under typical water flow conditions experienced in our MWTS.
* To assess the repellent properties towards ochre or ochre-rich mine waters
* To assess the potential environmental impact of employing these coatings on mine water treatment schemes
* To assess the likely costs of installation of the materials or coatings on mine water treatment schemes
* To provide recommendations for field testing including recommended coatings or materials and areas of the mine water treatment process that are likely to yield the best benefits.

The services to be provided by the Contractor will be to undertake laboratory based research to address the above objectives.

Key questions to be addressed during the research include:

* Are coatings or materials able to retain their integrity and properties in flowing water?
* Do hydrophobic surfaces significantly reduce ochre accretion compared to traditional materials and coatings?
* What, if any, are the significant potential environmental impacts of using these material/coatings, both during installation and operation?
* What are the likely installation costs for a typical treatment scheme and does this offer potential for cost savings compared to current maintenance regimes?
* What materials or coatings should be taken through to field trials?

## Tasks (Employers Requirements)

The following tasks have been included in this package of works:

* Project management
* Laboratory studies
* Technical reporting

1. **Project management**

The Contractor will be required to manage the project to ensure it is delivered safely to an adequate standard, on time and within budget.

The proposal should allow for:

* Kick-off meeting
* Monthly progress meetings
* Weekly email updates of progress should be provided by the Contractor to the Coal Authority’s Supervising Officer
* Quality management

The kick-off meeting and subsequent progress meetings may be held in person or by teleconference if preferred by the Contractor.

1. **Laboratory studies**

The Contractor

The Coal Authority will provide mine water and ochre samples to the Contractor or will facilitate site access to enable the Contractor to collect their own samples. The proposal should clearly state which approach the Contractor wishes to adopt.

The Contractor should clearly state the how it intends to achieve all project objectives. It is recommended that the Contractor consider the following:

1. Assessment of a range of potential hydrophobic materials/coatings proposed by the Contractor.
2. Comparison of ochre repellent properties compared to standard materials of construction/anti-fouling solutions as required.
3. Performance and durability of materials/coatings under a range of flow conditions and water chemistries typical of MWTS in the UK compared to standard materials of construction and anti-fouling solutions as required.
4. Selection of a robust methodology to undertake cost assessment of potential materials/coatings.
5. Selection of a robust methodology to undertaken environmental impact assessment of potential materials/coatings.

The proposal must include the Contractor’s proposed experiment design, including justification of the approach adopted:

* Methodology including details of the scenarios that will be tested.
* Any chemical or materials testing techniques to be undertaken.
* Details of the QA/QC procedures that will be adopted during the trial.

Any assumptions must be clearly stated.

1. Technical reporting

The Contractor will be required to prepare a technical report on the research findings. This technical report must be of a suitable standard for sharing publicly with stakeholders including water companies and environmental regulators.

The Contractor will also be required to present the findings of the research to the Coal Authority in Mansfield.

## Deliverables

The key deliverable will comprise a technical report including the following elements:

* Executive summary (1 page)
* Introduction
* Experimental Methodology
* Results (summarised in body of report with full factual data set to be provided in appendices)
* Interpretation
* Conclusions
* Lessons Learned
* Recommendations

The technical report must be of a suitable standard for sharing publicly with stakeholders including environmental regulators.

The Contractor will also be required to present the findings of the research to the Coal Authority in Mansfield.

## Indicative Timetable

Below is detailed the indicative timetable of events.

Post award we would expect the services to be programmed as detailed in the table below, assuming all data and samples are supplied by the Coal Authority.

|  |  |
| --- | --- |
| **Task** | **Time Scale** |
| Invitation to Tender and upload to Contracts Finder | 6/12/2016 |
| Deadline for submission of tenders | 12 noon 6/1/2017 |
| Contract Award | 13/1/2017 |
| Project Start-up Meeting | 1 week |
| Completion of laboratory testing | 4 weeks |
| Submission of draft technical report | 2 weeks |
| Presentation of research findings to Coal Authority | 1 week (subject to CA personnel availability) |
| Provision of Coal Authority comments on draft report | 1 week (subject to CA personnel availability) |
| Submission of final technical report | 2 week |

## Milestones

The key milestones within the project are:

* Provide draft technical report by 3rd March 2017

## Tender Programme

The Contractor must demonstrate that they can meet the timetable detailed above (this may be subject to change). The Contractor will be expected to begin work immediately following contract award.

#### Pricing

A financial ceiling will be set, based upon the appointed Contractor’s financial submission. The financial ceiling will not be exceeded by the appointed Contractor without prior justification and the written authorisation of the Coal Authority’s Project Manager.

#### Tender Return, Assessment & Criteria

The tendering Contractors are to ensure that the registered contact details on the eTendering portal are correct for this process.

In order to register please log on to [www.coal.bravosolution.co.uk](http://www.coal.bravosolution.co.uk), following the links and should you have any difficulties with this procedure, please contact Bravosolution, the Authority’s provider, on 0800 368 4850 (free phone number), who will assist you throughout the whole procedure at any time.

The tender will be awarded based upon a **70% Quality / 30% Financial award weighting**, with the quality assessment being completed prior to the financial assessment.

The documentation to be submitted is summarised.

Only one Quality Submission is required on the eTendering portal.

The Financial submissions for each of the projects are to be submitted separately on the eTendering portal.

**Quality Scoring Assessment**

|  |  |  |
| --- | --- | --- |
| **Assessment** | **Meaning** | **Score** |
| Adds Value | The evaluator believes that as well as meeting the requirements in all respects the proposal describes additional features that will benefit the Authority | 5 |
| Fully Acceptable | The evaluator is fully satisfied that the proposal meets the requirement in all aspects | 4 |
| Minor Reservations | The evaluator is confident that the supplier has the ability to meet the requirement but has some minor reservations | 3 |
| Significant Reservations | The evaluator believes the supplier has the ability to partially meet the requirement, but has some major reservations about the approach or solution proposed. The supplier has not met the minimum requirements as specified. | 2 |
| Unacceptable | The evaluator believe that the evidence fails to show that the supplier is capable in the requirement area | 0 |

**Minimum mark for each element of the quality assessment will be 3**: the evaluation panel is confident that the supplier has the ability to meet the requirements but has some Minor reservations.

**A score of 2 or less will result in a non-compliant bid** and the submission will not progress to the financial evaluation.

**Quality Assessment – Details**

See below details, requirements and weightings for the quality elements of this opportunity.

|  |  |  |  |
| --- | --- | --- | --- |
| **No.** | **Subject** | **Requirement and / or Evidence Required** | **Quality Weighting** |
| 1. | Programme GANNT Chart/ timeline | Gannt Chart or timeline detailing key activities, meetings, milestones, deliverables and latest dates for receipt of information from the Coal Authority or third parties.  Maximum single side of A4 | 10% |
| 2. | Project Personnel / Organisational Experience | CV’s for the named individuals that are committed to the project delivery for the key roles, demonstrating how their experience will benefit this project  Maximum of two sides of A4 per CV | 25% |
| 3. | Understanding of project brief, aims and objectives  Approach, Methodology Statement | Scope of works clearly defined with purpose of each proposed activity also clearly defined. Any assumptions should be clearly stated.  Maximum three sides of A4, including all figures and tables | 40% |
| 4. | Project Management, Communication & Organisation | Details of the names of individuals for each key role that are committed to the project delivery.  Details of the intended use of specialist consultants or sub-contractors.  Maximum of one side of A4 | 10% |
| 5. | Skills & Experience | Statement detailing where similar research activities have been undertaken within the last 5 years (highlighting examples where possible) demonstrating expertise in materials testing for flowing water conditions  Maximum of one side of A4 | 15% |