The Coal Authority

RD00606 Short Term Active Treatment Trials: Scope of Work

PSC Scope

September 2024

The Coal Authority, 200 Lichfield Lane, Mansfield, Nottinghamshire, NG18 4RG

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S 105 Client's objectives

In 2011, the Water and Abandoned Metal Mines (WAMM) Programme was set up between the Environment Agency, Defra and the Coal Authority to address pollution of rivers by abandoned metal mines. Currently, the Coal Authority operates four WAMM mine water treatment schemes, each using a different treatment technology, which are improving water quality in about 20 km of rivers.

In January 2023, Parliament adopted a statutory metal mines target, under the Environment Act 2021, to halve the length of English rivers polluted by harmful metals from abandoned metal mines by 2038. The Government's Environmental Improvement Plan (EIP), published in January 2023, estimated that to achieve this long-term target would likely require around 40 new mine water treatment schemes and a similar number of diffuse interventions. The EIP set a non-statutory interim target to construct 8 mine water treatment schemes and 20 diffuse interventions by 31 January 2028.

To help deliver the interim and long-term targets, the WAMM Programme is currently investigating active treatment options for mine water discharging from up to five abandoned metal mines. The purpose of this document is to describe a scope of work to carry out pilot plant test work at these sites to obtain the data necessary to provide an indicative cost to build and operate full-scale active mine water treatment schemes.

WAMM R&D

This project is intended to support delivery of the WAMM R&D Strategy which is set out below.

The WAMM R&D strategy is designed to minimise the whole life cycle costs and risks in delivering the Environment Act target to halve the length of rivers polluted by harmful metals from abandoned metal mines by 2038, whilst optimising the existing operational water treatment schemes and diffuse interventions.

Specific objectives include:

1. Decreasing whole life cycle costs (monetised and carbon) of mine water treatment schemes and diffuse interventions, particularly the land area required.

2. Optimising current technologies, for example:

2.1. Sulphate reducing systems:

2.1.1. Decreased hydraulic residence times,

2.1.2. Odour control methods,

2.1.3. Treatment materials.

2.2. Active chemical treatment:

2.2.1. Wheal Jane: decreasing power and chemical costs, for example through AI.

2.2.2. Site specific trials of different technologies.

3. Investigating alternative treatment technologies:

3.1. Sorption, chemical treatment, bio-chemical removal systems.

4. Reduce impacts from wastes:

4.1. Minimise disposal of wastes to landfill,

4.2. Find beneficial use for wastes.

5. Improve efficacy of measures to control diffuse inputs of metals.

6. Enhancing biodiversity on land (e.g., increasing priority species, planting trees and enhancing wildlife-rich habitats).

7. Contributing to net zero, particularly through sequestering carbon in soils and vegetation.

8. Improve our understanding of the impacts of metal pollution on aquatic wildlife.

9. Quantifying and monetising benefits.

The *Service* Objective

The objective if the *service* to be carried out is to:

- Undertake up to 5 no. innovative short term active treatment pilot trials.
- Determine optimal treatment conditions of treating the mine water.
- To produce a report providing the optimised treatment process and costs for treating the mine water at full-scale.

S 110 Background

The *Client* requires up to 5 no. active mine water treatment trials, as part of the R&D Strategy to support programme delivery, at up to 5 no. locations. It is expected that trials could run for approximately 6 weeks. Time proposals will be discussed and agreed in writing with the *Client* prior to commencement.

The *Consultant* shall design and undertake pilot trials for the active treatment of mine water of up to 5 no. sites to obtain data for optimised treatment process and costs for treating the mine water at full-scale.

The *Client* shall award from 1 no. of the active trials up to 5 no. active trails. These may be at any of the 5 identified sites with the option to award to multiple *Consultants*.

The *Client* reserves the right to award to multiple parties depending on the proposals provided during the tender period. Tenders shall be scored on quality of submission.

The *Consultant* shall design, supply, and install a suitable pilot scale active treatment plant for each of the mine water sources to be treated and carry out trials to optimise the system.

The *Consultant* shall be responsible for the construction of any temporary works required to provide the *Services*.

The *Consultant* shall provide an individual report at the end of each trial detailing the optimised treatment process and costs for treating the mine water at full-scale.

The details of the work are provided in the following sections of this scope.

S 200 Description of the Service

S 205 Description of the service

An active treatment pilot trial of the mine water (to be agreed between the *Client* and *Consultant* at the award of the award of the Service) shall be designed and carried out by the *Consultant* in order to provide a report that describes the process to treat each mine water and shall present the study deliverables.

Up to 5 no. active mine water pilot trials shall be carried out by the *Consultant* at up to 5 no. sites.

Each trial shall be considered as an individual piece of work, with the *service* to be provided by the *Consultant* for each trial as separate services and deliverables. Any ambiguity regarding the individual delivery of each trial shall be raised prior to accepting the *Service* or the *Client* assumes clarity, any future ambiguities will be decided at the discretion of the *Client.*

The core objective of this study is to obtain the data necessary to provide indicative costs and innovative methods for actively treating the mine water at a location using an appropriately sized active treatment scheme. For the various options to be compared objectively, processes must be considered at optimised or near-optimised conditions. “Optimal” can be a subjective measure, therefore for clarity, the *Client* considers “optimised” to mean that the sum of the following costs is minimised for a given set of feed conditions and process type:

- Power consumption variable costs
- Chemical reagent costs (incl. transport and delivery, etc.)
- Consumable costs (i.e. replacement electrodes, wear parts, etc.)
- Labour costs
- Waste disposal costs (incl. transport)

Other costs and factors will be considered as sensitivities during the *Client’s* cost effectiveness appraisals and are not to be included in determining “Optimal” conditions. Specifically to be excluded include:

- Prospective sale of waste streams
- Renewable power use
- Sustainability criteria

The *Consultant* shall submit the pilot plant and trials design to be accepted by the *Service Manager*, to include:

- plant diagram
- process flow diagram
- P&ID
- Testing and methodology
- Equipment schedule
- Contractually dependent consumables

The chosen active treatment(s) are required to treat the raw mine waters, at each location defined in **Error! Reference source not found.**, to meet the contaminant concentrations in the effluent at each location defined in **Error! Reference source not found.** for operation 24/7/365 days a year. The *Client* acknowledges that the High Density Sludge (HDS) process, using either lime or sodium hydroxide solution, could be used to treat these raw mine waters. Other chemicals can be used to form a HDS and the benefits of these could be investigated. Also, there could be other technology or technologies available to treat these mine waters and these could be considered options. Pumping/transfer costs to get the water to the head of the treatment works are specifically to be **excluded**. As this study is considered to be at Optioneering level, costs for any option under consideration can be produced with a +/-40% confidence in the accuracy of the cost estimate values.

The *Consultant* undertaking this test work shall also be able to meet the following conditions:

- The supplier must be able to supply a suitably sized pilot plant and any other ancillary equipment that is required for the trial work.
- The supplier must be able to appropriately staff and operate the pilot plant for the duration of the trial with suitably trained, competent, people.
- The supplier shall provide a report at the end of the trial that describes the work undertaken, its results, highlights any operational issues that manifest during the pilot test, and make recommendations.
- The use of sub-contractors shall be agreed, in advance and prior to their engagement, with the *Client's* appointed *Service Manager*.
- Any testing laboratory engaged for the analysis of samples must be UKAS accredited.

It is recognised that some bench batch testing may be required prior to any pilot testing taking place at site. Where this is recommended, this should be highlighted to the *Service Manager* no later than the Post Award Meeting so that mine water collection can be facilitated. The *Consultant* shall include all pre-requisite testing in the programme provided as part of their submission for the tender.

Study Deliverables

The output of the Pilot Trials study shall be a report that describes the process to treat each mine water. This report shall be submitted for acceptance by the *Service Manager.* The process concept should include, as a minimum, the following technical deliverables:

- Plant diagram to indicate the plant layout and the area the plant could occupy
- Process Flow Diagram
- Process description that will summarise how the plant will work
- P&I diagram
- Major equipment list, including "size" (i.e. capacity) of equipment
- Specifications / recommendations of process dependent chemicals required
- Chemical delivery and storage requirements and options. Some of the treatment sites may be in a rural setting and access during the winter could be restricted. So, there is a requirement to have at least 6 weeks storage of consumable chemicals on these sites during the winter period

- Study level appropriate capital cost estimate, using 2024 prices (+/- 40% Capital Expenditure), with breakdown by equipment list item and to, also, include civils and construction costs for the process building
- Annual requirement for contractually dependent consumables – e.g. total lime (tonnes) or total sodium hydroxide (tonnes), total hydrogen peroxide (cubic metres), total flocculant (kilograms), total power (kilowatt hours) and total operator / maintainer requirement (man-hours)
- Study level appropriate estimates to be given for all operational consumables (+/- 40% Operating Expenditure on an annual basis)
- Mass and Energy Balance
- Annual mass and projected assays of the solid product streams
- Predicted Process Water quality in between precipitation stages (where applicable)
- Cost optimisation summary that demonstrates how the process concept provided minimises overall costs within the constraints provided. Other cost optimisation/comparisons for other reagents maybe identified and required as the study takes place
- Local waste recycling or disposal options of solids product stream (at high level)

It should be noted that the above list of technical deliverables is not exhaustive and other technical deliverables maybe identified and required as the study takes place. In the event of this happening, the newly identified deliverable shall be brought to the attention of the *Service Manager* who will decide whether it should be studied further. The *Client* may also identify additional deliverables during study and shall notify the *Consultant* in the form of a compensation event to this contract.

After reviewing the study's report the *Client* may want to carry out additional investigations to improve its understanding of the operating costs of each process concept to further this study. Any potential, additional investigations would be procured by the *Client* as a compensation event to this contract.

S 300 Existing Information

S 305 Existing Information

5 no. potential locations have been selected for the trials to be located at:

A. Wheal Jane
B. Bridford
C. Cambokeels
D. Killhope
E. Nent Haggs

In this document, the mine water from these sites is characterised using the 90th percentile concentration from analytical data gathered over several years. The 90th percentile concentration is to be used as a design basis for an active treatment trial since this is what the scheme would most likely have to treat. Using the 90th percentile values also has the advantage of providing some extra treatment capacity to allow for events such as an increase in the mine water flow rate or a deterioration of the water chemistry. Furthermore, it also provides some contingency to mitigate the effects of increased rainfall or differing rainfall patterns caused by climate change.

The chemistries and flows that the test works would be expected to treat, for each location, are shown in Table 1. Ideally the active scheme should remove more than 99% of the identified contaminants. Table 2 shows the anticipated target concentrations of the identified contaminants, at each location, in the effluent discharged to the receiving water course. Some of the contaminants in the raw mine waters are present at concentrations such that after 99% removal, the resulting concentration is below the measured limit of detection for an ICP-MS instrument. This is noted in Table 2. If it is not technically feasible to achieve more than 99% removal for a given analyte, or this removal would incur excessive costs, i.e. in capital equipment, reagents or electricity, the *Consultant* must inform the *Client* so that a revised level of removal for the analyte can be agreed for the study.

Table 1. Flow and mine water chemistry (90th percentile values)

	Wheal Jane	Bridford	Cambokeels	Killhope	Nent Haggs
Flow, L/s	353	7	7	30	11
pH	3.3	5.3	7.3	7.70	8.22
Alkalinity (as $CaCO_3$), mg/L	0*	4	184	187	222
Total Suspended Solids, mg/L	16	9	16	12	8
Chloride, mg/L	307	26	245	23	12
Sulphate, mg/L	362	233	314	48	329

Calcium, mg/L	100	27	140	78	139
Magnesium, mg/L	14	11	14	12	26
Sodium, mg/L	116	15	117	13	33
Aluminium, mg/L	11	0.4	0.14	0.20	0.01
Iron, mg/L	95	64	0.24	0.72	0.11
Manganese, mg/L	3.5	8.8	0.81	0.09	0.39
Arsenic, mg/L	0.70	0.038	0.006	0.001	0.001
Cadmium, mg/L	0.022	0.039	0.0006	0.002	0.01
Copper, mg/L	0.44	0.002	0.008	0.004	0.001
Lead, mg/L	0.48	2.7	0.001	0.048	0.007
Nickel, mg/L	0.18	0.1	0.03	0.004	0.02
Zinc, mg/L	21	10.1	2	1.1	10

* Wheal Jane Metal Mine Site is measured Acidity (as $CaCO_3$) = 222 mg/L (90^{th} percentile)

Table 2. Target concentration of key contaminants in treated mine water, after removing 99%

	Wheal Jane	Bridford	Cambokeels	Killhope	Nent Haggs
pH	<9.0	<9.0	<9.0	<9.0	<9.0
Total Suspended Solids, mg/L	<30	<30	<30	<30	<30
Iron, mg/L	<0.95	<0.95	0.24	0.72	0.11
Manganese, mg/L	<0.035	<1	0.81	0.09	0.39
Arsenic, mg/L	<0.070	<0.001*	<0.001*	<0.01*	<0.001*
Cadmium, mg/L	<0.0002	<0.0004	0.0006	0.001	0.001
Copper, mg/L	<0.0045	0.002	0.008	0.004	0.001
Lead, mg/L	<0.03	<0.03	<0.03	<0.03	<0.03
Nickel, mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc, mg/L	<0.21	<0.10	<0.05	<0.05	<0.1

* This is the measured limit of detection for an ICP-MS instrument

The flows provided above in Table 1 are the flows at each of the mine water site. However, the *Consultant* may not have access to the flow at each site. This may be because of seasonal changes or other works such as the operational treatment scheme. The continued operational capacity of each mine water treatment scheme on the sites will be the priority of the flow distribution.

The *Consultant* shall agree in writing the required flow for the Pilot trials with the *Client* before starting on site.

Potential Site Locations

Wheal Jane:

- An operational mine water treatment scheme in Cornwall, South West of England.
- Access to the site is down a road (1 km), shared with other site traffic.
- There is power at the site.
- All works are to be planned and undertaken around any 'Operational Contracts' in place, and without interrupting the scheme's operational capability.

Bridford:

- A historic mining site in Devon, South West of England.
- Access to site is down an unsealed single track lane (1 km) from the main road, with passing places.
- Access is shared with residents.
- There is power at the site.

Cambokeels:

- A historic mining site in County Durham, North Pennines.
- Access is down a short (100m) steep sloped track with limited turning space. The track was recently (March 24) resurfaced with stone.
- There are recorded workings going underneath the access track. Mines plans show these to be of moderate depth (60-70m), however it cannot be ruled out extraction was not more extensive than shown on the plan. Plant has been using the track with no signs of stability issues.
- Most of the flat area at the bottom of the track is within flood zone 2.
- There is limited space in the area where the discharge is.

Killhope:

- A historic mining site in County Durham, North Pennines.
- Access is down a short (50m) track and involves crossing a stream at a ford (passable for vehicles except in peak river flows).
- The site is open as an attraction to the public (closed in winter).
- Part of the site is a Scheduled Monument.
- There is power at the site.

Nent Haggs:

- An operational mine water treatment scheme in Westmorland and Furness, North Pennines.
- Access to site is via a laid track.
- There is power at the site.
- All works are to be planned and undertaken around any 'Operational Contracts' in place, and without interrupting the scheme's operational capability.

Site Visits

All *Consultants* are advised to visit each site to familiarise themselves with the sites layout, limitations, restrictions and access. Visits to the premises must be made by appointment only with the *Client*.

There is limited parking at each site, *Consultants* shall only attend at the agreed time provided by the *Client.*

Wheal Jane, TR3 6EE: 15th October 2024
Bridford, Nr EX6 7AR: 16th October 2024
Cambokeels, Nr DL13 2HW: 1st October 2024
Killhope, DL13 1AR: 30th September 2024
Nent Haggs, CA9 3LE: 3rd October 2024

PPE required:

- High viz vest
- High viz trousers
- Safety Boots
- Eye protection
- Gloves
- Hard hat

S 400 Specification and standards

S 405 Specification and standards

All work undertaken in relation to this Work Package must be delivered in accordance with:

- Any testing laboratory engaged for the analysis of samples must be UKAS accredited or accredited to ISO/IEC 17025.

S 500 Constraints on how Consultant is to Provide the Service

S 505 Contract team – Others

Role	Details
Client	Name: The Coal Authority Address for Communications: 200 Lichfield Lane, Mansfield, NG18 4RG Address for electronic Communications: Aconex
Service Manager	Name: Hannah Corran Address for Communications: 200 Lichfield Lane, Mansfield, NG18 4RG Address for electronic Communications: Aconex

S 510 Communication System

All communications, including distribution of correspondence, contract notifications, drawings and technical submissions etc., shall be via Aconex. The *Client* will provide access to the document control platform once the contract is executed.

S 515 Management Procedures

The following meetings are planned for each individual trial:

Meeting	Location	Core Attendees	Frequency
Post-Award	*Client* office Mansfield NG18 4RG or remote via Microsoft Teams	*Service Manager*, *Consultant's* Project Manager	Once
Works progress & early warning	Site or remote via Microsoft Teams	*Service Manager*, *Consultant's* Project Manager	Weekly throughout the project
Completion & lessons learnt review	*Client* office Mansfield NG18 4RG or remote via Microsoft Teams	*Service Manager*, *Consultant's* Project Manager	Once

General meetings/calls to address the following:

- Safety Moment;
- Incidents, accidents and near misses;
- Programme vs progress;
- Early warnings;
- Compensation events;
- Risk register review;
- Information required / decisions outstanding / action log;
- Environmental / sustainability reporting; and,
- Stakeholder engagement / interface issues.

The *Consultant* shall allow for the key personnel (and the sub-*Contractors* if required) attendance at meetings.

The location for all meetings organised by the *Consultant* not at the Site shall be within reasonable travel distance (1 hour by car) from the *Client's* office.

S 520 Interfaces with third parties

Any communications with third parties who are not directly involved in the *service*, the same project or a statutory authority for which the *service* relates to shall be through the *Service Manager.*

All communications with land owners or for site access shall be through the *Service Manager,* including any requests for access such as site visits or providing the works.

All communications relating to the other works taking place on the sites including 'Operational Contracts' shall be through the *Service Manager* unless otherwise agreed in writing.

S 525 Co-ordination and co-operation

The contract shall be executed with collaboration and transparency between the *Client, Service Manager* and *Consultant*.

All works shall be planned and undertaken around any 'Operational Contracts' in place, and without interrupting any operational capabilities.

The *Consultant* shall be responsible for submitting information to statutory authorities or other similar organisations that are required in order to carry out the works.

S 530 Submission procedures

The submission procedures are to be undertaken individually for each Trial.

The *Consultant* shall submit design information and drawings via Aconex to the *Client* for review. All documents and drawings shall be submitted in their native format (word, cad, excel, etc.) and PDF with the exception of copyright materials which shall be in PDF format as a minimum.

The *Consultant* will submit a detailed design, and testing and methodology to the *Service Manager* for acceptance by the *Client* within 4 weeks prior to the commencement of the works.

The *Consultant* will submit to the *Service Manager* details of the *works* proposals, including location and extent of temporary works and the method statements, for acceptance by the *Client* at least 2 weeks prior to mobilisation on site.

The *Consultant* will submit the report to the *Client* within 4 weeks of the completion of the works.

It may be acceptable to the *Client* to receive separate submissions depending on proposals such as the programme. All changes to the submissions must be requested in writing to the *Service Manager* for acceptance. Acceptable separate submissions may include design, and testing and methodology for bench top works prior to design, and testing and methodology for the onsite pilot trials.

It is expected that any change in methodology is submitted within 48 hours of notification to the *Service Manager* for acceptance by the *Client.*

S 535 Quality management system

Submissions and reporting are expected to be of a high professional standard and shall be subject to thorough, qualified internal peer review prior to presentation to the *Client*. The standard of the reporting may influence future award decisions for future work packages.

The *Consultant* will be deemed to have included in tender for the services of a suitably experienced and competent person who shall, during the duration of the Works be site based to manage and take responsibility for the trials. This representative shall attend all site meetings properly called by the *Client* and shall attend all necessary coordination meetings. *Consultants* will be deemed to have included all costs of attending meetings in their tender return.

If applicable to the works under the Construction (Design & Management) Regulations 2015 (CDM 2025), the *Consultant* shall indicate as part of their tender return how they will attain compliance with regards to competency of their Designers. Wherever design work is undertaken, they shall comply with CDM 2015 and undertake design risk assessments and provide hazard identification schedules and notes on drawings.

Should, at any time during the project, the competency of the *Consultant* be brought under scrutiny, the *Client* has the right to request the CV of any *Consultant* for review. Competency can be assessed at the discretion of the *Client*.

Should a *Consultant's* competence be found to be unacceptable, the *Client* have the authority to request that the *Consultant* in question be removed from the Project.

S 540 Quality policy statement and quality plan

The *Contractor* shall comply with the Quality Policy Statement and Quality Management Plan submitted prior to the Post Award meeting.

S 545 Health and Safety requirements

The *Consultant* is to comply with the requirements of law, addition health and safety information will be provided/advised as necessary.

S 550 Statutory requirements

Where CDM Regulations 2015 apply the duty holders are as stated below:

The *Client* is the **Client**.

The *Client* is the **Principal Designer**.

The *Consultant* is the **Designer**.

The *Consultant* is the **Principal Contractor**.

S 555 Disclosure

The *Consultant* shall not, without prior consent of the *Client:*

- promote the *works.*
- disclose information about or obtained in connection with the service.

All promotional material or information to be distributed outside the project team shall be submitted for approval of the *Client*.

This requirement applies to all suppliers and Subcontractors procured by the *Consultant* as part of this project.

S 560 Form of retained documents

The *Consultant* shall retain the documents for the duration of the *period of retention*.

S 600 Information and other things provided by the Client and Others

S 605 Provision by the Client

The *Client* is to provide opportunities to visit each of the potential sites of the trials during the tender process. All *Consultants* are advised to visit each site they wish to bid for in order to familiarise themselves with the site layout, limitations, restrictions, access and any addition requirements.

Visits to the premises shall be made by appointment only through agreement with the *Client.*

The *Client* provides available mine water chemical and flow data, please also refer to S 305, Table 1 and Table 2.

The *Client* shall notify the *Consultant* of any H&S issues raised on the Site to ensure visibility of reoccurring hazards that the *Consultant* may need to consider as part of the *Service.*

The *Client* provides as the point of contact between the *Consultant* and Others.

The *Consultant* shall request from the *Client* any information required for the *service* to be completed that has not been provided no later than 1 week following the post award meeting.

S 610 Provision by Others

Provisions provided by Others including the *Client's* site Operators, will all be provided through the *Client* and not via direct liaison between the *Consultant* and Operator unless otherwise stated.

The *Consultant* shall request from the *Client* any information required for the *service* to be completed that has not been provided no later than 1 week following the post award meeting.

S 615 Approvals from Others

The *Consultant* is required to be aware of and obtain all necessary approvals including licences, permits, or consents to undertake the *service.*

S 700 Timing, programme and completion

S 705 Programme Requirements

A detailed programme shall be prepared and provided for each of the trials undertaken.

A detailed programme is provided by the *Consultant* to the *Client* no later than 2 weeks following award.

The programme is required to show the following:

- The *starting date, access dates,* Key Dates and Completion Date;
- Planned Completion;
- The order and timing of the operations which the *Consultant* plans to do in order to Provide the Service;
    - Post Award Meeting (One week after award)
    - First Programme (2 weeks after contract date)
    - Design, testing and methodology
    - Any pre-site testing
    - Start on site
    - Completed worksheets and data
    - Report submitted for acceptance
- The order and timing of the work of the *Client* and Others as last agreed with them by the *Consultant*;
- The dates when the *Consultant* plans to meet each Condition stated for the Key Dates and to complete other work needed to allow the *Client* and Others to do their work;
- Provisions for:
    - Float;
    - Time risk allowances;
    - Health and safety requirements; and,
    - The procedures set out in the Contract.
- The dates when, in order to Provide the Works in accordance with the programme, the *Consultant* will need:
    - Access of a part of the Site if later than the *access date*;
    - Acceptances;
    - Plant and Materials and other things to be provided by the *Client*; and,
    - Information from Others.

The programme is to include a Gantt chart. All elements of the programme are to be submitted in electronic copies. The electronic copies are in:

- The software in which the programme was prepared; and,

- Adobe acrobat format (.pdf).

The *Consultant* ensures that the electronic copy in the software in which the programme was prepared is to be capable of being read and edited by MS Project 2016.

Programme submissions are to clearly demonstrate all progress that took place up to and including the current status date. The status date should be clearly articulated along with each submission.

Each programme submitted by the *Consultant* is to have the last Accepted Programme displayed as a baseline. This should be assigned and clearly displayed (graphically represented in Gantt view and also through the additions of the 'Baseline Start Date', 'Baseline Finish Date' and 'Finish Variance' columns). Programme to be fully logic linked, clearly displaying the projects critical path.

Key Dates

The *consultant* shall refer to the Contract Data for the key dates.

S 710 Methodology Statement

Specific requirements as defined in S 705.

S 715 Sequence and timing

A programme shall be provided by the *Consultant* and updated every week or to any major changes in programme such as duration of *service* on site or completion date.

The completed worksheets, data and report shall be issued to the *Client* for review no later than approved in the programme.

Please allow 4 further weeks for the *Client* to review documentation.

Further amendments or edits required shall be re-submitted to the *Client* within 2 weeks of return of documentation.

Any changes to these timescales must be identified in the post award meeting.

S 720 Information and other things provided by the Client and Others

Specific requirements as defined in S 705.

S 725 Information Required

Specific requirements as defined in S 705.

S 730 Revised Programme

The *Consultant* shall provide a summary of changes with each revised programme providing an explanation of the changes and impact on following activities.

Programme narrative is to be provided in support of each submitted programme – detailing as a minimum, progress achieved since the last submitted programme, ability to meet future contractual milestones, changes to critical path, any key changes to programme logic/ durations, incorporated CE's, added or deleted activities.

S 735 Completion Definition

The *service* shall be complete when:

- All *services* within the Scope are completed;
- All testing to prove compliance with the Scope has been undertaken;
- The following information has been completed and issued to the *Client* and approved as final versions:
    - Data from any and all tests conducted.
    - Pilot trial's outcome report
- Temporary welfare has been removed and the area reinstated; and,
- Any Defects are recorded and all significant Defects (that would affect the plant performance or would require the plant to be taken off line) are resolved and completed.

S 740 Sectional Completion definition

N/A.

S 800 Other requirements of the conditions of contract

S 805 Consultants application for payment

The *Consultant* shall provide work done to date (as a percentage) within an updated activity schedule lines on a monthly basis to the *Service Manager.*

The *Consultant* shall submit an accrual by the second to last working day of the month to the *Service Manager*, detailing the expected sum to be applied for. All applications to be agreed in advance of final submission.

The *Consultant* shall provide a revised forecast of spend to completion by the 3rd working day of each month.

All submissions shall be made via Aconex.

S 810 Client use of the material

The *Client* may use the material as they require and in line with the organisational policies in place.

S 815 Consultant use of the material

The *Consultant* shall not use any material created for the purpose of the *service* outside the *service* without prior written consent from the *Service Manager.*

S 820 Records of expenses

The *Consultant* shall keep records of invoices, receipts and any other supporting documentation for all *expenses* incurred and shall be submitted to the *Client* with all relevant invoices.

~~*S 900 Acceptance or procurement procedure (Options C and E)*~~

~~*S 1000 Accounts and records (Options C and E)*~~

~~*S 1100 Ultimate holding company guarantee (Option X4)*~~

~~*S 1200 Undertakings to Others (Option X8)*~~

~~*S 1300 Transfer of rights (Option X9)*~~

~~*S 1400 Information modelling (Option X10)*~~

~~*S 1500 Performance bond (Option X13)S 1600 Climate change (Option X29)*~~

~~*S 1700 Project Bank Account (Option Y(UK)1)*~~