Mine-water Energy Toolkit

Procurement
Summary
In this section we present general procurement guidance combined with advice on procuring specialist contractors e.g. for drilling boreholes. The exact details for each procurement will vary for each specific situation, local regulations, and the precise nature of the project. Mine-water Energy scheme developers are strongly advised that although this document contains detailed guidance on the procurement of contractors, it is insufficient for an non-expert to use without support from experienced mine energy project service providers.
Key Points
General 1. **Establish Scope of Work**: Define the scope of the work and draft a comprehensive job description for the task. Include specific details such as the desired end result, expected timeline, and any special requirements like specific equipment or drilling techniques. 2. **Plan Procurement Timetable:** Set timetable for each stage of each procurement to ensure completion of the process in line with construction timeline. 3. **Identify Potential Contractors**: Identify potential contractors who are experienced in each of the specialist construction requirements such as coal mine drilling operations and heat networks. This could be based on referrals, past experiences, or research.

4. **Research Contractor Capabilities**: Conduct a preliminary analysis of the contractors' past work, expertise, and experience in similar projects. This might include checking references, reading reviews, and looking at case studies.
5. **Create a Request for Proposal (RFP)**: Generate a Request for Proposal document detailing the project, expected outcomes, timeline, and other pertinent details. This will allow contractors to understand the project fully and give accurate bids.
6. **Specify the form of contract** proposed (e.g. NEC4 ECC etc), and the assessment criteria as per a typical large engineering tender.
7. **Disseminate the RFP**: Share the RFP with the list of potential contractors and invite them to bid. The RFP should include a deadline by which the contractors need to respond.
8. **Review Bids**: Collect and review the proposals from the contractors. Make sure to assess their approach to the project, budget, timeline, and team composition.
9. **Conduct Interviews**: Arrange interviews with shortlisted contractors. These interviews will provide further insight into the contractor's capabilities, approach to work, and communication style.
10. **Best and Final Offer (BAFO).** Invite shortlisted contractors to review their initial offer following the interview process and to submit their 'Best and Final Offer'
11. **Assess Safety and Environmental Compliance**: Review the contractor's safety record, commitment to environmental protection, and their proposed methods to ensure they align with regulatory standards and the company's internal policies.
12. **Contract Negotiation**: Upon selection, negotiate the terms of the contract including the payment schedule, timeline, responsibilities, and project deliverables. Make sure that the contract includes clauses about any unforeseen delays or cost overruns.
13. **Legal Review**: Legal team or advisors to review the contract to ensure that it protects client interests and aligns with all regulations.
14. **Contract Execution**: Once everything is in place and all parties agree, sign the contract and initiate the project.
15. **Project Kick-Off**: Arrange a project kick-off meeting to ensure everyone is on the same page regarding project expectations, timeline, and communication channels.
16. **Regular Monitoring and Evaluation**: Once the work commences, establish a process for regular monitoring and evaluation to ensure that the work is on track and meets the project's standards. (See Project Management section of Toolkit)

Bill of Quantities Guide – for Issuing RFP for Borehole Drilling

1. Ensure that all regulatory and licensing conditions have been met – see licensing and permissions section of the Toolkit.
2. Undertake pre-works Statutory Undertakers services search & complete pre works dilapidation photographic / video survey of the site.
3. Ensure Compliance with Construction (Design and Management) Regulations 2015 and the Borehole Sites and Operations Regulations 1995. To include Principal Contractor role, Principal Designer Role and Designer Role.
4. Provide, maintain and remove on completion adequate welfare facilities.
5. Take necessary precautions including the use of Cable Avoidance Tool (CAT) and Signal Generator (Genny), Ground Penetrating Radar or similar, and indemnify the Employer against any damage, loss, report of consequential claims due to damage to services.
6. The Cable Avoidance Tool (CAT) and Signal Generator (Genny) are often used together to detect and avoid underground utilities. The Genny is used to apply a signal to a metallic utility line (such as a cable or pipe), and the CAT detector is then used to detect the signal and locate the utility. The CAT can also be used on its own to detect utilities that are emitting their own signals, such as live electrical cables.
7. Ground Penetrating Radar is a technology used to detect and map underground utilities, as well as other subsurface features. It works by emitting radar waves into the ground and then analysing the reflected signals to determine the location and depth of objects. GPR can be used to detect a variety of utilities, including both metallic and non-metallic objects.
8. Provide temporary service (electricity) for welfare facilities as necessary.
9. Provide temporary service (water) for welfare facilities as necessary.
10. Deliver, provide and maintain temporary 'Heras-type' fencing for drilling compound, and remove on completion (including warning signs, couplers, high viz feet, wind bracing stabilising bars as and ballast as required.)
11. Design, provision, maintenance and removal of the drill pad, for the duration of the works, should ground not be deemed suitable for loadings of selected rig.

Drilling Works-Pilot Boreholes

12. Drill one temporary narrow diameter borehole using aquifer protection methods to confirm geology and presence of target mine workings. Grout hole to surface upon completion.
13. Conduct pump testing if necessary.

Drilling Works – Abstraction Bore Hole – illustrative methodology

14. Mobilisation, site set up and demobilisation on completion.
15. Set up equipment to contain all arising and to deal with water encountered during the works.
16. Set up at Abstraction Borehole.
17. Drill and case the superficial deposits.
18. Grout and form appropriate plug around casing from base to the surface and test.
19. Drill and case internal cased borehole to the target depth including verticality checks at the frequency identified in your method statement, at least every 50m.
20. Grout and form plug at the bottom of borehole and grout.
21. Drill open bore to target depth.
22. Clean and purge from the bottom of the borehole mud flash and drilling cuttings as necessary.
23. Carry out 'dummy test' to confirm access and accommodation for pumping installation.
24. Install final stainless steel casing and Well Screen.
25. Install stilling well (min ID 1.25'') inside well casing.
26. To purge and evacuate from the bottom of the borehole of any residual mudflush and drilling cuttings as required by the specification.
27. Install detachable cap including cap plate.
28. Construct manhole at ground level including lockable cover.
29. Provide 2 copies of a Factual Report including drilling logs.

Drilling Works – Reinjection Hole

30. Mobilisation, site set up and demobilisation on completion.
31. Set up equipment to contain all arising and to deal with water encountered during the works.
32. Set up at Reinjection Borehole.
33. Drill and case the superficial deposits (assume 10m).
34. Grout and form appropriate plug around casing from base to the surface and test.
35. Drill and case internal cased borehole to the target depth.
36. Drill open bore to target depth.
37. Clean and purge from the bottom of the borehole mud flash and drilling cuttings as necessary.
38. Install final stainless steel casing and Well Screen.
39. Install stilling well (min ID 1.25'') inside well casing.
40. To purge and evacuate from the bottom of the borehole any residual mudflush and drilling cuttings as required by the specification.
41. Install detachable cap (including cap plate with inspection hole).

42. Construct manhole at ground level as described in Contract Drawings and Specification, including lockable cover.

Provisional Items

43. Set up at Exploratory Borehole.
44. Standing time due to circumstances beyond the control of the contractor, and at the instruction of the Engineer.
45. Sealing of aborted borehole to be inclusive of storage, mixing and placing facilities for borehole sealing materials.
46. Reinstatement of land following removal of any temporary arrangements.
47. Removal of all mud flush material from site to an appropriate location if used.
48. Provision of site security during non-working hours (manned or remote monitoring CCTV to be specified).
49. Final depths to be decided by the Engineer.
50. Extra verticality check.
51. WAC Testing.
52. Limited Pumping Test.
53. Source 1 pump capable of delivering 25 l/s from abstraction.
54. Installation of pumps and piping to reinjection well (assume 15m).
55. Rental of 2 x datalogger and 1x barologger.
56. Conduct step test - 4 x 100 min steps on well.
57. Conduct and supervise constant rate test on well.

Demobilisation of pumping equipment. It is important to stay flexible and open to adjustments as the project progresses. Unexpected obstacles may arise, and the ability to adapt quickly will help ensure the success of the project.

Key Actions

Action	Timeline
1. Create a procurement plan that takes into account permissions required prior to initiation and the construction timeline.	At project inception.
2. Fully understand the products and services required to deliver the project successfully prior to developing scopes of work	From project inception

3. Become familiar with the specialist contractor market e.g. borehole drilling companies with proven and demonstrable expertise in the particular challenges of drilling into former mine workings and successfully hitting targets at depth.	From project inception