

**Government of British Columbia
Ministry of Sustainable Resource Management
and
Partnerships British Columbia**

**REQUEST FOR PROPOSALS
FOR A PUBLIC PRIVATE PARTNERSHIP**

FOR THE DESIGN, CONSTRUCTION, FINANCING,
OPERATION
OF

BRITANNIA MINE
WATER TREATMENT PROJECT

May 6, 2004



**Ministry of
Sustainable Resource Management**



Britannia Mine Request for Proposals

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1. Introduction

1.1. Definitions

Capitalized terms used in this Request for Proposals (the “RFP”), unless defined within the text of this RFP have the meanings as set out in the draft Project Agreement attached at Appendix G, or in the additional definitions set out in Appendix A: Definitions.

1.2. Introduction

Her Majesty the Queen in Right of the Province of British Columbia as represented by the Minister of Sustainable Resource Management (the “Province”) is undertaking a remedial action program to mitigate the effects of historic mining operations at the Britannia Mine. This program includes a broad range of initiatives, including the design, construction, financing and operation of the water treatment plant and ancillary infrastructure, which is the subject of this RFP and additional work which is not. The program is known as the Britannia Mine Remediation Project.

The term the “Project” in this RFP means the entire scope of work as defined in the RFP, including the design, construction, financing and operation of the water treatment plant and all ancillary infrastructure and thereafter, the “Operations”, being the operation, maintenance, repair and replacement of the Project. The term “WTP” refers specifically to the water treatment plant itself and related equipment and facilities, but excludes other components of Project, such as the Fan Facilities, the Outfall, the 4100 Portal and the Plug. The Project will treat the Contaminated Water from Britannia Mine before it enters Howe Sound as well as groundwater from the Fan Area. The successful private sector entity or consortium Proponent will be designated by the Province as the preferred Proponent, and upon execution of the Project Agreement, will become the Operator, responsible for the design, construction, financing, and operation of the Project.

2. Objectives and Scope

2.1. Project Objectives

The Province’s expectations from the Agreement are summarized below. These expectations are provided to the Proponents as general guidance and are not intended to supersede or replace the specific requirements in Appendix C of the RFP. There is no order of importance in the following list.

1. The Project is to be designed, constructed and operated in a manner that protects the environment, in accordance with all current environmental regulations and standards, and to achieve continuing improvement in performance during the operating phase.
2. The treatment technology and Project design must have the flexibility to efficiently treat a wide range of water volumes and contaminant levels, including treatment of groundwater on a continuous basis and must be able to accommodate peak flows of Contaminated Water during all seasons.
3. Buildings and landscaping are to be aesthetically pleasing. The buildings should be designed and constructed to retain their appearance under local climatic conditions for 20 years minimum, including exposure to sea air.
4. Safety during construction and operation are important to both the Proponent and the Province. There is a preference for safety to be designed into the Project by

such means as wide roadways, ease of access to process equipment, and “inherently safe” features. Potentially unsafe situations are to be mitigated during design.

5. All facilities are expected to be in use after the Term of the Project Agreement. Quality is to be designed into the Project so that at the end of the 20-year contract term, the Project is fully operable, subject only to normal wear and tear. Only new equipment and materials will be allowed in the construction of the Project.

2.2. Project Scope

2.2.1. Work and Operations

The services to be provided by the preferred Proponent are comprised of two phases. First, the preferred Proponent will undertake the Work, being the design, construction and commissioning of the Project. Thereafter, the preferred Proponent will Operate the Project so as to satisfy the requirements of the Project Agreement. The preferred Proponent will provide or arrange for financing for both the Work and the Operations throughout the Term of the Project Agreement.

2.2.2. Scope Associated with the Design and Construction of the Project

During the Work phase of the Term, the Proponent will be required to perform the following tasks in conformity with the requirements of the Project Agreement:

- The mine water conveyance system from the 4100 Level Plug to the WTP.
- Upgrade the 4100 Portal as required in light of the Proponents design and as may be agreed by the Province. When the scope and parameters of such work have been defined, they will be included in the Work and paid for by lump sum or by appropriate adjustment of the Performance Mechanism.
- Build the Fan Facilities. When the scope and parameters of the Fan Facilities have been defined by the Province, they will be included in the Work and paid for by lump sum or by appropriate adjustment of the Performance Mechanism.
- A pumping system to pump storm water on an intermittent basis from the existing collection system to the outfall. The design requirements are still in development. The Proponent should provide for an allowance for storm water management. When the scope and parameters have been defined by the Province, they will be included in the Work and paid for by lump sum or by appropriate adjustment of the Performance Mechanism.
- A Project capable of treating acidic mine waters and groundwater at a design flow rate of 1,050 m³/hr to meet the discharge criteria specified in Schedule C. The Project must be capable of treating groundwater on a continuous basis. The groundwater may be saline, and the volume may be as low as 25 m³/hour. A separate treatment circuit for groundwater is acceptable.
- A piping system capable of conveying water from the WTP to a marine outfall system in Howe Sound. The effluent must discharge through a diffuser at a depth of 50 meters below sea level. The on-shore section of the outfall must be designed and priced in the Proposal. The design and construction of the marine portion will be discussed with the Proponent, and when determined it will be

included in the Work and paid for by lump sum or by appropriate adjustment of the Performance Mechanism.

- Power supply from the existing BC Hydro substation, site power distribution, site lighting, potable water supply, site communications, site grading and drainage, security fencing, and landscaping.
- A system is required for untreated mine water to bypass the WTP when the volume of water entering the mine workings exceeds both the capacity of the plant and the available storage capacity. The untreated mine water is to be partially neutralized and co-mingled with treated effluent before it enters Howe Sound.
- Provide for future landscaping as mutually agreed between the Province and the Proponent. When such landscaping is determined it will be included in the Work and paid for by lump sum or by appropriate adjustment of the Performance Mechanism.
- Develop procedures for project management, document control, quality control, and quality assurance.
- Develop procedures to address construction and operational safety, and compliance with both the operational guidelines established by the Province with respect to the operation of the Project, and the *Mines Act*. This includes definitive Hazard and Operability Analysis (HAZOP), or a similar approach.
- Carry out the shake down and commissioning of the Project.
- Obtain permits and approvals which the Province has not agreed to obtain from authorities having jurisdiction as required. An assessment of the required permits and the responsibilities of the Province and the Proponent can be found in Appendix H.

2.2.3. Scope Associated with the Operations of the Project

The Proponent will be responsible for the overall operation, repair and maintenance of the Project constructed in a manner that is in compliance with the requirements this RFP and RFP Documents, and that maintains the utility of the assets over the Term. The services during the operating phase are described in Appendix B2 along with monitoring requirements for such services. The Proponent shall generally provide any services reasonably required, but not listed, to operate, repair and maintain the Project and sustain a fully functioning facility.

The following generally summarizes the operating scope and requirements during the Term in conformity with the Project Agreement:

- Provide trained personnel to operate and maintain the Project; provide adequate supplies of chemicals, maintenance and repair supplies.
- Operate the Project and associated infrastructure/systems when water is available for treatment.
- Maintain the Project and associated infrastructure/systems in standby condition when not treating water. (e. g. Sludge re-cycling or disposing of any residuals).
- Operate and maintain the collection and pumping systems for groundwater and storm water.

- Manage the mine reservoir to maximize the volume of water treated and minimize the volume of mine water that by-passes the WTP. The Proponent will be responsible for matters within its control, but not be responsible for any changes in the mine water reservoir resulting from collapse of the mine workings, natural changes in the reservoir or other matters that are beyond the reasonable control of the Proponent.
- Maintain the Access Road and the Jane Basin Road as needed to provide the contracted services
- Collect and compile data related to snow pack, snow melt, reservoir levels, and use this information to manage the flow of water to the WTP.
- Maintain all permits required to operate the Project and associated infrastructure/systems.
- Management of the Sludge from the Project including the ultimate disposal of the Sludge.
- Operate the Project within the operating guidelines for routine operation, as established by the Province.
- Collect and compile all Project operational data, including effluent chemistry, pH, and total suspended solids (TSS) parameters in accordance with the Province's Guidelines.
- Develop a long term budget for costs required to maintain, repair, and operate the Project and associated infrastructure/systems.
- Make capital expenditures required to maintain the condition of the buildings and the Project and replace any elements of the Project that may require replacement.
- Perform routine maintenance, repairs and replacements, and annual rehabilitation in accordance with an annual operating and maintenance audit, which will be performed by an independent contractor to the Province.
- Perform "extraordinary work" related to the Project as requested by the Province as specified in the Project Agreement.

The Proponent will not be responsible for the collection, compilation or interpretation of environmental data collected with respect to the marine ecosystem in Howe Sound or for Other Work associated with the Britannia Mine Remediation Project that is not within the scope of the Work or the Operations.

The Proponent will design and develop the layout of the Project, including roadways and drainage, taking into consideration the process requirements, adequate space, access for ease of operation, maintenance, safety and construction sequencing and integration of the Project into the surrounding site.

3. Summary of Business Arrangements

The following section provides background information regarding the commercial structure of the DBFO.

3.1. Business Arrangements

The business arrangements may be governed by the following principles which will be further documented in the Project Agreement. This summary is for indicative purposes only and any/all terms may change prior to closing.

The Proponent will design, construct, finance, commission, operate and maintain the Project and certain other aspects of the Britannia Mine area over the Term of the Project Agreement.

3.1.1. Schedule and Commissioning

Substantial Completion of the Project is expected to occur by September 30, 2005.

“Substantial Completion” is defined in the Project Agreement. Substantial Completion includes completion of the start-up testing (as described in Appendix B).

Upon the satisfactory completion of the start-up testing, the Project will be considered to be in commercial operation, subject to satisfactory confirmation that the Project is capable of treating a minimum of 1,050 m³/hour of mine water for a consecutive thirty (30) day period, while meeting the Provincial Guidelines. The operational acceptance testing may be deferred to the spring freshet period of the year following commissioning, but, in any event, must be completed within 12 months of the completion of commissioning. Payments will be made to the Proponent during operational acceptance testing in accordance with the Project Agreement.

The Proponent will not be paid any monthly Periodic Payments until Substantial Completion has occurred.

If the Province believes the Proponent is failing to maintain the Construction Schedule and may not meet the scheduled Completion Date, the Province may require the Proponent to provide a report detailing reasons for the delay and demonstrate the steps being taken (at the Proponent’s cost) to eliminate or reduce the delay.

3.1.2. Term

The Term of the operating agreement will be from the date of Substantial Completion until September 30, 2025.

For greater certainty, delays in completion of construction or commissioning and start-up will not result in an extension of the Term of the Project Agreement and associated Monthly Payments.

The Province reserves the right to re-bid operation of the Project at the end of the Term or after a Termination Event (discussed below).

3.1.3. Payment Mechanism¹

Proponent is to price and bid its proposals based upon monthly Periodic Payments paid throughout the Term of the Project Agreement.

The Periodic Payment is to be based upon two fundamental components: (i) a portion related to the Project’s availability for the Operations and treatment of Contaminated

¹ More details regarding the Payment Mechanism can be found in the Project Agreement (Appendix G).

Water, and (ii) a portion reflecting volume of activity. Additional adjustments to the Periodic Payment may be made from time to time for Failure Events and Quality Events.

Payment Periods commence on the first day of the month immediately following Substantial Completion and start-up commissioning. Periodic Payments will only be made in respect of the Operations being provided, and will be subject to adjustments under the Payment Mechanism.

Payment for each Payment Period will be in arrears and based upon the Proponent's best estimate of volume, utilities and deductions/additions for such Payment Period. Adjustments and reconciliations will be completed in arrears as follows:

- i. The Payment Period's Periodic Payment, based on estimated volumes.
- ii. Adjustments from the applicable previous Payment Period on account of:
 - a. Volume Adjustment (actual water treated)
 - b. Utility Payment
 - c. Failure Event Deductions
 - d. Quality Event Deductions or Additions
 - e. Other amounts owing to/from Province

3.1.4. Volume Adjustment

The Periodic Payment is adjusted for volume of water processed. It should be noted that the volume adjustment may be either positive or negative, depending on whether the volume processed is higher or lower than expected. There are no guarantees of minimum volumes.

3.1.5. Utility Payment

Province will pay Proponent a Periodic Utility Payment. The Periodic Utility Payment will be based on the actual unit price of the utility services. Therefore, the Province will assume commodity price risk, whereas the Proponent will assume an element of volume risk on consumption and use of utilities. The Periodic Utility Payment component of the Payment Mechanism is designed to provide an incentive to the Proponent to reduce consumption and use through effective design, maintenance and management of the Project.

3.1.6. Failure Event Deductions

Failure Events are service performance failures generally related to regulatory water quality discharged by the Project, and are calculated according to a specified formula.

Deductions may be made to the full amount of the Periodic Payment.

3.1.7. Quality Event Deductions or Additions

Quality Events are service performance failures that are generally not related to a regulatory water quality levels, and are calculated according to a specified formula. Quality Events are classified into the following categories:

- Reporting Requirements
- Safety
- Community Relations

- Operational Issues.

A deduction to the Periodic Payment is made if performance is below expectations, and an addition may be made if performance in certain aspects of operations is higher than expectations. The amount of the deduction/addition is calculated with reference to the impact and extent of the Quality Event.

3.1.8. Innovation and Variations

The Proponent will be encouraged to develop innovations in connection with the Work and the Operations and propose changes in order that the cost of performing the Operations be reduced and the quality of the Operations be improved. The Province may approve or require an innovation or other change pursuant to the Variation Procedure, in which case, the cost of the Variation will be paid by the Province together with a Management Fee. In the case of innovations or changes which are introduced by the Proponent, if savings or benefits arise, there will be appropriate additional compensation for the Proponent. If the innovation or change is introduced by the Province, the compensation of the Proponent will be limited to the recovery of the Proponent's costs and the Management Fee.

It should be noted that the Province is considering the possibility of geothermal and hydro power generation from the Project. If the Proponent is interested in including such facilities in its Proposal, it is free to do so and to suggest in the Proposal how the Proponent should be compensated therefore. If these opportunities are developed and integrated into the Project after the date the Project Agreement is signed, the Province would not expect that the compensation of the Proponent therefore will extend beyond the Proponent's cost and Management Fee unless there is something particularly innovative about the Proponent's proposal at the time. Any such initiative will be dealt with as a Variation under the Project Agreement.

3.1.9. Cash Allowances

With respect to those elements of the Project which are stated to be payable by way of lump sum or by appropriate adjustment of the Payment Mechanism, the work associated with such elements will be incorporated into the Work pursuant to a Variation Confirmation and the amount payable will be determined as for a Variation which has been initiated by the Province.

For the time being, the cost of such elements of the Project should not be included by the Proponent in calculating the amounts payable pursuant to the Payment Mechanism. Such costs will be budgeted for and paid by way of lump sum or adjustment to the Payment Mechanism, as determined by the Province in its discretion, when the scope of work necessary for such elements has been settled.

3.1.10. Ownership and Licenses to Use and Access

The Province will continue to own all lands comprising of the Site as well as improvements and equipment installed on the Site which comprise the Project (except leased motor vehicles).

The Province will provide the Proponent with a series of non-exclusive licenses providing rights of use and access to, on and over the Access Road, Site, Jane Basin Road, Fan Area, Workings, 4100 Portal and Plug, and Outfall to enable the Proponent and others to perform the Project Operations.

In consideration for these licenses, the Proponent will provide the Work at its own cost and risk.

The Province may restrict access to parts of the Workings for safety or other reasons.

The Proponent acquires no interest in land, improvements, equipment and other chattels.

3.1.11. Tax Issues

The Proponent is solely responsible for obtaining and relying on tax advice from its own advisors and experts, including obtaining any advance interpretations and rulings from CCRA in relation to the Project which it feels are appropriate (including in relation to the proposed land access license structure and its tax consequences).

The Proposed Monthly Payment will include GST and PST.

3.1.12. Monitoring

The Proponent is responsible for monitoring its own performance as set out in the Performance Requirements and providing the Province and the Regulators with details of compliance and failures. The Province has the right to audit the Proponent's reports.

3.1.13. Environmental Liability

The obligations of the Province and the Proponent in respect of environmental matters will be governed by the following principles which will be further documented in the Project Agreement. This summary is for indicative purposes only and terms may change prior to closing.

The Proponent is expected to be responsible for incremental environmental liabilities resulting from releases of non-compliant water for which the Proponent is responsible to treat in accordance with the Project Agreement.

The Proponent is not expected to be responsible for existing environmental conditions and associated liabilities, save to the extent they impact construction costs for the Works (for example excavation costs and disposal of excavated materials).

The Proponent is not expected to be responsible for incremental environmental liabilities resulting from Abnormal Circumstances (being circumstances beyond the control of the Proponent such as an event of Force Majeure).

3.1.14. Maintenance and Repairs

The Proponent will ensure the Project is maintained in good working order. The Proponent will diligently perform all required ordinary maintenance, repairs and replacements as required to keep the Project in good working order.

The Proponent will provide an annual Operating Quality Control Plan and an annual Financial Plan, with both plans incorporating a rolling 5 year horizon.

The Province and the Proponent will review the Operating Quality Control Plan and the Financial Plan each year, allowing for inspections by the Province as required. If the Province reasonably believes that the Proponent is in breach of its maintenance and repair obligations, a third-party survey may be performed. If the survey shows that rectification is required, the Proponent must perform the required remedial work at its own expense, and pay the Province for the cost of the survey.

3.1.15. Termination

The Project Agreement may be terminated for a number of reasons. The payment to the Proponent on termination, if any, will depend upon the reason for termination. The following generally outline some of the expected reasons for termination and the resulting payment to the Proponent:

- Termination for the Proponent's default (including by reason of Prohibited Acts): compensation is determined either by re-tendering and/or by a formula.
- Termination for the Province's default or for convenience: the termination payment is set to repay the Proponent's Senior Funded Debt, junior debt (if any), and a target cash-on-cash return on equity of ●% per annum from Substantial Completion to Termination, and other adjustments. For greater certainty, the Proponent shall not be paid future profits after such termination.
- Termination for Abnormal Circumstances which cause the Project Agreement to be terminated: the termination payment is set at the same level as for the Province's default, except that the Proponent and any junior lenders will be reimbursed only for their debt and equity investment but not any earnings, profit or interest.

3.1.16. Other

The Province reserves all rights to the naming of the Project and all rights to signage.

The Proponent may propose commercial or other opportunities to the Province, which the Province may accept or decline. Provisions for profit/revenue sharing are not set out in the RFP; under the Project Agreement provisions will be determined during negotiations.

The Proponent takes responsibility for the site conditions including the geotechnical and environmental conditions to the extent of incremental construction costs on an "as is" basis. Subject only to claims of unknown environmental conditions or items of geological, historical or archaeological interest that delay construction, the Proponent cannot make any claim against the Province if incorrect or insufficient information has been provided in prior reports and materials, including the Reference Documents.

The Proponent is responsible for obtaining, at its sole cost and risk, all development approvals required for the development of the Work.

More details regarding the Payment Mechanism can be found in the Project Agreement (Appendix G).

4. Summary of Technical Information & Performance Criteria

4.1. General Design Criteria

The general design criteria as presented in Appendix B, Performance Specifications, presents the planning and design requirements for the Project, including:

- specific planning requirements;
- commissioning, start-up and testing requirements
- design parameters related to the volumes and characteristics of various water flows; and

- design criteria for each of the engineering disciplines.

Proponents should note Section 3.4.6 of Appendix B related to the treatment technology. This section provides additional requirements that must be met if the Proponent wishes to present a different technology from that presented in their EOI. If a different technology is proposed, the technology will be subject to evaluation using the same “Pass/Fail” criteria as used in evaluating the Request for Expressions of Interest (RFEI). The Province is not obligated to accept any Proposal that is not based upon the technology that has already been judged to be a demonstrated technology.

It is recognized that the addition of a requirement to treat groundwater on a continuous basis, including when the flow of mine water is at seasonal low flows may present some challenges that can be best met through a different approach to treatment or a second treatment circuit in the Project. The Province has no preferences, and expects the Proposal to address the issues related to treatment of groundwater.

4.2. Environmental Approvals

The Project will require permits and/or approvals from authorities having jurisdiction. A preliminary list of those permits together with their current status and responsibilities to obtain same is detailed in Appendix H. The Province has applied for the effluent discharge permit, and is in receipt of a draft permit. The Proponent is responsible for obtaining the final discharge permit and for providing any additional information that may be required to support the issuance of this discharge permit. The draft discharge permit is on the web site as noted in Appendix C. The Province is initiating other permit applications.

Outfall construction is expected to require approvals under the *Fisheries Act*, *Land Act*, and the *Navigable Waters Protection Act*. Outfall construction may also require approval under the *Canadian Environmental Assessment Act, 1999*. While the Province will be preparing permit applications to expedite the approval process and provide definition to the requirements under these Acts, the Proponent is expected to assume the responsibility of obtaining the permits required for the Outfall construction.

The Proponent will also be responsible for all permits and approvals that entail the design of specific facilities. These include demolition and construction permits from MEM, and all other permits that would normally be obtained during the construction phase.

5. Communications

5.1. General

The Project represents an important infrastructure commitment by the Province which affects local communities, stakeholders and various levels of government. Accordingly, a comprehensive and effective communications and public relations plan is essential.

The selected Preferred Proponent will be required to submit a clear, concise communications and public relations Communications Plan within ten (10) business days of receipt of the Notice of Award. As part of the Proposals in response to this RFP, Proponents may identify their communications approach and resources to managing effective community and stakeholder relations and communications. While not mandatory at this stage, identifying resources and submitting a plan will be mandatory in the negotiations phase.

The Communications Plan will outline in detail how the Proponent, jointly with the Province, will ensure that all audiences are kept informed about the Project. The Communications Plan will outline in which areas the Proponent will lead in communications, with the Province supporting, and in which areas the Province is expected to lead communications with the Proponent supporting. It will also explain how the concerns of stakeholders and local residents will be addressed. This plan must be updated on a regular basis and reviewed by the Province.

In addition the Proponent will establish the following communications/information processes that will represent the Project and the development process to the public:

- record and summarize all public inquiries, complaints, and communications in written reports (name, concern, action taken, date, phone call/visit) and provide copies of the same to the Province's Representative on a timely basis;
- direct all media inquiries and interview requests to the Province's Representative;
- provide a public information display at the site prior to mobilization and until Substantial Completion of the Work that will inform the public of the purpose of the Project and the finished appearance;
- provide regular and timely liaison with stakeholders regarding significant Project milestones and other impacts (and provide guidelines as to what the Proponent determines to be regular and timely); and
- address posting of all appropriate documents to an internet web page. Appropriate documents for posting will include, but are not limited to, permit submissions (monitoring reports, plans, reports), and project updates.

5.1.1. Community and Stakeholder Relations

For the purpose of the Communications Plan, the following list outlines, but is not limited to, the minimum requirements for notification of issues impacting stakeholders, as identified in Appendix J:

- emergency services and
- residents of Britannia Beach.

The Proponent, in partnership with the Province, will develop and maintain a more comprehensive list of residents or resident groups and other stakeholders as design and construction progress. It will be incumbent on the Proponent to identify and deal with new stakeholders to mitigate issues as they arise.

5.1.2. Communications Approach

In developing the Communications Plan, the Proponent must take into consideration an approach that is timely, proactive, strategic and responsive to the needs of all audiences. The approach to project communications should reflect the need for collaboration and cooperation between the Proponent and the Province in all communications matters.

The Proponent will take front-line responsibility for public and stakeholder relations. The Proponent's Communications Plan must encompass the following: proactively building and maintaining positive community relations; designing and implementing a communications strategy; and ensuring that public information initiatives are coordinated with the communications priorities and activities of the Province.

5.1.3. Roles and Responsibilities

All communications activities prior to the date the Project Agreement is signed will remain the responsibility of the Province, and the Proponent will refrain from making any public comment, responding to questions in a public forum or carrying out activities to promote or publicize its qualifications during the RFP stage.

Subsequent to the signing of the Project Agreement, the Proponent's communications programs and activities will be planned in consultation with the Province.

5.1.4. Communications Resources

The Proponent's Communications Plan must specify the human, financial and material resources available to provide effective information flow both internally and externally, taking into account the various types of information required, who receives the information and why.

Communications staff will be experienced in media relations, will possess effective writing skills, will have a clear understanding of the project and will be proficient in identifying issues. Knowledge of government communications procedures is preferred.

Resources will be adequate for the duration of the Term and to ensure that the proactive elements of the plan are attainable.

The Proponent will be expected to establish and maintain a public information facility for the duration of the Term. The facility must be easily accessible to the public, contain relevant information on the Project and, when necessary, be supported by knowledgeable staff with public relations skills. Location, design, operating hours, and staffing strategies will be specified in the Communications Plan.

The Communications Plan will define key communication tools for both internal and external communications.

Such tools will include, but not be limited to, collateral print materials (brochures, newsletters) issues management systems (alerts, strategies, briefing documents, media contact reports) project information reports, news releases, handouts, open house display material, an Internet web page, and advertising.

5.1.5. Communications Objectives

Communications staff working for the Proponent must be prepared to articulate the Province's interest as well as that of the Proponent's.

Objectives will take into account the promotional, public relations, and issues management aspects of the Project.

Communications objectives will address the need for an orderly flow of information between government, stakeholders, community interests, regulatory agencies and the public.

The statement of objectives should reflect a proactive approach.

5.1.6. Audiences

The Communication Plan will identify all internal and external audiences and the information that each audience requires, as well as when and why.

The Communications Plan will assess any sensitivities or long-standing positions associated with stakeholder groups.

5.1.7. Media Relations

The Communication Plan must outline a strategy to effectively coordinate responses to media queries with the Province to ensure positive relations with the media and positive coverage.

The lead role in media relations will remain with the Province.

5.1.8. Strategies

Communications strategies will include proactive communications measures such as identification of milestones and related communications activities and strategies for those milestones.

Where particular communications activities are planned (i.e. announcements; events) approval must be sought from the Province on timing and participation as well as the appropriate scale of activities.

Where specific issues are anticipated, strategies for managing them are to be included in the Communications Plan.

5.1.9. Advertising

Advertising programs must be addressed in the Communications Plan. For example, creative direction, advertising frequency, size of ads, media placement and approval processes should be predetermined with the Province to ensure effectiveness, public awareness and consistency.

Advertising will be used to notify residents and stakeholders of design and construction impact.

Appropriate media outlets should be identified in the plan.

5.1.10. Critical Issues Management

The Communications Plan will include a section to explain how the Proponent will keep the Province informed of emerging critical issues on a timely basis.

The Province will take the lead role in critical issues management.

6. Information Sources

6.1. *The Web page and Electronic Data Room*

Information regarding the Britannia Mine Remediation Project generally is available at www.britanniamine.ca. This website contains a link to an electronic data room specifically for the Project which contains this RFP, any addenda hereto as well as information relating to the Project, all under the heading **WTP_Request for Proposals**. In addition, the electronic data room contains a list of all reports and studies relating to the Remediation Project which are in the possession of the Province, as well as copies of those reports and studies which the Province believes are relevant to the Project. If a Proponent wishes to obtain a copy of any report listed in the electronic data room which is not already set out in full, they may request a copy from the Province's Contact Person. Additional relevant information will be posted to the electronic data room from time to time, including the questions of Proponents, answers to those questions and any revisions to solicitation documents. All of the documentation made available to the Proponent is referred to as the "Reference Documents", and the Proponent will be

deemed to have reviewed and given due consideration to the Reference Documents in submitting its Proposal.

A part of the web site for the Project is password protected and will be used for any confidential information which the Province makes available to the Proponents. A draft copy of the Project Agreement (including Schedules) will be in the protected area; whereas most, if not all, information required for the RFP will be in the publicly accessible area of the data room. A password will be provided to each Proponent upon issuance of this RFP.

6.2. Reliance on Information

All information posted on the website for the Remediation Project generally or specifically in the electronic or physical data room for the Project or which is provided pursuant to any request for information made by a Proponent has been obtained from sources which the Province believes to be reliable and is made available to the Proponents in good faith. However, no representation, express or implied, is made as to the accuracy or completeness of such information or that such information is suitable for the purposes of any Proponent, and the Province, the Ministry of Water, Land and Air Protection and Partnerships British Columbia expressly disclaim any and all liability for any errors or omissions in such information or which may be contained in any oral or written communication transmitted or made available to any Proponent. The submission of a Proposal by a Proponent will confirm the agreement of such Proponent to the disclaimer of liability contained in this paragraph.

6.3. Partnerships BC Business Directory

The Partnerships British Columbia Business Directory, an online directory for all Partnerships British Columbia projects, provides an opportunity to interact for persons seeking business arrangements or who may be interested in participating in such projects ("Business Directory"). Any organization may place information in the online Business Directory such as contact details, brief description of organization, nature of services offered and relevant expertise. Further, any business may access the Business Directory online to seek organizations for potential business arrangements. Such placements do not, however, assure the formation of a consortium, joint venture, partnership or other business arrangement and do not assure participation in any Partnerships British Columbia project, including the Project. Placement of information on the Business Directory is optional and is not part of the Selection Process.

The Business Directory can be accessed as follows:

http://www.partnershipsbc.ca/business/bu_directory.asp

Users of the Business Directory are responsible for verifying the accuracy, reliability, relevance and sufficiency of all information in the Business Directory and the status, standing, capabilities or experience of any person listed. The Province and Partnerships British Columbia do not review, verify or approve the information in the Business Directory and therefore are not responsible for, and do not make any representation with respect to, such information. Continuous access to or operation of the Business Directory is at the sole and absolute discretion of the Province and Partnerships British Columbia. Either the Province or Partnerships British Columbia may refuse or choose not to post any information on the Business Directory.

7. Conflict of Interest

7.1. No Use of or inclusion of Restricted Parties

Restricted Parties:

- (a) are not eligible to advise any Proponent in the RFP Selection Process; and
- (b) must not participate as an employee, advisor, consultant or member of any Proponent.

The Province may, at its sole and absolute discretion, disqualify a Proponent who uses in any manner or who includes in its Proposal a Restricted Party. The onus is on the Proponent to ensure that it does not use or include any Restricted Party.

7.2. Who are Restricted Parties

At this stage of the procurement process, the Province has identified the following persons as Restricted Parties because of their direct and recent or current involvement in the Selection Process or the planning or implementation of the Project:

- JR Huggett Co
- Libra Project Services Inc
- Golder Associates Ltd and affiliated companies
- Clark, Wilson
- Swadden, Virgin, and Young
- Boughton Peterson Yang Anderson Law Corporation
- SRK Consulting Ltd
- Klohn-Crippen Consultants Ltd
- Laurion Consulting Inc.
- Capital Works Inc.
- Kaehne Consulting Ltd.
- KOMEX International Inc.

This is not an exhaustive list of Restricted Parties. Additional persons may be added to the list at any stage of the Selection Process. Neither the Province nor any of its employees, advisors and representatives is liable to any Proponent for any claims, whether for costs of preparation of the Proposal, loss of anticipated profit, loss of opportunity or any other matter whatsoever, for any use or reliance on this list or use or inclusion of Restricted Parties in any submission for the Selection Process.

7.3. Exclusivity

No Proponent, or any of its key members which includes the designer and the main contractor, will have any interest whatsoever in any other Proponent's Proposal, either directly or indirectly, nor will any Proponent enter into any agreement with another Proponent before the Submission Deadline that could create such an interest. If it is subsequently determined that such an interest does exist, this will constitute sufficient cause in the Province's discretion to terminate the Agreement.

Team members that may participate on more than one team include:

Consultants:

- civil
- structural
- mechanical
- electrical, instrumentation and process control
- geotechnical

Contractors:

- civil
- mechanical
- electrical, instrumentation and process control
- sub trades

8. Rules of Procedure

8.1. Province's Contact Person

All communications or enquiries about this RFP must be made by email, in writing, or facsimile to the Province's Contact Person:

Sue-Anne Fimrite
Project Consultant
Partnerships BC
Suite 1250 – 999 West Hastings Street
Vancouver, BC
V6C 2W2

Email: sueanne.fimrite@partnershipsbc.ca

Fax: 250-356-2222

Deliveries of communications or enquiries at the office of the Province's Contact Person will be accepted weekdays from 9:00 am to 5:00 pm local time and must clearly state "Britannia Mine Project RFP Enquiry". Communications or enquiries to and responses from the Province's Contact Person may be recorded and may, at the Project Team's discretion, be distributed to all Proponents. The Project Team reserves the right not to respond to any enquiry or communication made by a Proponent, or to keep in confidence enquiries and communications from an individual Proponent, and responses given, that relate to a particular technical or financial approach to the Project.

While a Proponent may choose to communicate with the Province's Contact Person by e-mail, an e-mail by the Proponent to the Province's Contact Person will not constitute notice pursuant to this RFP unless it is responded to by the Province.

The Province is not responsible for any error that may occur from submission of communications or enquiries.

8.2. No Unauthorized Contact

All communication on matters related to the Project or the RFP Selection Process must be directed in writing to the Province's Contact Person. Proponents must not attempt to, or actually, communicate directly or indirectly on matters related to the Project or the RFP Selection Process with any representative of any Restricted Party, the Province or any other government employees who are involved in the Project or the RFP Selection Process under the penalty of peremptory disqualification from the procurement process.

Information offered from sources other than the Province's Contact Person with regard to the content, intent or interpretation of this RFP or the Background Information Website is not official, may be inaccurate and should not be relied on in any way by any Person for any purpose.

8.2.1. No Lobbying

Proponents or any member of a Proponent or Proponent's consortium or their agents will not engage in any form of political or other lobbying or communications whatsoever with respect to the Project; or to influence, or to appear to influence, the outcome of the procurement process. This includes, but is not limited to, contact with any Ministers; Ministerial staff, Members of the Legislative Assembly and staff, Ministry or Partnerships BC staff, project team members, advisors or consultants to the Project team, etc.

Proponents may state publicly that they have been shortlisted, but they must not publicly discuss or disclose the nature or any aspect of their proposal, nor promote their Proposal in the media. All communications, questions or other inquiries must be directed through the Province's Contact Person as specified in the RFP. In the event that any such lobbying or communications occur, the Province or Partnerships British Columbia, at its sole and absolute discretion, may at any time, but is not required to, reject any Proposal submitted by that Proponent without further consideration.

Partnerships British Columbia and/or the Province can either terminate that Proponent's right to continue participating in the RFP stage and subsequent stages of the procurement process, or impose such conditions on that Proponent's continued participation in the procurement stage as the Province or Partnerships British Columbia, at its sole discretion, may consider in the public interest or otherwise appropriate.

8.3. Clarification on RFP

Each Proponent should review the entire RFP, including any and all addenda, prior to submitting a Proposal. Any request for clarification of issues related to the RFP must be transmitted to the Province's Contact Person not less than 10 days prior to the Submission Deadline.

8.4. Addenda

Written addenda are the only means of varying, clarifying or otherwise changing any of the information contained in this RFP. The Province reserves the right to issue addenda up to five (5) business days before the Proposal Submission Deadline. The addenda will be posted to the Britannia Mine RFP electronic data room and a notification will be sent to all Proponents. Proponents not acknowledging in writing receipt of all addenda, may have their Proposal rejected.

8.5. Proponent's Contact Person

Proponents must submit, within 7 business days of receiving the RFP, contact information for the Proponent's Contact Person, if a change has been made since the RFEI.

8.6. Substitution of Team Members/Key Personnel

Substitution of Proponent team members will be permitted by the Province only if:

- The replacement of a team member involved does not, in the sole opinion of the Province, materially affect the overall quality of the Proponent; and
- The team member replaced and the remaining team members have collectively communicated their satisfaction with the substitution to the Province in writing.

Any change in Proponent member, Project Manager or other key personnel from those named in the EOI must be pre-approved by the Province prior to the submission of the Proposal.

Requests for changes to Proponent composition must be made in writing to the Province Contact Person a minimum of two weeks prior to the Submission Deadline.

8.7. Cost of Preparing Proposals

Proponents are solely responsible for all costs they incur in the preparation of their Proposals.

8.8. Clarification of Proposal

The Province reserves the right but not the obligation to request clarification of a Proposal or request further information from any or all Proponents. In addition, if, in the opinion of the Province, any Proposal contains a minor defect or irregularity or fails in some way to comply with any requirement of this RFP in a way that, in the opinion of the Province, can be remedied without providing an unfair advantage to one or more Proponents, the Province's Contact Person may request clarification from the Proponent.

The Province, upon receipt of appropriate clarification, may waive the minor defect or irregularity and accept the Proposal. Failure by a Proponent to provide a written response that, in the opinion of the Province, properly clarifies its Proposal within the time specified in the request for clarification may result in disqualification of the Proposal.

8.9. Process Conditions

The RFP and RFP Documents do not create a tender process. This RFP is not an invitation for an offer to contract and it is not an offer to contract made by the Province. By this RFP, the Province reserves to itself the right, in its sole and absolute discretion, to consider and analyze the Proposals, select a preferred Proponent, and sign an agreement with the preferred Proponent or not to sign an Agreement at all.

Without limiting the generality of the foregoing, the Province reserves the right to:

- reject any Proposal, whether or not complete and whether or not it contains all the required information;
- require clarification of any Proposal;
- request additional information on any Proposal;

- reject any or all Proposal's without any obligation, or any compensation or reimbursement to the Proponents;
- re-advertise for new submissions or call for tenders for this work or for work of a similar nature.

The Province may, in its sole and absolute discretion, independently verify any information in any submission. The Province reserves the right to debrief both successful and unsuccessful Proponents after the announcement of the Selected Proponent. Qualifications

A Professional Engineer registered to practice engineering in British Columbia will stamp all design drawings and specifications.

8.10. Changes in Proponent

If there is an addition, deletion, or change in the members comprising a Proponent, in the key personnel positions of a Proponent or a change of effective control in any Proponent member after a Proposal has been submitted, the Proponent must notify the Province's Contact Person in writing, within five working days of any such change. The Province reserves the right to terminate any candidacy of a Proponent if, in its opinion, the change materially negatively affects the ability of the Proponent to carry out the scope of the Project.

8.11. Notification of Success

A written notice in the form of a letter to the Proponent's Contact Person is the only valid form of notification of success at the RFP stage and eligibility to proceed to the negotiation stage.

8.12. Reservation of Rights

The Province reserves the right, in its sole and absolute discretion, to:

- modify, cancel or suspend the Selection Process or any or all stages of the Selection Process at any time for any reason;
- accept or reject any Proposal based on the Evaluation Criteria as determined in the sole and absolute discretion of the Province;
- not accept any Proposal; and
- reject or disqualify all or any Proposal without any obligation, compensation or reimbursement to any person.

8.13. Limitation of Damage

Each Proponent, by submitting a Proposal, agrees that:

- in the event any or all Proposals are rejected or disqualified or the Project or Selection Process is modified, suspended or cancelled for any reason, neither the Province, or its employees, advisors or representatives will be liable, under any circumstances, for any claim or to reimburse or compensate any person in any manner whatsoever, including but not limited to, costs of preparation of the Proposal, loss of anticipated profits, loss of opportunity or for any other matter; and

- the Proponent waives any claim for loss of profits or loss of opportunity if the Proponent is rejected or disqualified or is not successful in the Selection Process.

8.14. Freedom of Information and Protection of Privacy Act

All documents and other records in the custody of or under the control of the Province are subject to the *Freedom of Information and Protection of Privacy Act* and other applicable legislation. Except as expressly stated in this RFP and subject to this Act or other applicable legislation, all documents and other records submitted in response to this RFP will be considered confidential.

8.15. Disqualification

Proposals may be disqualified at the sole and absolute discretion of the Province if:

- a Restricted Person is acting as an advisor or member of the Proponent's team;
- the Proponent makes contact with any Person who the Proponent is prohibited by the RFP from contacting;
- they do not comply with the requirements of this RFP unless they can be remedied or clarified under Section 8.8; or
- they include a false or misleading statement or claim.

9. Submission Requirements, Process and Schedule

9.1. Process

The Proponent will submit its Proposal on the basis of the requirements of the RFP, and the Proponent's further investigations. Proposal submissions should include all of the information requested in the RFP in the format shown in Section 9.4.

9.2. Schedule

Proponents are required to comment in their responses to this RFP on the Preferred Schedule and in particular, to provide their estimated time to design and construct the Project, up to commencement of commissioning.

The Proponent will have a specified time period that will be defined in the Agreement to design and construct the Project to Substantial Completion.

9.2.1. Preferred Schedule:

ISSUE REQUEST FOR PROPOSALS:	May 6, 2004
PROPONENT'S MEETING	May 19, 2004
COMMENTS FROM PROPONENTS ON DRAFT PROJECT AGREEMENT	June 1, 2004
CLOSING DATE FOR SUBMISSION OF PROPOSALS:	July 15, 2004
NOTIFICATION OF SELECTION OF PROPONENT:	September 2004
SIGNING OF AGREEMENT:	November 2004
TARGET DATE FOR SUBSTANTIAL COMPLETION	September 2005
TARGET DATE FOR OPERATIONS COMMENCE	November 2005

Comments on the Preferred Schedule are encouraged; please contact the Province Contact Person.

Proponents should make reference to the above schedule when drafting the Project Schedule as required for the Technical Proposal.

9.3. Project Agreement

A DRAFT Project Agreement accompanies this RFP under Appendix G. Proponents are encouraged to offer comments, such as questions on, clarifications of, and/or proposed essential amendments, etc, in writing to the Province Contact Person on the draft Project Agreement **on or before June 1, 2004**. These comments should be listed in order of importance and any proposed essential amendments include a rationale for making such an amendment.

Once the comments are received, the Project Team will review the proposed essential amendments and may, in its sole and absolute discretion, accept or reject any of the proposed amendments. The Project Team will re-issue a final draft version of the Project Agreement to Proponents with the intent that it is unlikely to significantly change during the negotiations phase of the process.

9.4. Proponent's Meeting

The Project Team will convene a Proponent meeting in Richmond, BC to which all Proponents will be invited. The Project Team may, at its own discretion, including in response to a request of a Proponent, convene further information meetings. Attendance at any of these meetings is optional. Any additional information or clarification that the Project Team decides is required will be covered by written addenda.

A summary of minutes taken during the Information Meeting will be posted in the electronic data room along with Proponent's questions and answers.

The information meeting will be held at:

Location: Delta Vancouver Airport Hotel
Richmond, BC

Date: May 19, 2004

Time: 09:00 am to 16:00 pm

Please RSVP to the Province's Contact Person via email by May 13th, 2004 including company name, with an email address, and expected number of participants.

9.5. Commercial-in-Confidence Meetings

A Proponent may, at any time prior to the submission of its Proposal, by written request (via fax, mail, or email) to the Province's Contact Person, apply for commercial "in confidence" meeting(s) with the Province for the purpose of discussing in private the viability or acceptability of a proposed aspect or element of its Proposal prior to its submission, or commercially sensitive issues relating to its Proposal. The application must set out in writing in the application the questions the Proponent wishes to have answered, and should be clearly marked "Commercial in Confidence".

The Province will not be obligated to grant a requested meeting and also will not be obligated to answer the questions. If the Province declines to answer any question it will keep the question in confidence.

If the Province grants a confidential meeting with a Proponent under this Section, then any minutes of such meeting will not be distributed. The Province does, however, reserve the right to issue copies of any commercial in confidence questions and answers to all Proponents if, in its judgement, it can do so without compromising confidentiality.

9.6. Pilot Plant Tests

9.6.1. Steps to follow

The Contaminated Water from the Britannia Mine is understood to be currently discharging at around 150 L/s, and therefore should easily be able to provide the necessary volumes for any conceivable number of pilot plants.

The Proponent will be required to provide to the Pilot Plant Test Contact Person (see below) a written access request which states the volume of mine water needed for the pilot plant, the pilot plant technology being tested, schedule for testing, staffing, workday length, area covered by the plant and ancillary equipment, (e.g. generator, storage tanks, reagent store, trailers etc), access to the existing mine outfall discharge pipeline, effluent sampling requirements, Sludge disposal arrangements, arrangements for site security, provides a health and safety plan, and sets out arrangements for site clearance and demobilization. The Proponent will then be required to sign an agreement with the Province prior to accessing the site for the purposes of setting up and operating a pilot water treatment plant. This agreement will be in the form of a License of Occupation, which will contain specific terms.

All costs, management and administration effort associated with supply of mine water to the pilot plant, quality testing and discharge of treated water to the deep outfall and the provision of ancillary services at the pilot plant site (potable water, washroom, electrical power, etc.), including any requirements of the License of Occupation, will be the responsibility of the Proponent.

9.6.2. Location of Pilot Plant Testing

The Project Team is currently working on a location for Proponents to conduct their pilot plant tests. If a Proponent has a preferred location for the pilot test plant, it should be notified to the Pilot Plant Contact Person.

9.6.3. Contact Person for Pilot Plant Testing:

Paul Bedell, P.Eng.
Golder Associates
Business Phone: (604) 296-4391
Email: paul_bedell@golder.com

9.7. Submissions of Proposals

9.7.1. General Format

The Proposal will be comprised of the Proposal Form in the form of Appendix F and include a Financial Proposal and a Technical Proposal. The Proposal should contain the information outlined below and should comply with the following table of contents. Material in any other format may be rejected.

Financial Proposal (Separate Binder)

- 1) COVER PAGE
Identify all Proponent members.
- 2) TABLE OF CONTENTS
- 3) FINANCIAL PROPOSAL

Technical Proposal (Separate Binder)

- 1) COVER PAGE
Identify all Proponent members.
- 2) TABLE OF CONTENTS
- 3) TECHNICAL PROPOSAL

9.7.2. Submission Location and Submission Time

The Submission Location for Proposals is:

Partnerships BC
Suite 1250 – 999 West Hastings Street
Vancouver, BC
V6C 2W2

Attention: Sue-Anne Fimrite

Proposals must be submitted by hand or courier to the Submission Location before the Submission Deadline. Proposals submitted by post, facsimile, or email will not be considered. Deliveries of Proposals at the Submission Location will be accepted weekdays from 9:00 am to 5:00 pm Local Time.

The Submission Deadline is no later than 2:00 pm Local Time on July 15, 2004.

Proposals received after the Submission Deadline will not be considered, and will be returned unopened.

9.7.3. Proposal Requirements

Each Proposal **should**:

- be in 3-ring binder(s) on single sided 8.5" x 11" paper and every page should be numbered;
- be in text of 1.5 X spaced and not smaller than 11 point typeface where practical;
- include one original and six (6) copies of the Financial Proposal;
- include one original and ten (10) copies of the Technical Proposal;
- include the name of the Proponent and a return address on the exterior of the sealed container; and
- be clearly marked "Britannia Mine WTP Proposal" on the exterior of the container.

Each Proposal **must**:

- be in English;
- be addressed to the Province's Contact Person;
- be received (by hand or courier) at the Submission Location by the Submission Deadline; and
- include an authorization in favour of the Province authorizing the Province and its advisors to make such enquiries as the Province deems appropriate of any reference provided by the Proponent as well as any Person involved with the services referenced by the Proponent in the Proposal in relation to past relevant projects undertaken by the Proponent.

The Province may reject an incomplete Proposal at its sole and absolute discretion.

Each Proposal may include additional materials and brochures; however, the Province is not obliged to, and may not, consider such information.

9.8. Financial Proposal

9.8.1. Introduction

The Financial Proposal is to include the following as described more fully below:

1. signed proposal form in the form annexed as Appendix F;
2. Financial Templates based upon Standardized Assumptions;
3. Financial Templates based upon Proponent's own assumptions (Periodic Payment Pricing Templates);
4. financial hedging strategies;
5. sensitivity analysis;

6. income commitment summary;
7. financial guarantee, performance security and recourse information;
8. financial statements;
9. financial arrangements between Proponent members;
10. details on all debt and equity financing commitments for the Project; and
11. any other information reasonably required to allow financial evaluation (as described below).

9.8.2. Signed Proposal Form

Proponents must provide a signed Proposal Form (Appendix F) as part of their submission. This Form should be included in the Financial Proposal.

9.8.3. Financial Templates

Proponents should provide detailed financial information in support of their Proposal. Such information should generally follow the format identified in the Financial Templates section. This information should reconcile to the proposed Periodic Payment proposed by Proponent.

Two sets of Financial Templates are to be submitted:

1. Standardized Financial Templates. The first set of Financial Templates is to be based upon the Standardized Assumptions provided in Section 10. These assumptions will be used by Province to perform sensitivity testing and comparative analysis of Proponent submissions.
2. Periodic Payment Pricing Templates. The second set of Financial Templates is to be based upon Proponent's own set of assumptions. These Financial Templates shall clearly identify the Proponent's proposed Periodic Payment over the Term.

Such submissions will include:

- a) capital cost estimate;
- b) operating cost estimate over the Term of the Project Agreement;
- c) reserve and replacement estimates for the Project (including preventative maintenance, demand maintenance and refresh cycle of fixed items, as required); and
- d) Periodic Payment calculations and proposal (with certain components identified).

Proponents are to use assumptions they deem reasonable for water volume and water chemistry. The Province makes no representation or warranty regarding future water volumes and composition.

9.8.4. Financial Hedging Strategies

Proponents should provide details on any planned financial hedging strategies, if any, expected to be used for chemicals, reagents etc. used by the Proponent.

9.8.5. Sensitivity Analysis

Proponents should provide the sensitivity analysis described in the Financial Templates section of this RFP. Such analysis will include sensitivity scenarios for:

- a) water chemistry
- b) water volume

The Province wishes to assess the impact of these parameters on the Payment Mechanism. It should be possible for the Province to duplicate such analysis in the spreadsheet materials provided by the Proponent in its submission.

9.8.6. Income Commitment Summary

The Proponents should provide details on any third-party commitments and guarantees for income assumed in its Proposal from the sale of Sludge/by-products from the Project. Evidence of long-term commitments is preferred.

9.8.7. Financial Guarantee, Security, and Recourse Information

The Proponent should provide full details on each Proponent member's parent organization guarantees, recourse and any other similar support, if any, for (i) design/construction, (ii) operations, and (iii) environmental liabilities. Details of expected insurance provisions should also be provided. For each support commitment, Proponents are to provide, as applicable:

- a) the financial depth of the guarantor organization entity proposed to provide such support;
- b) the scope of each guarantee, and how this guarantee would work in practice if called on;
- c) the proposed level of the guarantee;
- d) the duration of the guarantee; and
- e) the extent of third-party environmental insurance coverage.

9.8.8. Financial Statements

The Proponent should provide recent financial statements for any Proponent member who is a party to the Proposal or is providing guarantees or other significant financial support, if any, to the Proponent.

9.8.9. Financial Arrangements between Proponent Members

The Proponent should provide details on the financial arrangements between its members as they relate to the Project.

9.8.10. Details on All Debt and Equity Financing Commitments

The Proponent must provide a description of arrangements for the proposed financing and capital structure for the Project and Proponent, including details on all equity investor participations, related party debt financing, and all third-party Project-specific debt financing including particulars of the requirements of any providers of Senior Funded Debt. All equity funding commitments and related party debt financing commitments required for the Project must be finalized and fully described for this RFP submission.

Proponents planning to use third-party Project-specific debt financing of any type must provide commitment letters for (i) the full construction component of the Project, and (ii) forward commitments for “take-out” long-term financing for operations of the Project. All relevant correspondence from third-party financial institutions should be provided. “Term sheets” and other similar forms of non-binding indicative terms from funders will not be deemed sufficient evidence of construction financing availability.

Proponents should clearly indicate the extent of their support/guarantee of forward third-party take-out financing commitments, if used.

Full details of the debt and equity components, as applicable, of the proposed financing plan must be provided by each Proponent. These will include the amount, sources, term, interest rate, terms of repayment, transaction fees, loan security, collaterals, guarantees and warranties and in respect of equity, the amount, sources, term, ownership interest, profit participation, and, expected rate of return.

9.9. Technical Proposal

9.9.1. Introduction

The Technical Proposal is to include the following as described more fully below:

- a) management plan
- b) technical reports
- c) project schedule
- d) operating and management plan

The Proposal sections should be in the sequence shown above.

A covering letter, or letter of submittal, may be included, and should explain how any additional documents relate to the RFP (for example oversized drawings - as separate folded drawings or possibly as roll plans).

In the event that the Proponent’s proposal is based on a technology that is different from the technology previously accepted by the Province as a demonstrated technology, the Proposal is to include a separate section that fully addresses the new technology and presents supporting information to justify the change from the technology in the Expressions of Interest. The Proponent should clearly state in the cover letter that the Proposal is based in whole or in part on a new technology. This section of the Proposal will be evaluated prior to consideration of the balance of the Proposal, and the balance of the Proposal will only be evaluated once the Province has accepted the new technology as a demonstrated technology in accordance with the original criteria established in the Request for Expressions of Interest.

9.9.2. Management Plan

The management plan should address the manner in which the Proponent would undertake all Work required by the Proponent under the Project Agreement, including:

9.9.2.1. Organizational Structure

If there are no changes from the Proponent’s Expression of Interest, there is no requirement to provide information under this section.

If there is a change from the Proponent's Expression of Interest, please provide details and impacts on the Project.

9.9.2.2. Project Manager

If there are no changes from the Proponent's Expression of Interest, there is no requirement to provide information under this section.

If there is a change from the Proponent's Expression of Interest, please provide details and impacts on the Project.

9.9.3. Technical Reports

Technical reports should be included in a Proposal as follows:

- design functionality report
- mine water treatment plant design report,
- mechanical design report,
- electrical design report,
- process control design report
- Sludge management report
- outfall design report (onshore section)
- architectural report
- landscaping design report
- operations and maintenance report.

9.9.3.1. Design Functionality Report

A detailed written description of the solution to the challenges posed by the Project with evidence of the design life, maintenance components and the objectives solved by the Proponent's design. Drawings should be provided to represent the detailed solution of the design functionality. Plan, profile, cross-sections, etc., as appropriate for this Project, should be clearly representative.

In this section the Proponent should also address the following:

- a. flexibility of the plant to handle changes in flow rates, and in particular the ramp up to high flow conditions expected during the spring freshet;
- b. flexibility of the process to handle changes in water chemistry and in particular the low iron content expected under "flow through" conditions from the Workings;
- c. flexibility of the process to handle low flow conditions outside of the spring freshet period;
- d. treatment of groundwater flows;
- e. means of minimizing by-pass events, and of managing the Contaminated Water during these events;
- f. ability of the plant to consistently achieve the Province's Guidelines for effluent chemistry; and

- g. ability to expand the Project or alter the layout to accommodate future changes in the process or changes in technology.

9.9.3.2. Mine Water Treatment Plant Design Report

The Proponent must provide a detailed mine water treatment plant design report, in full compliance with the Performance Specifications described in Appendix B. The Proposal should be practical and innovative where appropriate.

As a minimum, the mine water treatment plant design report will provide the following information:

- a. description of the design methodology and supporting analysis (if appropriate), giving a description of how the Contaminated Water treatment functions have been incorporated in the Proposal. It is anticipated that this will be supported by a flow sheet, mass balance, and list of major equipment, complete with equipment sizing;
- b. description of operational considerations to be used in the detail design process. It is anticipated that this will be supported by preliminary piping and instrumentation drawings illustrating the major process control instruments and control loops;
- c. description of the proposed methodology to meet the requirements identified in Appendix C of this RFP, such as:
 - o ability to operate effectively under the range of projected variation on the chemical composition of the influent specific to the Britannia Mine;
 - o temperature fluctuation; and
 - o ability to accommodate volumes indicated in Appendix B, including the ability to operate the Project at less than the design capacity.
- d. The Proponent must provide supporting analysis/documentation to justify the proposed mine water treatment plant design. The minimum requirements for drawings to accompany the mine water treatment plant design report are as follows:
 - o key plan;
 - o plan and section drawings showing all elements of the Project;
 - o profiles for entry pipes and outfall works; and
 - o typical sections for each major plant component.

9.9.3.3. Mechanical Design Report

The Proponent will provide a mechanical design report that, as a minimum, provides the following information:

- a. description of each major mechanical component to be provided;
- b. schematic drawings of the mechanical systems;
- c. discussion of operation and maintenance issues, including equipment features that address the project challenges; and
- d. life cycle/energy cost discussion.

9.9.3.4. Electrical Design Report

The Proponent will provide an electrical design report that, as a minimum includes a description of:

- a. instrumentation and control systems
- b. major electrical equipment;
- c. power supply and distribution;
- d. electrical schematic drawings; and
- e. communication systems.

9.9.3.5. Process Control Design Report

The Proponent will provide a process control design report that, as a minimum includes a complete and comprehensive description of the process control philosophy in sufficient detail to demonstrate an understanding of the process control issues that will be faced in operation of the Project under both normal and abnormal conditions. Abnormal conditions include operation at the outer range of the flow and mine water chemistry conditions as well as upset conditions.

9.9.3.6. Sludge Management Report

The Proponent must clearly state the selected option(s) for disposal and/or management of Sludge. The Proposal must include, as a minimum, the following standards and features, depending upon the option selected. Any of the following options or combinations of options will be accepted by the Province if implemented in conformity with Applicable Law. The Province will also consider other locations on the lands acquired by the Province from MacDonald Development Company in 2003, providing that the requirements of Option A are met.

In all instances, the Sludge Management Report must address any plans for temporary storage on the Site.

Option A – Impoundment in Jane Basin.

- Provide proof based upon pilot testing or industrial experience that the Sludge can pass the BC SWEF test.
- Provide a firm commitment to obtain a landfill discharge permit under the *Waste Management Act* and approval under the *Mines Act*, as appropriate.
- Accept responsibility for management of the Sludge impoundment facility and any failures of the facility, including those caused by the failure of the bluff surrounding Jane Basin.
- Provide a storage plan for the first five years of plant operation. The plan must address means of storing or transporting the Sludge during the winter.
- Commit to maintain the access road to Jane Basin in a condition that is suitable for transport of materials to Jane Basin. This is a separate obligation from the commitment to maintain the Jane Basin access road for access to the weather stations and other facilities by four-wheel drive vehicles.

Option B – Reuse or Recycle

- It is preferred that the Sludge created in the Operations is reused or recycled in an environmentally friendly manner.
- Provide the name, address and name of contact person at the reuse or recycling facility, or facilities.
- Provide a letter of commitment from the receiving facility to accept the Sludge, and state the period of the commitment.
- Provide a description of the manner in which the Sludge will be re-used or re-cycled.

Option C – Dedicated Offsite Landfill

- Provide proof based upon pilot testing or industrial experience that the Sludge can pass the BC SWEPP test.
- Provide a letter of commitment from the receiving facility to accept the Sludge, and state the period of the commitment.
- Commit to a site location and to obtain a landfill discharge permit under the *Waste Management Act*.

Option D - Commercial Landfill

- Provide proof based upon pilot testing or industrial experience that the Sludge can pass the BC SWEPP test, if the facility is located in British Columbia, or the standard landfill acceptance test for landfills outside of British Columbia.
- Provide the name, address, name of contact person and permit number of the landfill.
- Provide a letter of commitment from the receiving facility to accept the sludge, and state the period of the commitment.
- Provide information on any permit violations since January 1999.
- Provide a copy of the landfill's most recent environmental audit, which will be for no earlier than 2003.

9.9.3.7. Outfall Design Report (Onshore Section)

The Proponent will provide an Outfall Design Report that, as a minimum, provides the following information for the onshore section of the line:

- Brief description of design methodology, including the means for tying in the storm water discharge;
- Brief description of the type of pipe, manholes and proposed arrangement for the onshore component;
- General Arrangement Drawing of the planned routing for the outfall pipeline if different from the routing in the Westmar Study, and a full discussion of the technical and land acquisition issues. This is not required if the Proponent intends to follow the routing in the Westmar study.

- Discussion of maintenance issues, including how the Proponent intends to design the submerged portion of the outfall for ease of maintenance and replacement of failed sections.
- Construction staging requirements, if required.

The Province will discuss the design of the offshore (marine) section of the outfall system with the Proponent. Komex International Inc., a Restricted Party, will be available to work with the Proponent on the engineering aspects of the offshore section. However, this does not remove the responsibility for design and construction from the Proponent and the Proponent may elect to have another qualified firm perform this design, subject to the Province approving that firm. When the scope, cost and performance specifications of the marine portion of the Outfall have been developed, the construction of the marine portion of the Outfall will be included in the Work pursuant to the Variation Procedure and payment therefore will be made to the Proponent either by a lump sum payment or by adjustment of the Payment Mechanism.

9.9.3.8. Architectural Report

The Proponent will provide an Architectural Report that, as a minimum, provides the following information:

- coloured elevation of the main building of the WTP, including a schedule of surface materials and finishes; and
- a plan of the main building of the WTP.

9.9.3.9. Landscaping Design

A landscaping design report is not required. The Proponent is to include an allowance of \$100,000 in the cost estimate for the construction phase to provide for future landscaping as mutually agreed between the Province and the Operator.

Please note that the landscaping is to be maintained throughout the operating period.

9.9.4. Project Schedule

The Project schedule should be prepared in sufficient detail that it can be used as a base schedule throughout the life of the Project and should include a description of the key components and major activities of the Work, and should follow Project Management Institute (PMI) standards. The Project schedule should be prepared electronically using appropriate software. It is desirable that the Project schedule use MS Project software to be compatible with other schedules maintained by the Province for the Britannia Mine Remediation Project.

The Project schedule should depict the entire Project, showing the major milestones in the process from design through to Project commissioning. The Project schedule should be in a “critical path” method format with anticipated milestone dates within the critical path clearly indicated. The milestones should include but not be restricted to the following:

- anticipated Project Agreement award date at the end of November 2004;
- start of construction;
- dates of interim and final completion for the various design components and related compliance review dates, where applicable;

- Site occupation date;
- anticipated commencement and completion dates for each portion of the construction phase of the Project;
- seasonal shutdown start and end dates (if applicable);
- dates for the commencement of the manufacture and installation of major process equipment;
- scheduled dates for Substantial Completion and Total Completion;
- start- up and completion of commissioning
- commencement of Contaminated Water treatment; and
- key dates related to
 - obtaining rights-of-way
 - environmental approvals; and
 - BC Hydro Service

9.9.5. Quality Control

The Proponent must provide a construction Quality Control Plan during the negotiation process that should conform to the requirements of Appendix B covering the design and construction within fifteen (15) business days of being notified that they are the Preferred Proponent.

The outline of the operating Quality Control Plan will be developed by the Proponent 60 days prior to commencement of Commissioning.

9.9.6. Operations and Maintenance Plan

The Proponent will provide a report in respect of Ordinary Repair and Replacement that, as a minimum, provides the following information:

- identification of the agents and chemical requirements and estimated usage level per 1000 m³ of water treated;
- summary of the proposed operation of the facility by the Proponent including staffing requirements, with certification levels, if required;
- the proposed maintenance methodology;
- the proposed safety, health and emergency response plan, with attention to the environmental protection to be afforded, particularly with regards to spills; and
- a description of the Operating Quality Control Plan which will address all testing, inspection and monitoring required to ensure conformance with the requirements defined in Appendix C; and
- proposed procedures for record keeping and reporting.

9.10. Deposits for Shortlisted Proponents

9.10.1. Shortlisted Proponent

All short listed Proponents will be required to provide a deposit of \$50,000 within 5 working days of being invited to the RFP stage. They will have five (5) business days to withdraw from the competition after receipt of the RFP and RFP Documents including the draft Project Agreement without loss of this deposit.

The \$50,000 deposit is not refundable after the five (5) business days if a valid proposal is not submitted.

The deposits are requested to be in the form of an irrevocable Letter of Credit. The Letter of Credit will be issued by a Chartered Bank of Canada for an amount of \$50,000 in lawful money of Canada with the following terms substantially similar the following:

We hereby authorize the Her Majesty the Queen in Right of the Province of British Columbia, as represented by the Minister of Sustainable Resource Management (“the Beneficiary”) to draw upon us for the account of _____ (the “Customer”) up to the amount of FIFTY THOUSAND DOLLARS (CDN \$50,000) in lawful money of Canada upon written demand for payment made on us by the Beneficiary which demand we will honour without inquiring whether the Beneficiary has the right as between the Beneficiary and the Customer to make such demand.

This Letter of Credit is irrevocable and will expire at 12:00 noon local time in Vancouver, British Columbia on November 30, 2004 (the “Initial Expiry Date”) provided that the term of this Letter of Credit will renew automatically for a further period of six months without the necessity of any further action on our party unless we otherwise notify the Beneficiary not less than 90 days before the Initial Expiry Date, which notice will be in writing to the above address and effectively given on receipt.

9.10.2. Proponent Who Is Successful In the Proposal Call Process

The Proponent selected by the Province to become the Operator will be required, upon selection, to replace its \$50,000 deposit with a new deposit of \$100,000, in the form of a Letter of Credit, within five (5) business days of Notice of Award. The \$100,000 deposit delivered by the preferred Proponent will be held as security for the obligation of the Proponent to execute the Project Agreement complete with such contract security or bonding requirements as has been set out in its Proposal, as well as insurance requirements of the Project Agreement.

All Letters of Credit will be returned, with the exception of the preferred Proponent’s, after the successful award of the contract. The preferred Proponent’s deposit of \$100,000 will be returned pending financial close of the Project Agreement.

10. Evaluation Process

10.1. Process Conditions

This RFP and the RFP Documents do not create a tender process. This RFP is not an invitation for an offer to contract and it is not an offer to contract made by the Province. By this RFP, the Province reserves to itself the right in its sole and absolute discretion to

consider and analyze the Proposals, select a preferred Proponent as Operator, and if it so determines, sign an agreement with such Proponent.

Without limiting the generality of the foregoing, the Province reserves the right to:

- reject any Proposal, whether or not complete and whether or not it contains all the required information;
- require clarification of any Proposal;
- request additional information on any Proposal;
- reject any or all Proposals without any obligation, or any compensation or reimbursement to the Proponents;
- refuse to enter into an Agreement with any of the short listed Proponents;
- re-advertise for new submissions or call for tenders for this work or for work of a similar nature.

The Province may, in its sole and absolute discretion, independently verify any information in any submission.

The Proposals submitted by the Proponents must be binding offers and the Province reserves the right to make a choice from the various offers, or not choose any.

10.2. Competitive Process

With the issuance of this RFP, the Province is making a business opportunity available to Proponents having the experience, competence, managerial sophistication and financial capacity to enter into Agreements to design, construct, finance, maintain and operate the Project.

The competitive process is initiated by the issuance of this RFP to Proponents who can satisfy the mandatory requirements defined in this RFP. It is anticipated that the various Proposals received in response to this RFP may incorporate different design features, materials, construction and business approaches and may differ in other respects. The following evaluation process will be followed to select the preferred Proponent.

10.3. Evaluation Process and Criteria

Evaluation sub-committees specializing in technical and financial/commercial sectors will closely evaluate each Proposal. The Evaluation sub-committees will then report their findings to an Evaluation Committee who will review and assess the sub-committee reports and recommend a rating of the Proposals. The Evaluation Committee will recommend a preferred Proponent to the Steering Committee. The Steering Committee and/or the Province may, in its sole and absolute discretion, accept or reject the recommendations of the Evaluation Committee.

If the Province determines that a Proposal is unclear in some aspects, a list of questions may be prepared to provide the Proponent with an opportunity to clarify its Proposal. If these clarifications are insufficient, the Province may in its sole and absolute discretion decline the Proposal.

Evaluation of Proposals will be based solely on the contents of the submissions and any clarifications provided in writing in response to the questions asked by the Province's Contact Person. The evaluation will be conducted in the manner and sequence described below.

- pass/fail evaluation if alternative technology proposed, as compared to EOI
- completeness review of proposal
- rated evaluation
 - qualitative evaluation
 - risk adjusted net present value (“NPV”) evaluation of the Proponent’s 20 year financial plan

10.4. Pass / Fail Evaluation

If the Proposal is based in whole or in part upon a technology that is different from the technology accepted by the Province as a demonstrated technology in the Request for Expressions of Interest (RFEI) stage, the section of the Proposal addressing the new technology will be evaluated on under the Pass/Fail criterion established in the RFEI.

10.5. Completeness Review of Proposal

The Proposal submissions will be reviewed to ensure they meet all the mandatory requirements, policies and procedures as stated in this RFP. The following are the mandatory requirements:

- The Proposal must be received at the Submission Location prior to Submission Deadline;
- the Proposal Form in the form of Appendix F must be signed by the Proponent or each member of the Proponent consortia, if the consortia is a partnership or joint venture;
- the Technical Proposal will contain the Technical Proposal which is generally composed of the items as described in Section 9, Appendix B, and Appendix B2; and
- The Financial Proposal will contain the Financial Proposal which is generally composed of the items as described in Section 9 plus the Financial Templates as described in Appendix I.

Proposals that do not contain a new technology or ones that are considered to have passed the criterion will be evaluated on a completeness review basis for their compliance with the stated requirements for the following elements:

- management plan;
- technical reports;
- project schedule; and
- operation and maintenance plans.

All Proposals must successfully address all of the required elements to proceed to the risk adjusted net present value evaluation. Detailed descriptions of requirements for completeness review elements are set out in the RFP and RFP Documents.

10.6. Rated Evaluation of the Proposal

Proposals will be scored out of 100 points. The Proposal receiving the highest score will be recommended as the preferred Proponent. The rated evaluation has two components: qualitative evaluation and risk adjusted net present value evaluation. To

reflect the relative importance of these components, each component will be assigned a weight as indicated in the table below:

Qualitative Evaluation	40 points
Risk Adjusted Net Present Value of 20 year Financial Plan Evaluation	60 points
Total Points Available	100 points

10.6.1. Qualitative Evaluation (40 points)

Aspects of the Proposal submission which are neither part of the net present value calculation, nor pass/fail in nature, will be subject to a qualitative evaluation.

The qualitative evaluation will be a comparative assessment of the Proposals. The Province's Evaluation Committee members will rate Proposals against the twenty (20) predetermined evaluation criteria in the table below. Proposals will receive points related to the 20 criteria to the extent that the Evaluation Committee, in its sole and absolute discretion, considers appropriate in terms of adding value to the Project. If there are no discernable differences between Proponents in a specific evaluation category, or no price differential can be supported, all Proponents will score zero in that category.

The following criteria will be used for qualitative evaluation:

Criteria	Detail
1. Aesthetics	Issues to be evaluated include the appearance of the buildings and the impact on the surrounding area
2. Durability of building structure	Ability to retain appearance over 20 years in local climate.
3. Schedule	Substantial Completion of the Project, including commissioning, by September 30, 2005.
4. Flexibility of the process to handle changes in flow rates	Evaluation of the proposed methods to be able to increase the treatment rate from the minimum rate to the full design capacity within a two week period.
5. Flexibility of the process to handle changes in water chemistry	Evaluation of the proposed methods to operate the process when contaminant loadings are low.
6. Flexibility of the process to be able to operate at the minimum design flow (groundwater only)	Process mass balances and related information to be supplied in the proposal for treatment of mine water, and for the treatment of groundwater only during the dry season.
7. Sludge disposal	Proposals for beneficial reuse of generated Sludge will be

Criteria	Detail
	evaluated.
8. Flexibility of the Project to manage by-pass events.	Proponent's plans for operation at 133% of the design capacity to reduce the need to by-pass Contaminated Water.
9. Expandability of the Plant	Ability to expand the Project - layout arrangement is conducive to future expansion, if required.
10. Ability of the plant to consistently achieve the Provincial Guidelines	Demonstration that the Provincial Guidelines can be met under upset conditions.
11. Financial hedging strategies, if any	The proposed hedging strategy, if any, for chemicals, reagents etc. used by Proponent.
12. Financial sensitivity to water chemistry changes and water flow rates	The impact on the annual Periodic Payment of changes in water chemistry and water flow rates.
13. Income Commitments, if any	Level of third party advanced commitments and guarantees for income assumed in the Proponent's financial plan to achieve revenues for Sludge/by-products.
14. Recourse, Guarantees during the Work, if any	<p>The provision of parent organization guarantees during design/construction, including the following information:</p> <ul style="list-style-type: none"> i. the financial resources of the guarantor organization proposed to provide such support (recent financial statements should be provided for such entity(s)); ii. the scope of each guarantee, and how this guarantee would work in practice if called on; iii. the proposed level of the guarantee; and iv. the duration of the guarantee.
15. Recourse, Guarantees during Operations, if any	<p>The provision of parent organization guarantees during operations, including the following information:</p> <ul style="list-style-type: none"> i. the financial depth of the guarantor organization proposed to provide such support (recent financial statements should be provided for such entity(s)); ii. the scope of each guarantee, and how this guarantee would work in practice if called on; iii. the proposed level of the guarantee; and iv. the duration of the guarantee.

Criteria	Detail
16. Recourse, Guarantees and/or insurance for environmental risks, if any	<p>The provision of parent organization or other support/guarantees for environmental liability matters, including the following information:</p> <ul style="list-style-type: none"> i. The financial depth of the guarantor organization proposed to provide such support (recent financial statements should be provided for such entity(s)). ii. The scope of this support, and how it would work in practice if called on. iii. The proposed level of the guarantee. iv. The duration of the guarantee. v. The extent of third-party environmental insurance coverage.
17. Financial Commitments	<p>Proponents must provide a description of arrangements for the proposed financing for the Project, including details on all equity investor participations, related party debt financing, and, all third-party Project-specific debt financing including particulars of the requirement of any providers of Senior Funded Debt.</p> <p>All equity funding commitments and related party debt financing commitments required for the Project must be finalized and fully described in this Proposal.</p> <p>Proponents planning to use third-party Project-specific debt financing of any type must provide commitment letters for (i) the full construction component of the Project, and (ii) forward commitments for “take-out” long-term financing for Operations of the Project. All relevant correspondence from third-party financial institutions should be provided. “Term sheets” and other similar forms of non-binding indicative terms from funders will not be deemed sufficient evidence of construction financing availability.</p> <p>Proponents should clearly indicate the extent of their support/guarantee of forward third-party take-out financing commitments, if used.</p> <p>Full details of the debt and equity components, as applicable, of the proposed financing plan must be provided by each Proponent. These will include the amount, sources, term, interest rate, terms of repayment, transaction fees, loan security, collateral, guarantees and warranties and in respect of equity, the amount, sources, term, ownership interest, profit participation, and, expected rate of return.</p>
18. Allowance cost impact	Proponents should clearly illustrate (using financial

Criteria	Detail
on proposed Periodic Payment	examples where appropriate) how the capital cost of allowance items will be integrated into the proposed Periodic Payment. For example, if all allowance items have a total capital cost of \$1,000,000 and annual operating/maintenance costs of \$48,000 per year during the Term, how will Proponent integrate these costs into the Periodic Payment and how will the Periodic Payment increase?
19. Financing Plans	Reasonableness, completeness and adequacy of the proposed financing plan.
20. Other considerations.	Other value added features of the proposals will be evaluated.

The value of a point is dependent on the lowest 20-year risk adjusted NPV submitted by a Proponent who has qualified under the pass/fail evaluation. This will be calculated prior to the qualitative evaluation by a Provincial employee or a financial consultant.

The award of points in the qualitative assessment will recognize the inherent value of the points, and the value of points will be determined in this financial evaluation section based upon the difference between the lowest Proponent bid and the other bids in accordance with the formula identified.

10.6.2. Net Present Value Evaluation of 20-Year Financial Plan (60 points)

The following information will be extracted from the Proposals for the purposes of the NPV calculations. The Province may make adjustments it deems appropriate to reflect risks associated with each Proponent proposal.

Proposals for the 20-year financial plan will first be evaluated for reasonableness as a pass or fail. The Province reserves the right to require clarification of the 20-year financial plan. A score of 0 points will be assigned to any 20-year financial plan if it is judged to be unreasonable.

Criteria	Detail
1. Risk-Adjusted Lifecycle Costs	<p>The expected net present value cost to Province of:</p> <p>(A) the projected payments to the Proponent over the length of the Project Agreement; and,</p> <p>(B) any other cost or benefit to the Province resulting from the Proposal, including taking into account any adjustments arising from one or more of:</p> <ol style="list-style-type: none"> 1. perceived variations in the Proponent's proposal from initial form of Project Agreement; 2. the quantitative evaluation of risk, and the Proposal's risk level and

Criteria	Detail
	risk allocation; and 3. variability and increases in Periodic Payments due to variations in water flow rates and water chemistry.
2. Development Cost Pro-forma ²	Reasonableness, completeness and adequacy of the <u>development cost</u> summary pro forma, including reasonableness and feasibility in comparison to those of other Proposals and those assumed by Province in its public sector comparator.
3. Operating Pro-forma	Reasonableness, completeness and adequacy of the <u>proposed operating cost pro-forma</u> , including reasonableness and feasibility in comparison to those of other Proposals and those assumed by the Province's public sector comparator.
4. Capital Maintenance Pro-forma	Reasonableness, completeness and adequacy of the <u>capital maintenance cost pro-forma</u> , in accordance with the Performance Requirements, scope and other provisions of the Project Agreement, and including provisions for: <ul style="list-style-type: none"> i. preventative maintenance; ii. demand maintenance; and iii. refresh cycle of fixed items.

The Proposal with the lowest risk adjusted 20-year NPV cost to the Province will receive all 60 points allocated to this section. Proposals with a higher NPV cost will receive proportionally fewer points in accordance with the following formula:

$$\text{Points}_{\text{Higher NPV Cost}} = 60 - 60 \left[\frac{\text{NPV Cost}_{\text{Higher}} - \text{NPV Cost}_{\text{Lowest}}}{\text{NPV Cost}_{\text{Lowest}}} \right]$$

Proposals that receive a pass will be evaluated with a risk adjusted NPV calculation to determine the life-cycle cost of the Project to the Province based on the 20-year financial pro-forma plan. The calculation will consider cash flows over the 20-year life of the service.

10.6.3. Financial Assumptions

Proponents are to prepare two sets of Financial Templates using the format generally described in Appendix I.

1. Standardized Financial Templates. The first set of Financial Templates is to be based upon the Standardized Assumptions provided below. These assumptions will be used by the Province to perform sensitivity testing and comparative analysis of Proponent submissions.

² Pro-formas referred to in this sub-section mean cash flow forecasts prepared on a cash basis before any accounting accruals or similar GAAP adjustments. Such pro-formas are to generally be in a format similar to the templates identified in Appendix I – Financial Templates.

2. Periodic Payment Pricing Templates. The second set of Financial Templates is to be based upon Proponent’s own set of assumptions. These Financial Templates shall clearly identify the Proponent’s proposed Periodic Payment over the Term.

10.6.3.1. Standardized Financial Templates

Proponents are to provide a set of completed Financial Templates based upon the requirements outlined in this RFP and the Project Agreement as well as the following Standardized Assumptions.

For greater certainty, the Province does not provide any assurance, representation or warranty regarding Contaminated Water volume, groundwater volume, storm water volume, changes in water chemistry, and inflation over the Term of the Agreement. The assumptions provided here are simply to establish some consistency across Proponent proposals to facilitate an objective review and evaluation of such proposals.

10.6.3.2. Standardized Assumptions

Inflation rates (for Operating Term)	<p>Assume inflation of 2% per annum over the Term for the following parameters in Financial Templates:</p> <ul style="list-style-type: none"> - on-site labour - lime & other basic raw materials (including transportation etc.) - Utility costs - Sludge disposal costs/revenues - other non-controllable costs <p>Proponent to establish its own expected inflation rate during the Term for the following parameters (however Province reserves the right to adjust such assumptions (to 2% per annum) if the assumptions are unreasonable, in the sole and absolute discretion of Province):</p> <ul style="list-style-type: none"> - Overhead, administration & other controllable costs - Specialized and proprietary chemicals, if any
Discount rate	The Province is expecting to use a nominal annual discount rate of 8.12%.
Term	20 years
Contaminated Water volume	Contaminated Water flow averages 4,977,000 m3/year.
Contaminated Water Chemistry	Mean (per Appendix D)
Groundwater volume	Groundwater flow averages 876,000 m3/year
Groundwater chemistry	Assume saline and contamination mix as described in Appendix D, Section 2 (based upon samples from 2003 and 2004).

Storm water volume and chemistry	Ignore for purposes of this analysis.
Allowances	Exclude from analysis. Proponent is to assume groundwater is treated in accordance with Project Agreement (despite excluding the cost related pumping equipment) and therefore should reflect the cost of chemicals, reagent and Sludge transportation and disposal from groundwater in Periodic Payment.

10.6.3.3. Periodic Payment Pricing Financial Templates

Importantly, Periodic Payment proposals from Proponents must be based upon Proponent's own assumptions for expected Contaminated Water volume, groundwater volume, storm water volume, changes in water chemistry over the Term of the Agreement (which may or may not be similar to the assumptions described below). If a Proponent's proposal is accepted, then the agreed Periodic Payment shall only be adjusted in accordance with the Payment Mechanism (as described in the Project Agreement, as amended from time to time). All analysis and reports provided by the Province (in this RFP as well as the data room) are provided for information purposes only.

10.6.3.4. Periodic Payment Assumptions

Inflation Rates	Same as above in Standardized Assumptions. Generally assumed to be 2% per annum throughout the 20-year Term. Proponent must clearly illustrate all other inflation assumptions used. Province reserves the right to adjust such assumptions (to 2% per annum) during evaluation of proposals if the Proponent assumptions are unreasonable, in the sole and absolute discretion of Province.
Discount Rate	The Province is expecting to use a nominal annual discount rate of 8.12%.
Term	20 years
Contaminated Water volume flow and chemistry	Proponents are responsible for estimating future Contaminated Water volume and chemistry.
Groundwater volume and chemistry	Proponents are responsible for estimating future groundwater volume and chemistry.
Storm water volume	Proponents are responsible for estimating future storm water volume and chemistry.
Failure Events and Quality Events	Proponents should indicate any Failure Events or Quality Events assumed in their analysis and calculation of the proposed Periodic Payment.

10.7. Evaluation Summary

The evaluation table below describes the Proposal evaluation process. Proposals must meet the mandatory requirements in the Proposal completeness review to proceed to the Pass/Fail Evaluation.

PASS/FAIL EVALUATION		
Alternative technology proposed (vs EOI). • Use criteria from RFEI to evaluate proposals containing an alternative technology.	PASS	FAIL
PROPOSAL COMPLETENESS REVIEW		
Proposal received at Closing Location prior to Submission Deadline	YES	NO
Signed Proposal Form included in Financial Proposal (per Appendix F)	YES	NO
Financial Proposal	YES	NO
Technical Proposal	YES	NO
Management Plan	YES	NO
Technical Reports	YES	NO
Project Schedule	YES	NO
Operation & Maintenance Plan	YES	NO
RATED EVALUATION		
Qualitative Evaluation	Max 40 points	
Risk Adjusted Net Present Value Evaluation of 20 year financial pro-forma	Max 60 points	

THE PROPONENT WHOSE PROPOSAL SCORES THE HIGHEST NUMBER OF POINTS WILL BE RECOMMENDED BY THE EVALUATION TEAM AS THE PREFERRED PROPONENT. IN THE EVENT OF A TIE, THE PROPONENT WHOSE PROPOSAL HAS THE LOWEST RISK ADJUSTED 20-YEAR NPV COST WILL BE RECOMMENDED AS THE PREFERRED PROPONENT.

Final

Appendix A

Definitions

For the purposes of this RFP, the expressions set forth below have the meanings ascribed to them in the draft Project Agreement attached as Appendix G, with the following additional meanings set out below:

“Contractual Service Requirements”	means the requirements to be specified in the Project Agreement including, but not limited to, all permits, licenses, and directions of authorities having jurisdiction. The Provincial Guidelines may be more stringent than those permitted in the discharge permit.
“Evaluation Team”	means the Ministry of Sustainable Resource Management staff, Partnerships BC staff, community representatives and consultants chosen to evaluate the Proposal’s.
“HAZOP”	a structured hazard and operability study for evaluation of a complex process for the purpose of finding problems associated with the operability and safety of the process.
“Hydraulic Capacity”	means the maximum volume of water that can physically flow through the WTP without overflows, spillage, or damage to the WTP.
“Operational Acceptance”	means the acceptance by the Province that the Project has operated on a continuous basis for 30 Days in compliance with the Performance Requirements and the Standards in accordance with the Commissioning Plan and has been so certified by the Operator’s Consultant. Operational Acceptance for the purpose of the RFP is a key element of “Substantial Completion” of the “Work” for the purposes of the Project Agreement.
“Operating Period”	means the operating period, which will initially be set at 20-years, commencing on the date upon which Operational Acceptance will be scheduled to occur in the Project Agreement.
“Preferred Proponent”	means any entity, including the company, firm, consortium of any legal entity the Proponent selected by the Province during the RFP Selection Process to negotiate the Project Agreement.
“Project Team”	means, the Ministry of Sustainable Resource Management staff, Partnerships BC staff, community representatives and consultants involved in the Britannia Mine Water Treatment Plant Project.
“Proponent”	means any entity, including a company, firm, consortium or any legal entity, which has been invited to the RFP stage.
“Province’s Contact Person”	contact information provided under Section 8.1

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“Proponent’s Contact Person”	Identified by the Proponents according to Section 8.5 of the RFP.
“Proposal”	means the proposal submitted by a Proponent under this RFP;
“Restricted Parties”	means those Persons (including their former and current employees) who (a) had, or currently have, direct participation or involvement in the Selection Process, or (b) in the planning or implementation of the Water Treatment Plant Project beyond the feasibility level studies, or (c) have specialized knowledge related to the mine water reservoir or outfall, and who may therefore provide a material unfair advantage or confidential information that is not, or would not reasonably be expected to be, available to other Proponents.
“RFP”	means this Request for Proposals, being that is, the documentation issued by Partnerships British Columbia on behalf of the Ministry of Sustainable Resource Management requesting the submission of proposals and detailing the project requirements;
“RFP Documents”	means collectively this RFP plus Appendixes A to J inclusive, plus any Addenda;
“Selection Process”	means the process pursuant to which the Province solicits Proposals, develops a short list of Proponents to whom the Province will submit the RFP and selects the Preferred Proponent with whom the Province will enter into the Agreement for the WTP.
“Special Waste”	has the meaning as defined in the Special Waste Regulation under the <i>Waste Management Act</i> (British Columbia);
“Submission Deadline”	The Submission Time is no later than 2:00:00 pm Local Time on July 15, 2004.

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Appendix B

PERFORMANCE SPECIFICATIONS

1.0 Project Objectives

The Province's expectations from the Contract are summarized below. These expectations are provided to the Proponents as general guidance. There is no order of preference in the listing.

1. Buildings and landscaping are to provide an aesthetically pleasing site. The buildings should be designed and constructed to retain their appearance under local climatic conditions for 20 years minimum, including exposure to sea air.
2. Recognizing the proximity of the community of Britannia Beach, the likely expansion of residential areas on private land, and the proximity of the BC Mining Museum, all facilities are to be designed to mitigate visual and noise impacts.
3. Safety during construction and operation are important to both the Proponent and the Province. There is a preference for safety to be designed in to the facilities by such means as wide roadways, ease of access to process equipment, and "inherently safe" features. Potentially unsafe situations are to be mitigated during design. The Province intends to conduct a full safety review of the designs, and expects to be invited to participate in the "HAZOP" reviews conducted by the Proponent.
4. The treatment technology and Project design have the flexibility to efficiently treat a wide range of mine water, including water with lower metal concentrations than the projected "average" chemistry, as the metal concentrations are expected to decrease with time.
5. All facilities are expected to be in use after the term of the contract. Quality is to be designed into the facilities so that at the end of the Term, the facilities are fully operable, excluding deterioration due to normal wear and tear. Only new equipment and materials will be allowed in the construction of any facility, without the prior consent of the Province.
6. The facilities are to be designed, constructed and operated in a manner that is protective of the environment, and in accordance with all current environmental regulations and standards.
7. Protection of the environment is also achieved by a WTP that operates consistently, efficiently and reliably. Ease of operation of the process, and the provision of installed spares for critical process equipment, are considered to be desirable features. Consistent with the philosophy of protecting the environment, the Province wishes to incorporate features that will minimize the frequency of "By-pass Events".
8. Ease of monitoring and controlling the operations of the plant.
9. Efficient use of human and other resources through remote monitoring of the operation of the plant, ease of maintenance, and efficient use of chemicals and power.
10. Continuing improvement in performance during the operating phase.

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2.0 Specific Planning Requirements

2.1 *Sustainability and Life Cycle Issues*

The Proponent will be required to develop the Project consistent with the concept of responsible and sustainable development. This includes improving the facility's economic performance both in life cycle and capital cost terms. It also means the facility will be more resource efficient particularly with respect to the use of labour, energy, reagents and materials used in its construction and operation. General considerations will include:

- The design shall attempt to facilitate the most efficient use of materials and the minimization of waste, e.g. standardized dimensioning;
- The design shall maximize the use of environmentally responsible production processes;
- The design shall increase the lifespan of the building by the use of durable materials;

The Project, including the mine water conveyance system to the plant and the outfall, should be designed and constructed on an energy efficient, low maintenance basis with a minimum life for:

- Structural elements of at least 50 years.
- Underground utilities – 50 years.
- Roofing – 25 years.
- Mechanical components of - 20 years.
- Electrical items of at least - 20 years.
- Instrumentation of at least - 10 years.

with no major overhauls or replacement anticipated during the first 75,000 hours of operation.

Should major maintenance be required during the Term, it will be the responsibility of the Proponent. Items that have a design life cycle of less than 20 years must be clearly identified by the Proponent.

2.2 *Integrated Design Management Program and Partnering*

The Proponent will be required to utilize an integrated design management program with respect to the design development of the Project. An integrated team approach to design recognizes that crucial decisions made at the start of the design have substantial impacts in the final construction and operation of a facility. It is therefore required that all the design trades (e.g. mechanical, electrical, etc.) work in conjunction with each other from the start, rather than being brought in sequentially on the Project to design their respective systems in isolation.

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2.3 Scope of Design and Construction Work**2.3.1 Water Management and Treatment**

- Provide paved access roads within the Site. This includes any new access roads required for access to the WTP for supply of chemicals and removal of Sludge. A permanent means of access for construction traffic is required through/around the Project for access to the area behind the mill (concentrator) building. The road from the Project to the BC Hydro substation does not need to be paved.
- Provide a paved parking area of sufficient size to permit parking of two tour buses as well as visitors and the Proponent's personnel.
- Provide site grading and drainage to effectively manage uncontaminated runoff from upstream of the plant site and from the plant site itself. This includes the flows in seasonal creeks in the plant site area. The installed drainage system must be independent of the drainage systems through the property of the BC Mining Museum, and not add to the surface water runoff or groundwater flux through the Fan Area. Uncontaminated runoff is to be discharged through the outfall system
- Provide security systems to minimize the potential for the public to access the Facility area, including the 4100 Level adit and the Province's property behind the BC Mining Museum, and to minimize the potential for injury to the public.
- Provide utility connections from the BC Hydro sub-station to the WTP, the groundwater and storm water pumping systems and other installations requiring electric power supply.
- Provide site power distribution as required for the operation of the Facility.
- Provide telephone, fax and hi-speed internet communication capabilities.
- Provide process water and potable water supply.
- Provide sanitary sewage disposal.
- Provide a fire alarm system to meet the guidelines in Appendix B, Section 3.11.
- Provide a site communications system to meet the guidelines in Appendix B, section 3.11.
- Provide for pumping of groundwater from the groundwater pumps on the Fan Area to the WTP, together with intermediate surge tanks, electrical and instrumentation connections, as required. The design requirements are still in development. The Proponent will be compensated for this work through a Cash Allowance. Impoundment of groundwater behind the 4100 Level Plug will not be allowed.
- Provide for pumping storm water from the existing storm sewer line that collects storm water from the Museum property to the outfall system. The flow of storm water being pumped to the outfall is to be measured and recorded on a continuous basis. The design requirements are still in development. The Proponent will be compensated for this work through a Cash Allowance.
- Design and construct a WTP with a Design Capacity of 1,050 m³/hour. The hydraulic capacity of the WTP, which is the flow rate that can be handled without spillage is to be 1,400 m³/hour. The WTP must be capable of treating

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groundwater on a continuous basis. The groundwater may be saline, and the volume may be as low as 25 m³/hour. . A separate treatment circuit for groundwater is acceptable. The WTP must be capable of treating a range of water qualities as specified in this RFP and RFP Documents, and be capable of meeting the Provincial Guidelines.

- Provide a new valve and pipe installation at the 4100 Level plug. In the event that the Proponent accepts the existing temporary installation, the Proponent will be responsible for all future modifications to this installation.
- Provide a Contaminated Water conveyance system from the 4100 Level plug to the WTP. The Proponent may elect to accept the existing temporary installation within the 4100 Level Adit as either as temporary or permanent facility. The Proponent will be responsible for all future modifications to this installation.
- Provide a system for the monitoring of water levels in the mine workings and for remote control of the flow rates. The Proponent may elect to accept the existing installation as either a temporary or permanent facility.
- Provide a system for the introduction of groundwater into the WTP.
- Provide a system for the automatic and continuous recording of the flow in m³/hour, turbidity and pH of Contaminated Water entering the Project. The flow rates of Contaminated Water and groundwater are to be measured and recorded separately.
- Provide process control instruments to continuously measure and record the volume (in m³/hour), and pH, of untreated water that is by-passing the Project and being fed into the outfall system.
- Provide reagent storage systems with the capability to store sufficient reagents and chemicals to meet the projected usage if the Project was to operate continuously at the Design Capacity.
- Provide a centralized, air-conditioned control room, housing process automation, control and data recording equipment, to which all process control signals are fed, including those from the control systems in the 4100 Level adit, and both the flow measurement from the groundwater pumping system and the storm water pumping system.
- Provide a building to house: (a) the process equipment that by its nature or function must be protected from the weather, (b) the control room, and (c) storage areas for repair supplies and bagged chemicals or reagents.
- Provide a system to enable excess water volumes to by-pass the WTP when the volume of water entering the mine workings exceeds both the capacity of the plant and the available storage capacity of the mine. Provide a means for neutralization of this Contaminated Water before it is combined with the treated water. This water must be combined with the treated effluent before it enters Howe Sound.

2.3.2 Outfall System

- Provide a piping system capable of conveying a combined flow of 3,600 m³/hour of treated water, and water that has by-passed the WTP to a marine outfall system in Howe Sound, which will discharge the effluent through a diffuser at a depth of 50 meters below sea level.

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- Provide for the addition of treated groundwater into the outfall system.
- Provide for storm water that is collected from the existing storm sewer line that discharges into the existing outfall at Britannia Creek to be piped into the outfall system.
- Provide sampling points to allow water samples to be obtained after the groundwater and surface water has entered the outfall. As a minimum a sampling point is to be provided where the outfall pipe enters Howe Sound.
- Provide all chambers to have locked, removable covers.

The following are provisional scope items that will be discussed with the Preferred Proponent. The off-shore components of the outfall are not to be included in the cost estimate, and will be addressed through a Cash Allowance. They are provided here for reference and to ensure that the onshore component is compatible.

- Locate the first port of the diffuser within one metre of 53.2 m below MSL (50.0 m below LLW).
- Conduct a survey of bottom current velocities along the marine section of the outfall, and incorporate this information into the design of the marine section of the outfall
- Design of the diffuser to minimize the dynamic loading on the seabed floor.
- Design the outfall with three diffuser ports. Although modelling has shown that a one-port diffuser is capable of meeting the dilution requirements for treated water, the 3-port diffuser is a requirement to provide a margin of safety when other water sources, such as by-pass event and/or storm water are being discharged.
- Design the marine section of the outfall in a manner that a slope failure will not cause a failure of the entire submerged pipe.
- Design the marine section of the outfall so that a failed section of the outfall pipe can be replaced in an expedient manner to minimize environmental effects of the pipe failure. Since the delivery of pipe is anticipated to be the constraining factor on rapid replacement of the line, the Proponent's are requested to include the cost of a section of spare pipe (as a separate line item cost) in their Price Proposal.

2.4 Scope of Services during Operations

The Proponent will be responsible for the overall operation, repair and maintenance of the Project constructed in a manner that is in compliance with the requirements this RFP and RFP Documents, and that maintains the utility of the assets over the Term. The services during the operating phase are described in Appendix B2 along with monitoring requirements for such services. The Proponent shall generally provide any services reasonably required, but not listed, to operate, repair and maintain the Project and sustain a fully functioning facility.

The Proponent is not responsible for the repair and maintenance of other facilities such as the mine water diversions and the Workings.

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2.5 Design Requirements

2.5.1 General Requirements

Proposals should demonstrate the Proponent's clear and coherent understanding of the challenges to be faced in implementing the Project. Topics that Proponents may wish to address in the Proposal may include, but are not to be limited to:

- achieving highest and best use of the opportunity;
- allocating risk in an appropriate manner;
- partnering with other Proponent members to ensure the Project is delivered as planned;
- ensuring a well designed and cost effective Project Plant that meets the Province's functional requirements;
- ease of modification of the plant to incorporate future technological advances in control technology, .
- dealing with public concerns in an appropriate manner; and
- quality of asset created for the Province.

2.5.2 Code Requirements

All aspects of the design are to be certified by a Professional Engineer registered to practice in the Province of British Columbia experienced in the design of process facilities of comparable complexity, size and function.

The Project design is to be prepared in accordance with the current edition of the BC Building Code, the National Building Code, and any other applicable Regulations, Ministry of Water, Land and Air Protection approvals and other authorities having jurisdiction. The Plant will be of a standard that meets those for equivalent facilities in North America.

The Proponent shall include submission, approval and payment for all necessary permits, fees and licenses from authorities having jurisdiction. The Project will not be exempt from the normal requirements related to permits and building inspections.

The facility life span is expected to be fifty (50) years without major structural repairs (excluding wear surfaces) and planned accommodation of settlements.

2.5.3 Design Review Requirements and Documentation

All drawings and calculations shall be in Metric (S.I.) Units.

The Province will carry out compliance reviews during the Project design development. These reviews will include all design disciplines and will confirm the Proponent's design complies with the standards, specifications and criteria comprising schedules to the Project Agreement. The Proponent may request a review of the civil, structural and architectural design separately from the review of the mechanical and electrical designs to facilitate the construction schedule. The Proponent will present drawings at the 50% and again when the design is 90% complete. The design development will be based on the design review and consultation process. Each submission will include five paper copies and one electronic copy (AutoCAD 2000 or later) of the design drawings and specifications.

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Before proceeding with the final design, the Proponent will present 50% complete design drawings to the Province for review. The Proponent will provide a detailed architectural design report in full compliance with this RFP and RFP Documents.

The Project design report will provide the following information:

The following drawings are required:

- key plan;
- plans of all aspects of the facility;
- process and instrumentation drawings;
- process mechanical drawings and equipment lists;
- structural drawings;
- process design criteria;
- process flow diagram and mass balances;
- control panel layouts and I/O listing;
- typical sections;
- electrical single line diagram;
- technical data sheets for major equipment;
- hydraulic profiles for the influent and effluent piping systems; and
- plan and cross-section drawings of piping installations.

The drawings will clearly show and describe the materials to be used and the equipment details. The Province will be allowed ten (10) business days to review these plans before the Proponent may proceed with the final design. The Proponent will be required to meet with representatives of the Province, and fully discuss the basis for the design. The Proponent will be responsible for obtaining all approvals from utilities and other government agencies, other than those identified as the responsibility of the Province in Appendix H.

The next review by the Province will be at the 90% design stage. The Province will review the completed drawings before the Proponent proceeds with construction. This review will assure that the design drawings have been completed in accordance with the approved preliminary design and scope of works. The Province will review these plans within ten (10) business days and obtain sign off before the Proponent may finalize the design and proceed to construction.

2.5.4 Design Folders

Design folders will be prepared for the 90% design submission and will have indexes and sectional dividers. They will contain pertinent correspondence and will be arranged in chronological order by subject matter. The folders will include design calculations, material specifications, and should reference and confirm any pre-design study information utilizing the construction design for the work. The Project record submission identified in 2.6 will also contain these folders.

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2.5.5 Design Modification

In the event that the Proponent wishes to modify the Project drawings during construction, it will prepare and submit revised drawings to the Province for review according to the above procedure for compliance review.

2.6 Project Record Submission

The following records will be supplied by the Proponent and the Province may inspect these upon providing reasonable notice:

- as constructed plans, survey plans and cross section plans;
- design folders;
- WCB notice of project;
- minutes of all meetings, including pre-construction;
- construction inspectors daily reports;
- surveys during construction;
- settlement surveys;
- supplemental drawings;
- underground utility plans;
- road and pavement structure design;
- landscape plans;
- copies of all approvals and permits required for the completion of the Project;
- all ancillary works including but not limited to storm drainage, sanitary sewer, lighting, parking areas and road works;
- quality control test data and all inspection reports; and
- signed quality control reports from engineer.

2.7 COMMISSIONING, START-UP AND TESTING REQUIREMENTS

The Proponent will be required to demonstrate full compliance with the performance specifications through a thorough commissioning and start-up process.

2.7.1 Commissioning

The Proponent shall conduct a thorough shakedown and commissioning of the facilities to ensure that all mechanical and electrical/instrumentation systems are capable of functioning as designed. The commissioning period is the Proponent's opportunity to test the various systems and correct any deficiencies found, prior to the commencement of start-up of the facilities. The Proponent may use Contaminated Water during the commissioning period, and will be paid for water treatment, provided the discharged effluent meets the Provincial Guidelines.

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2.7.2 Performance of the Acceptance Testing

The Proponent shall be responsible for operation of the facility during this period. The Proponent shall permit monitoring of its efforts during this period by the Province in order to gain a greater working knowledge of the systems.

The Proponent shall pay for any extraordinary costs incurred due to shakedown, including, but not limited to, equipment or facility damage. The Proponent shall be responsible for all maintenance and repairs of the upgrades to the facility during this period, including spill cleanups.

2.7.3 Start-up Testing

Proponent shall indicate in writing to the Province that the shakedown and commissioning is complete and that the facility is ready for start-up and treatment of Contaminated Water. All permanent system components must be in place before requesting the start-up testing.

The objective of the start-up testing program is to demonstrate:

- i. that the process technology is capable of meeting the operating guidelines for the treatment of Contaminated Water, and generation of Sludge or by-products in accordance with the specifications of the RFP and RFP Documents.
- ii. That all system components, including the mine water level control and the outfall, are operable.
- iii. That the process control systems are capable of controlling the water treatment process.
- iv. That the usage of chemicals is generally in accordance with the usage stated in the Proponent's proposal

The Province, or its representatives, will be allowed to witness all or part of the start-up testing program.

The Proponent will be paid for the water treated to the standards in the Performance Requirements during the start-up period in accordance with the Project Agreement, as if the provision of the service had started, for the purposes of payment.

2.8 Operational Acceptance Testing

Upon the satisfactory completion of the start-up testing, the Project will be considered to be in commercial operation, subject to satisfactory confirmation that the Project is capable of treating a minimum of 1,050 m³/hour of Contaminated Water for a consecutive thirty (30) day period, while meeting the Provincial Guidelines. The operational acceptance testing may be deferred to the spring freshet period of the year following commissioning, but, in any event, must be completed within 12 months of the completion of commissioning. Payments will be made to the Proponent during operational acceptance testing in accordance with the Project Agreement.

The Proponent shall assemble its commissioning team and shall conduct the acceptance testing of the facility, which the Province shall witness, to determine whether it meets the specifications contained herein. The Province reserves the right to determine the specific dates and time of the test in order to ensure sufficient Contaminated Water, equipment and personnel are available. If such a determination results in a delay of the acceptance test, an extension of the time limits included under

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the payment section of the Project Agreement shall be granted, provided that the Proponent gave adequate notice of at least 10 days.

Generally, the test parameters for acceptance are compliance with the technical specifications.

The Province shall conduct a visual inspection of the various systems prior to, and at the conclusion of the testing with the Proponent, noting any obvious leaks and other indications of poor workmanship, equipment failures/damage or abnormal wear and tear, as determined at the sole and absolute discretion of the Province. The Proponent shall repair such leaks, damage or wear. If the Province concludes that such leaks, equipment failure/damage or wear are of a reoccurring nature, the Province, in its sole and absolute discretion, may declare that the Project has failed the acceptance test.

If, in the Province's sole opinion and absolute discretion, the Proponent does not pass the operational acceptance testing, the Province reserves the right to allow the Proponent to undertake remedies as agreed with the Province and to retake the acceptance testing at a later date, or to waive any minor irregularity that occurs during the testing. The Province will not unreasonably deny the Proponent's request for a second acceptance test.

In addition to the specific actions contained above, the Province may require the Proponent to demonstrate the facility's ability to comply with any of the parameters contained in this RFP and RFP Documents.

3.0 Design Criteria and Performance Specifications

3.1 Quality Management

The Proponent will submit a detailed Quality Control Plan to the Province Contact Person within thirty (30) calendar days of receipt of the Notice of Award. The quality management manual will be developed from the Quality Management Plan submitted after the Proponent had been notified it was the Preferred Proponent.

No Work will be done on Site until the Quality Control Plan has been submitted and reviewed by the Province as complying with the Project Agreement requirements as laid out in this RFP and RFP Documents, or as subsequently may be negotiated.

3.2 Geotechnical Design Criteria

3.2.1 Geotechnical Assessment

Soil Investigation Reports pertaining to the plant site area at the 4100/4150 Level benches have been prepared by Golder Associates, AMEC (geotechnical) and URS (environmental). These reports are available in the RFP Data Room. The Proponent may undertake additional site investigations as may be deemed necessary by the Proponent, at no cost to the Province, to undertake adequate foundation design.

The Proponent shall demonstrate that the estimated total and long-term differential settlement will not affect the structural integrity, functionality, and operation and maintenance of the facility.

The maximum permissible total and differential settlements for the various structures are to be specified by the structural engineer responsible for the design of the structures. The Proponent will install settlement markers and monitor at 2 month intervals

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throughout the construction and the Warranty Period specified in the Project Agreement, to confirm the maximum permitted settlement is not exceeded.

The Proponent is solely responsible for adequately designing the foundation system and for the adequate performance of the foundations in accordance with the Project Agreement.

3.2.2 Seismic Design

Seismic Zoning for the Project area will be as defined in the National Building Code of Canada (NBCC) and British Columbia Building Code (BCBC).

Liquefaction potential of the subsurface soils shall be evaluated by a geotechnical engineer retained by the Proponent. The design shall incorporate ground improvements and other methods of addressing potential liquefaction to meet the NBCC and BCBC.

3.2.3 Foundation Design/Retaining Wall Design Criteria

The Design Engineer will specify:

- The minimum factor of safety against bearing capacity failure under static conditions ;
- The minimum factor of safety against sliding under static loading; and
- The minimum factor of safety against overturning under static loading.

3.2.4 Settlement Analysis

Settlement analysis of structures will be performed. Foundations will be designed such that differential settlement between adjacent footings is limited to the amount tolerable as specified by the structural engineer and as specified by the appropriate codes.

The Proponent shall demonstrate that the estimated total and long-term differential settlement will not affect the structural integrity, functionality, and operation and maintenance of the facility.

3.3 Site Controls

- Horizontal Control is based on the UTM ground coordinate system as shown by the drawings
- Vertical Control is based on the elevations in metres referenced to the ground UTM grid
- Mean sea level as the 0 m datum.
- Topographical data for the Plant site area (4100/4150 Level benches and access road) will be provided by the Province in electronic format (AutoCAD 2000 or later).

3.4 Design and Construction Parameters

3.4.1 Project Flows of Contaminated Water from the Reservoir

The projections of flows of Contaminated Water from the mine reservoir (discharging via the 4100 Level Plug) have been based upon a compilation of historic flow records, adjustment to incorporate the recorded (or estimated) flow of water historically

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discharging via the 2200 Level adit (closed by installation of a concrete plug in 2001), computer modeling and incorporation of data generated during a "Plug Test" (mine filling test) in 2002. This information is the best information available, but is inherently uncertain due to the database used in the modeling and the limited time record of 24 years (1977 to 2001).

As a result of this modeling, and the discharge permit application to MWLAP, the Project is to be designed for a Design Capacity of 1,050 m³/hour. The Project must be able to meet the Provincial Guidelines for dissolved metals, pH, and total suspended solids (TSS) on a sustained basis when operating at the Design Capacity.

Providing that the Project is operating at the Design Capacity, and the reservoir is full to the maximum operating level [approximately 240 metre level above the plug], any excess water will be permitted to by-pass the WTP, providing that this water is mixed with the treated effluent prior to discharge to the marine environment. The maximum projected flow rate from the mine is 3,600 m³/hour, based upon a 50-year return period event. The total water management system, including conveyance system from the 4100 Level Plug to the WTP, the WTP by-pass system and outfall system must be capable of handling 3,600 m³/hour. The Province accepts the risk that the flow rate may exceed this figure on rare occasions, and that this could result in the reservoir overflowing through the 3250 Level adit. The Province will construct a means for handling such an extraordinary overflow event, and will not hold the Proponent responsible for any environmental consequences of this overflow, providing that the Proponent has met his other obligations with respect to the operation of the Project.

The hydrological model of the mine reservoir, as developed by SRK Consultants, is available in the password-protected section of the RFP electronic data room.

3.4.2 Flow of Groundwater

The groundwater in the Fan Area is contaminated due to the flux of water through the Museum area, and the former concentrate storage area, both of which are underlain by soils containing mine tailings and waste rock. Drilling investigations and computer modeling have provided a basis for the assessment of the means of mitigating the flux of groundwater from entering the environment at the foreshore. The Province has committed to the mitigation of this source of contamination by installing a groundwater collection system. [This collection system will be installed by others during 2004.] Prior to the startup of the Project, the collected water will be discharged through the existing outfall pipe at Britannia Creek.

The Province expects that it will be required to treat this water in the Project, and therefore, wishes to incorporate a provision for treatment into the scope of work. The projected flows under various conditions may range from 25 to 150 m³/hour.

The groundwater to be collected is expected to be a mixture of contaminated fresh (non-saline) and saline water. The salinity of the groundwater is unknown and may vary with time. The chemical characterization data for the groundwater sampled during 2003 and early 2004 have been used to develop a design basis which is presented in Appendix D, Section 2 – Groundwater Chemistry.

3.4.3 Flows of Storm Water

Storm water from runoff on the Museum site is currently collected and directed through a storm sewer to the existing outfall at Britannia Creek. This facility, which was installed in 2003, consists of a series of collection drains and a gravity main connecting to the

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existing outfall. As-built drawings of the installation are available in the electronic data room.

The Proponent is required to design, install and operate a storm water pumping system with the capability to pump 50 m³/hour of storm water from the existing storm sewer to the new outfall system once it is in operation. Since the design basis has not been established, the Proponent is not required to address the design and construction of the storm water pumping system in the Proposal. The Proponent will be compensated through a Cash Allowance.

3.4.4 Contaminated Water Characteristics

The Contaminated Water is acidic and contains varying concentrations of dissolved metals, including copper, zinc, cadmium, iron, manganese, and aluminium. Various geochemical models and the Plug Test have been used to develop a projected range of concentrations of the contaminants of concern. It is to be noted that the concentrations are not independent variables, but depend upon complex geochemical interactions. The projected “average” concentrations used in the feasibility study are not to be interpreted as being indicative of average long-term conditions. Proponents are encouraged to independently review all the data used to develop the mine water characteristics, and the reports prepared by the Province’s consultants. Proponents are advised that there is some evidence that the metal concentrations may vary (reduce or increase) due to either the effects of time or operation of the reservoir.

The Proponent is responsible for the treatment of all Contaminated Water that are within the ranges for the 10th to 90th percentile as presented in Appendix D Section 1.0 Mine Water Chemistry, Table 2, and is to design the Project to treat this range of influent water chemistry. The Province will not consider payment of any additional compensation to the Proponent unless the Contaminated Water are outside the 10th to 90th percentile range shown in Table 2 of Appendix D for a period in excess of 30 days of operation, and it can be demonstrated that the condition adversely affected the effluent quality or the Proponent’s costs.

3.4.5 The Provincial Guidelines for Effluent Discharge

The following Provincial Guidelines are to be used as the basis for designing the Project, and are the basis for judging the performance of the Proponent. The Province has established the following Average Monthly Values that it expects the Project to be able to meet on a monthly basis when the volume of water treated is less than or equal to the design capacity.

<u>Parameter</u>	<u>Limit</u>
dissolved copper	≤ 0.02 mg/L,
dissolved iron	≤ 0.01 mg/L,
dissolved zinc	≤ 0.03 mg/L,
dissolved aluminium	≤ 0.5 mg/L,
dissolved manganese	≤ 0.2 mg/L,
dissolved cadmium	≤ 0.001 mg/L,
total suspended solids	≤ 10 mg/L,
pH range	6.5 to 9.5
and, on a grab sample;	

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96HRLC50 fish bioassay

≥100% survival (non-acutely toxic)

Additional parameters specific to the treatment process may be added.

The point of measurement for both the Discharge Permit and the Provincial Guidelines will be at the discharge from the Project into the pipe leading to the Outfall in Howe Sound, before the introduction of Contaminated Water from controlled bypass events or storm water.

3.4.6 Treatment Process Technology

The Province has not specified a water treatment technology. Proponents who have been selected to respond to this RFP have already supplied technical information related to a preferred technology, and this technology has been accepted by the Province as a demonstrated technology. In the event that the Proponent wishes to present a different technology at the proposal stage, the Proponent must provide comprehensive supporting information to justify the change, the effects, if any, on the ability to meet the Provincial Guidelines. This new technology will be evaluated under the “pass/fail” criterion described in the Request for Expressions of Interest, and may also be subject to other criteria at the sole and absolute discretion of the Province. The Province is not obligated to accept any Proposal that is not based upon the technology that has already been judged to be a demonstrated technology.

3.4.7 Handling and Disposal of Process Sludge or By-products

The Province considers the proposed means for the handling and disposal of Sludge or by-products from the Project to be a significant aspect of water treatment at the Britannia Mine. The Proponent must provide evidence that the solid or liquid wastes from the proposed treatment process will not be considered or classified as a Special Waste.

While beneficial reuse of the Sludge is the preferred disposal method, Proponents will be permitted to use a portion of the area near the plant site for interim impoundment of sludge or by-products. An area under the BC Hydro right-of-way at the northern end of the 4100 Level bench has been identified as a potential site. BC Hydro has stipulated a minimum standoff from pylons and minimum static and dynamic (operating) clearance beneath overhead cables as described in the Design Specifications.

Proponents will be allowed to propose the utilization of other areas within the Province’s property at Britannia, including Mount Sheer and Jane Basin for the long-term impoundment of sludge, providing that the Proponent is able to obtain the necessary permits for a solid waste disposal facility.

The Province owns land to the east of the Site, including an area referred to as Jane Basin. Jane Basin includes a man-made depression resulting from former mining operations undermining the surface and resulting in the collapse of the surface into the mine workings (the Workings). Previous studies, which are available in the RFP data room, have indicated some geotechnical concerns with a rock bluff (Jane Bluff) that overhangs part of Jane Basin, and that is expected to fail at some time in the future. Failure of Jane Bluff could result in a movement of rock that may affect any planned location of a Sludge impoundment facility in Jane Basin.

Proponents who intend to dispose of the Sludge or by-products outside of the Province’s property at Britannia must clearly state the intended destination for the materials and provide the Province with assurances that the materials will be managed in accordance

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with the *Waste Management Act* and other applicable legislation and disposed of in an environmentally-acceptable manner.

3.4.8 Effluent Disposal and Outfall

The Proponent is required to discharge the effluent from the Project, together with Contaminated Water that by-passes the WTP, and surface water runoff from the Fan Area into a marine outfall into Howe Sound. Previous studies, which are available in the RFP data room, have identified that a location about 1.5 km south of Britannia Beach is a feasible location for this outfall. The Province accepts that this location has a potential for slope failure and the risk of this failure is part of the risk to be accepted by the Proponent. The Province will not accept an outfall located offshore of Britannia Creek in the area identified as the “North” site in the reports prepared by Komex, due to the high probability of a slope failure in this area. The Province does not wish to accept the potential environmental consequences of a relatively frequent interruption in service.

The Province has commissioned scoping studies to identify an overland routing from the Site to the south outfall location. The routing is entirely on land owned by the Province, BC Rail or the BC Museum of Mining. The Province has held preliminary discussions with the landowners, and understands that there are no objections to this routing, subject to the satisfaction of certain conditions related to construction along the BC Rail right-of-way. Notwithstanding the above, the Proponent is responsible for the route selection for the overland component, and for the location of the sub- marine portion of the outfall system. In the event that the Proponent selects another routing, the Proponent will be responsible for acquisition of all rights-of-way.

The provision of the sub-marine portion of the outfall is covered by a Cash Allowance and the Province will negotiate the final details of the proposed outfall with the Preferred Proponent. The onshore or overland portion of the outfall system is part of the requirements of this Proposal and is to be included in the Proponent’s bid price.

3.4.9 The Automated Process Control System

Collection system monitoring and alarm systems together with data logging and reporting functions must be designed to encompass not only the WTP, but also the instruments at the 4100 level plug, the groundwater pumping and collection system and the outfall. The system must be user friendly and flexible to ensure that as new technology becomes available it can be readily incorporated into the system.

There are numerous control options available and it will be up to the Proponent to select and configure a system which provides complete control and monitoring of the system. Instrumentation and Control System Design guidelines are presented in section 4 of Appendix B.

3.5 Materials

3.5.1 General Requirements

All materials incorporated into the work shall conform to the latest edition of the appropriate CSA and ASTM specifications or to other standards expressly specified in the RFP and RFP Documents. All provisions in the CSA and ASTM and other standard specifications specified regarding materials, workmanship, finish, inspection and rejection are hereby made part of the specifications as far as they are applicable and not inconsistent with the specifications.

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3.5.2 Goods and Materials to be furnished by the Proponent

- Only new materials and product are to be supplied by the Proponent for use on this Project, unless recycled or reused products are specifically approved by the Province.
- Only products for which replacement parts and service are readily available are to be used. The use of 'end-of-line' or 'surplus' discounted items, where an extended support period cannot be identified are not suitable for incorporation into the design.
- The manufacturer's/suppliers instructions for material or product and installation methods are to be complied with in all cases.
- Metal fastenings and accessories in the same texture, colour and finish as the base metal are to be supplied. Prevent electrolytic action between dissimilar metals. When securing exterior work or work that may be located in a corrosive atmosphere, non-corrosive fasteners are to be used.

3.6 Environmental Criteria

All facilities must be designed and constructed giving consideration to the effects of the facility and operation upon the environment, and the surrounding land owners. The Britannia town site is intended to be developed for residential housing (250 + units). The sound level at the fence enclosing the Project will be a very important issue for residents and the Proponent will be obliged to design the plant and control noise levels during operation so residents are not disturbed. This will be a particularly sensitive issue at night (ambient levels ~30 dBA).

- Noise – less than 40 dBA (total peak for the plant) at the fence line. This requirement is due to the proximity of future residences. The Operator will be required to demonstrate, with calculations, the anticipated peak sound at the fence, and will be responsible for mitigating any exceedances during Operations.
- Dust – in addition to meeting all standards and permitting requirements established by the regulatory authorities, the facilities are to be designed and operated to minimize fugitive dust. Dust control must be designed in to the Project.
- Odour - in addition to meeting all standards and permitting requirements established by the regulatory authorities, the facilities are to be designed and operated to minimize the frequency and severity of odours. Odour control must be designed in to the Project.

Appendix B2 contains a list of Environmental Criteria Proponent must satisfy during Operations.

3.7 Civil Design Criteria

This Section includes the criteria and design basis for the earthworks, site roads, drainage facilities, sanitary sewage, potable water, fire water main and offsite process piping systems for the Project. The design shall comply with these design criteria. Items not covered herein shall conform to the appropriate publications referenced throughout these performance specifications.

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3.7.1 Site Preparation and Earthworks

3.7.1.1 Cuts and Fills

The earthworks design is required to provide cut and fill earthworks that will remain physically stable for the design life of the project, with respect to both mass stability and surface erosion.

The Site shall be stripped of all topsoil vegetation and other organic debris. Topsoil suitable for use in slope remediation should be stockpiled in a location provided by the Province. The Proponent shall present a plan for stockpiling and re-use of topsoil materials for approval by the Province.

The western part of the Site is underlain by a disused concrete-lined sludge pond ('sedimentation pond'). Depending on the plant layout proposed by the Proponent, part of this area may be encroached by the Site fill. Only topographical information is available for this part of the Site. Proponents must satisfy themselves of the ground conditions underlying and proximal to the sedimentation pond.

3.7.1.2 Compaction

Fill material will be conditioned, placed, spread and compacted to achieve a sufficient density commensurate with achieving approved design parameters of bearing capacity and settlement tolerance. If necessary, sub-excavate and replace unsuitable weak or compressible sub-grade soils in order to ensure that the required design parameters are achieved.

3.7.1.3 Typical Gradients

A cross slope of 2% will be maintained for site grading purposes.

3.7.1.4 Side Slopes

At the Site, required excavation to achieve design grades is expected to encounter both native in-situ soils, and mine waste rock materials. The geotechnical boring records provide an indication of the distribution and thickness of the mine waste rock fill material. All mine waste rock material is to be excavated and removed from the Site. Excess waste fill may be disposed on lands owned by the Province. Disposal of waste rock and spoil on land owned by the Province will require the Proponent to obtain the approval of the Ministry of Energy and Mines (MEM).

Maximum side slopes for both plant area and access road:

In Cut area	1.5(H):1(V) in soil 0.33(H):1:(V) in rock, if encountered
In Fill area	2.0(H):1(V) at the plant site 1.5(H):1(V) for road way fill

3.7.1.5 Special Surface Treatments

Shotcrete, geosynthetic or other surface erosion control measures may be used as required for the slope stability.

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3.7.2 Drainage Structures

3.7.2.1 General

The drainage design will intercept and safely convey all storm runoff, seasonal streams and seepage waters impinging on the Site. The following design basis will apply to storm drainage structures:

Climatic design data specified in the BC Building Code, and other design criteria specified by governing agencies.

- 1:100 year 24 hour storm event or any other applicable event.
- Compliance with applicable environmental regulations for drainage structures, water flow and discharge.

3.7.2.2 Sizing of Drainage Works

Ditches will be designed to:

- provide ample capacity for the design storm flow, below freeboard level;
- ensure that flow velocities for the design event are at or below standard levels specified for the types of material exposed in the side slopes;
- be designed accordingly for mineral and forest debris prevalent on the slopes above the site when sizing ditches and culverts.

The following minimum criteria will apply:

Minimum positive slope	0.2%
Minimum ditch depth	300 mm

3.7.3 Site Roads

The roads will be used to provide access for construction and operations. During operations traffic on the road may comprise vehicles used by the Proponent and visitors to the Site.

3.7.3.1 Design Parameters

	Design Parameter
Minimum width of asphalt paved surface	5.5 m
Minimum shoulder width	1 m
Maximum gradient	8%
Maximum design speed	40 km/h
Design loading	MS200
Crown slope	2%

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Minimum surface course of crushed, durable, well graded, granular material	150 mm
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The design storm for ditching and culvert design will be as follows, subject to approval by governing agencies:

- Culverts and ditches 10 yr. 24 hour
- Headwater Requirements 50 yr. 24 hours

3.7.3.2 Pavement

Pavement structure will be designed according to the following requirements:

Pavement Thickness	The Proponent is required to design surface asphalt, base course, and sub-base to suit subgrade conditions and anticipated traffic loading. This is subject to amendment by the governing agency that may impose additional minimum standards.
Maximum grade	8% (less than 300 m)
Surface:	Central Crown with 2% cross slope
Runoff Control	Side road ditches and slope erosion protection measures commensurate with exposed materials

At this time, no guardrail or safety berm is specified along the outside edge of fill embankments, given the private controlled status of the road and the low frequency of traffic. This is subject to approval of the appropriate governing agency.

3.7.3.3 Buried Pipe

All culverts and other buried pipes shall be designed to ensure that sufficient protective cover is provided to avoid adverse impacts of loaded vehicles using site roads and parking and manoeuvring areas at the site.

3.7.3.4 Sanitary Sewer

The septic tank and/or sanitary sewer system will be designed in accordance with governing codes and requirements.

3.8 Structural and Architectural Design Criteria

This Section includes the criteria and design basis for the structural and architectural works for the Project. The design shall comply with these design criteria. Items not covered herein shall conform to the appropriate publications referenced throughout these design criteria.

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3.8.1 General

All in-ground structures shall be designed to resist uplift from hydrostatic head if sub-drainage systems fails and tanks are empty. All liquid containing structures shall conform to ACI-350 "Environmental Engineering Structures".

3.8.2 Cast-in-Place Concrete

- 1) Reference Standards (latest edition as of execution of contract):
 - Concrete Materials and Methods of Concrete Construction: CSA-A23.1
 - Methods of Test for Concrete: CSA-A23.2
 - Portland Cement: CAN/CSA-A5/A8/A362
 - Supplementary Cementing Materials: CAN/CSA-A23.5-M
- 2) Concrete testing by an independent testing agency, shall be at the Proponent's cost. Testing shall be in accordance with CSA-A23.1 except for the following:
 - The average of any three consecutive 28 day tests shall not be below the specified design strength.
 - No one test shall be below 90% of the specified design strength.
- 3) All reinforcement to be to CSA A23.1 Grade 400W.

3.8.3 Hydrostatic Testing

- 1) Hydraulic structures shall be subjected to hydrostatic testing upon completion.
- 2) The Proponent shall, prior to testing, finish the structures and shall repair and waterproof any areas which appear to be inadequate.
- 3) Testing shall be done after completion of repairs and finishing work, and after concrete has adequately cured, but before backfilling. Structures shall be filled slowly to maximum water level and left to stand for 3 days.
- 4) There shall be no persistently damp areas on exterior faces, nor any visible leakage at any point. Following this visual inspection test, the water level shall be brought to the original level.
- 5) The hydrostatic test will begin at this time and will last for five days. There shall be no leakage at any point.
- 6) In case of inadequacies, the structure shall be emptied, the deficiencies repaired and the hydrostatic test shall then be repeated.
- 7) The Proponent shall supply, install and remove a liquid level measuring device with a sharp pointed metal probe with a locking or clamping screw. The device shall have a scale graduated in millimetres.

3.8.4 Miscellaneous Metals**3.8.4.1 Materials**

- All stairs, ladders, walkways and access hatches are to meet WCB requirements.
- All miscellaneous metals to be a minimum of hot dipped galvanized.

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- Steel – conform to CAN/CSA-G40.21-M, Grade 300W.
- Steel pipe – conform to ASTM A53 – Grade B.
- Galvanizing – conform to CAN/CSA-G164-M.
- Stainless steel – ASTM A167-86 and A276-86a or Type 316.

3.8.4.2 Fastenings and Anchor Bolts

- Anchor bolts to ASTM A307-86a, unless specified otherwise.
- For fastenings in stainless steel and aluminium use stainless steel Type 316 ELC ASTM A167-86.
- For structural steel use high strength bolts to ASTM A325M-86.
- All fasteners submerged in water – Stainless Steel Type 316 ELC ASTM A167-86.

3.8.5 Architectural Finishes

- 1) External architectural finishes for all structures are to be appropriate to the location.
- 2) Roofing shall meet the requirements of the RCABC.
- 3) Sound levels at the property line shall not exceed 40 dbA. Sound levels within buildings are to conform to WCB regulations.
- 4) Reference standards (latest edition as of date of execution of Contract):
 - CSA Standards on Concrete Masonry Units CAN3-A165-M
 - Mortar and Grout for Unit Masonry CSA-A179-
 - Masonry Design for Buildings CAN3-S304-M
 - Connectors for Masonry CSA-A370-
 - Masonry Construction for Buildings CSA-A371-

3.8.6 Painting

Surface preparation paint application and paint products are to comply with the Canadian Painting Contractor’s Architectural (CPCA) Painting Specification Manual, latest edition.

3.8.7 Structural Steel

Limit States Design for Steel Structures, CAN/CSA-S16
 Cold Formed Steel Structural Members, CSA-S136
 General Requirements for Rolled or Welded Structural Quality Steels, CAN/CSA-G40.20
 Structural Quality Steels, CAN/CSA-G40.21
 Welded Steel Construction (Metal Arc Welding), CSA-W59

3.8.8 Concrete and Reinforcement

Concrete Materials and Methods of Concrete Construction, CSA-A23.1

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Design of Concrete Structures, CSA-A23.3

Welded Steel Wire Fabric for Concrete Reinforcement, CSA-G30.5

Welded Deformed Steel Wire Fabric for Concrete Reinforcement, CSA-G30.15

Billet-Steel Bars for Concrete Reinforcement, CAN/CSA-G30.18

3.8.9 Masonry

Masonry Design for Building, CSA-CAN3-S304.1 (limit states design)

Concrete Masonry Units, CSA-A165

Motor and Grout for Unit Masonry, CSA-A179

3.8.10 Timber

Engineering Design in Wood (Limit States Design), CSA-O86.1

National Lumber Grades Authority (NLGA)

3.8.11 Tanks

Welded Steel Tanks for Oil Storage, API 650

Standard for Welded Steel Tanks for Water Storage, AWWA D100

Steel bins, small water tanks (shop fabricated and transported as full units), and all non-water tanks shall be designed in accordance with the requirements of API 650. Large water tanks (field assembled) shall be designed in accordance with the requirements of AWWA D100.

3.9 MECHANICAL DESIGN GUIDELINES

This section presents guidelines to indicate the standard that will be acceptable to the Province. In the event that a Proponent wishes to establish design criteria that are different from the guidelines, the Proposal must clearly define the exceptions and present an explanation of the costs and benefits. Notwithstanding the above, variations from the Codes will not be permitted.

3.9.1 Preamble

The Province requires the Proponent to select equipment that will result in efficient life cycle costs and that the following issues will be reviewed as part of this process:

- * Reliability
- * Durability
- * Ease of maintenance
- * Demonstrated strong product support
- * Energy consumption/efficiency

3.9.2 Reliability

Mechanical equipment shall have been supplied and used in similar duties for a minimum of five years. This shall be demonstrated by manufacturer's references supplied with the proposal.

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It is considered important that the selected design capacity of any equipment be significantly within (25% below) the rated maximum capacity of the item (pump, blower, fan, gearbox etc.). This will allow some margin for adjustments to the process during the operating life of the plant. It is envisaged that this will also improve the individual reliability of equipment.

Note that electric motors should be selected for the actual duty.

In any case where the Proponent is not intending to install a spare, the Proponent should justify this decision with due regard to the impact that the failure of that piece of equipment will have on the process, until the repair is carried out. The location of spares and estimated total lead time, from failure to replacement, should be included.

3.9.3 Durability

Equipment shall be selected with proper attention to environmental conditions. Materials of construction and external surface finishes shall be selected for long life and to minimise corrosion. Internal finishes shall be selected to minimise both corrosion and erosion.

3.9.4 Ease of Maintenance

The installation of equipment shall be designed with due consideration for field maintenance and access.

Lifting beams and hoist anchor points shall be installed to allow equipment to be safely removed and replaced during the service life, with the ability to safely move the equipment to an adjacent lay down area using a hoist.

Couplings and bearings shall be designed to be easily removable, where feasible.

3.9.5 Product support

The ability of the manufacturer to support the equipment with timely spares delivery and technical on site assistance, either directly or through an agent is considered critical to the successful, long term operation of the plant. The Proponent should identify manufacturers support and the location of the nearest service centre, for each item of plant.

In cases where a manufacturer can provide a long term warranty and/or service support contract this should be described. If the Proponent is not proposing to install a spare, or carry a spare on site, the lead time for delivery of a complete unit should be included.

The Proponent should identify the envisaged operation staff level, normal working hours and anticipated level of maintenance support (if any) from Proponents.

The Proponent should identify the envisaged methods of technical & maintenance support for control, electrical, instrumentation and mechanical equipment. Both the anticipated normal response time (day time working) and out of hours responses should be stated. The information will include the estimated travel time to the site.

3.9.6 Energy Efficiency

Equipment will be selected to operate efficiently, where choices exist to optimise efficiency (i.e. bi lobe or tri lobe blowers). See Electrical section for selection of electric motors.

Final

3.9.7 Codes

The mechanical systems must conform to all applicable codes, laws, bylaws and standards of practice for the intended use including:

- * AFBMA Anti Friction Bearing Manufacturers Association
 - * AGMA American Gear Manufacturers Association
 - * AISC American Institute of Steel Construction
 - * ANSI American National Standards Institute
 - * API American Petroleum Institute
 - * ASME American Society of Mechanical Engineers
 - * AWS American Welding Society
 - * AWWA America Water Works Association
 - * BC building codes
 - * Canadian Gas Association
 - * Canadian Underwriters Laboratories
 - * CSA Standards including CSA W59 (welding)
 - * MSHA Mine Safety and Health Administration
 - * NFPA including 70-1991 National Fire Protection Code
 - * OSHA Occupational Safety and Health Administration
 - * SSPC Steel Structures Painting Council
 - * SMACNA Sheet Metal & Air Conditioning Contractors National Association including "Guidelines for Seismic Restraint of Mechanical Systems and Plumbing Piping Systems"
 - * UBC Uniform Building Code
 - * WCB Workers Compensation Board (BC)
- * If there should be a conflict between the requirements of this specification and codes, laws and by-laws, then the most stringent or strict requirements shall apply.

3.9.8 Permits

The Proponent shall pay for and obtain all permits, authorizations and inspections required by the latest codes, laws and by-laws for mechanical systems. Changes and alterations required by an authorized inspector of any authority having jurisdiction shall be carried out immediately.

3.9.9 Elevations

The elevations of the Site are shown in the site plan. All equipment furnished shall be designed to meet stipulated conditions and to operate satisfactorily at these elevations.

3.9.10 Noise

It is envisaged that there will be relatively few pieces of equipment with a substantial sound level (i.e. blowers, if required, and dust control, particularly the silo), and these items will require comprehensive sound attenuation in order for the noise issue to be thoroughly dealt with.

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A nominal, initial standard of 45 dBA for each separate noise source has been set for near field sound pressure levels, with the goal of achieving less than 40 dBA (total peak for the plant) at the fence. This requirement is due to the proximity of some future residences to the site. The Proponent will be required to demonstrate, with calculations, the anticipated peak sound level at the fence.

3.9.11 Workmanship & Materials

The equipment manufacturer shall guarantee all equipment against faulty or inadequate design, improper assembly, defective workmanship or materials and leakage, breakage or other failure. Materials shall be suitable for service conditions.

All equipment shall be designed, fabricated and assembled in accordance with recognized and acceptable engineering and shop practice. Individual parts shall be manufactured to standard sizes and thickness so that repair parts, furnished at any time, can be installed in the field. Like parts of duplicate units shall be interchangeable. Equipment shall not have been in service at any time prior to delivery, except as required by specified tests.

Except where otherwise specified, structural and miscellaneous fabricated steel used in equipment shall conform to AISC standards. All structural members shall be designed for shock, vibratory and seismic loads. Unless otherwise specified, all steel which will be submerged, all or in part, during normal operation of the equipment shall be at least 6 mm thick.

3.9.12 Lubrication

Equipment shall be adequately lubricated per manufacturer's instructions prior to shipment to the job site. Where equipment has to be drained of lubricant prior to shipment, for safety purposes, a warning shall be attached to the equipment adjacent to the lubricant fill point.

Grease fittings shall be provided for all grease lubricated bearings and sleeves and tubing shall be installed to permit greasing with unit in operation.

3.9.13 Bearings

- Unless otherwise specified, provide oil or grease lubricated, ball or roller type equipment bearings, designed to withstand the stresses of the service specified. Rate each bearing in accordance with AFBMA Methods of Evaluating Load Ratings of Ball and Roller Bearings.
- Provide equipment bearings that have a minimum L-10 rating life of 100,000 hours, as determined using the maximum equipment operating speed, unless otherwise specified.
- Fit grease lubricated bearings, except those provided factory sealed and lubricated, with easily accessible grease supply, flush, drain and relief fittings. Use extension tubes where necessary. Provide standard hydraulic alemite type grease supply fittings
- Equip oil lubricated bearings with either a pressure lubricating system or a separate oil reservoir type system.

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- Each oil lubrication system to be of sufficient size to dissipate the heat energy generated in the bearing under a maximum ambient temperature of 40 °C. Provide a filler pipe and an external level indicator gauge.

3.9.14 Drives

The opportunity to standardise drive couplings should be considered during initial selection of equipment. Spacer type couplings are preferred to simplify separation of direct drives. Manufacturer's warranties for equipment should include couplings.

Specific attention should be given to problems associated with field removal of couplings during the service life using standard hand tools (no flame), possibly after several years service.

V-belt drives shall have adjustable, overhead motor mounts and separate baseframe assemblies. V-belt drives shall be selected with a minimum service factor of 1.5.

3.9.15 Safety Guards

All belt drives, fan blades, couplings and other moving or rotating parts shall be covered on all sides by a safety guard in accordance with WCB regulations.

Safety guards shall be fabricated from durable material (1.6 mm or thicker galvanized or aluminium-clad sheet steel or from 13 mm mesh galvanized expanded metal).

Each guard shall be designed for easy installation and removal. All necessary supports and accessories shall be provided for each guard. Supports and accessories, including bolts, shall be galvanized.

3.9.16 Equipment Bases

Provide all supports, anchorage and mounting of all equipment in accordance with the manufacturer's recommendation, the BC Building Code and industry standard requirements. Each component of packaged equipment shall be provided with suitable bases or supports. Bases or supports shall be adequate for the equipment and service intended.

3.9.17 Special Tools & Accessories

Equipment requiring periodic repair and adjustment shall be furnished complete with all special tools, instruments and accessories required for proper maintenance. Equipment requiring special devices for lifting or handling shall be furnished complete with those devices.

3.9.18 Surface Preparation and Finish

Steel and iron surfaces (equipment) shall be protected by suitable coating systems completely applied in the shop. Coating systems should be selected to provide high durability in the envisaged weather conditions. Consideration should be given to coating degradation due to direct sunlight ('chalking').

Surfaces that will be inaccessible after assembly shall be protected for the life of the equipment.

All surfaces shall be abrasive blasted to SSPC SP-6 Commercial Blast Cleaning (Including SSPC-SP-1 Solvent Degreasing) to obtain a 1- to 3-mil blast profile. Wheel

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abrading or shot blasting (which leaves a slightly peened finish) is not acceptable. Soluble chlorides on the surface shall not exceed 2 ppm.

Surfaces to be finish coated after installation such as handrails shall be prepared for painting as recommended by the paint manufacturer for the intended service and then shop painted with one or more coats of the specified primer.

It is desirable if structural steel and walkways are finished hot dip galvanized or constructed from material that will not corrode. Galvanizing shall be to CAN/CSA G164-M.

3.9.19 Electric motors

The Electrical Guideline describes the general requirements of electric motors. Under steady operating conditions for duty described the power draw shall not exceed 85% of the available motor power (nameplate).

3.10 Major Equipment

This section presents guidelines to indicate the standard that will be acceptable to the Province. In the event that a Proponent wishes to establish mechanical equipment that is different from the guidelines, the Proposal must clearly define the exceptions and present an explanation of the costs and benefits. Notwithstanding the above, variations from the Codes will not be permitted.

This section addresses the major equipment for a lime-neutralization process. In the event that a Proponent intends to use another process, the Proposal must contain sufficient information on the major process equipment to achieve the intent of this section, which is to establish a quality standard for the major items of process equipment.

3.10.1 General

Equipment shall be fit for purpose, with specific reference to long and reliable operation. The Proponent is required to demonstrate this by showing that the required performance for each item is comfortably within the performance curve and providing documentation showing references for similar duties (over several years of operation) as well as any extended warranties that manufacturers are able to offer.

3.10.2 Agitators

3.10.2.1 Operational Requirements

The agitators will be installed in a dirty, wet and dusty environment.

The agitators covered by this specification will be installed outside and will be exposed to all weathers.

All agitators will be required to operate continuously, 24 hours per day, with scheduled shut down periods for routine maintenance and overhauls.

The agitators will be capable of start-up after tank contents have settled due to a power failure or other equipment shutdown reason.

The operating noise level must be a maximum of 45 dbA measured at the edge of tank (standing on the access walkway) containing the agitator.

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The design life of the agitators shall be at least 20 years.

Agitator type (axial, hydrofoil, etc.) shall be designed and selected to efficiently achieve the duty at the maximum flow rates identified. In practice the system will, for the majority of the year, operate at lower flow rates.

3.10.2.2 Drive

The gearbox shall be a combination of helical and spiral bevel gearing in a housing of either high-quality close-grained cast iron or stress-relieved and reinforced fabricated steel. The gear reducer shall be constructed in accordance with AGMA 6010E. Reducer shall be suitable for AGMA Class II 24-hour continuous service under moderate shock conditions.

Gearbox shall be rated in accordance with AGMA standards, with a minimum service factor of 1.5 based on motor nameplate power rating and 24 hours operation and shock loading. Thermal rating shall be not less than the motor nameplate rating.

Gearbox shall have a minimum L-10 bearing life of 100,000 hours, based on the motor horsepower.

Gear reducer housing shall have an inspection door to allow inspection and checking of backlash and alignment of gears.

Bearings shall be ball or tapered roller type. Gears and bearings shall be enclosed in an oil bath housing with oil level gauge and necessary oil and containment seal, to prevent entering of dust and water or leakage of oil from the oil bath.

Gear reducer bearings shall be oil lubricated by immersion in an oil bath or by splash lubrication accomplished by means of gears or a slinger rotating on a horizontal shaft in an oil bath to ensure the positive displacement of oil to lubricate all critical bearings. Oil pumps will not be allowed.

A dry well seal shall be provided to prevent oil leakage down the output shaft. A dipstick shall be furnished to measure the oil level in the reducer housing. Sight glasses, or other visible means to measure oil levels, are to be allowed with discretion. Reliance on dirty or blocked visual oil level indicators may lead to equipment failure.

Reducer output shaft bearings (both solid and hollow shaft types) shall be grease lubricated or permanently lubricated. All oil fill and drain lines and grease fittings shall be located so as to be easily accessible.

3.10.2.3 Shaft and Impeller

The impeller assembly shall be designed to produce insofar as practical completely balanced loads on the vertical shaft. The agitator drive train shall be balanced to minimize vibration transmitted to the tank and agitator support bridge.

The agitator shaft shall be overhung and designed for operation without bottom or intermediate bearings. The agitator shaft design shall provide sufficient shaft rigidity to prevent undue shaft flexure and to prevent unbalanced forces on the gears and tank superstructures when agitator is operating during pump down of liquid level through the impeller.

Heavy duty tapered roller bearings or equivalent shall be furnished to absorb all thrust loads. Low speed gearing shall be placed close to the upper bearings so shaft flexure will cause only negligible gear movement.

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The maximum operating speed shall be less than 65% of the first critical speed of the agitator.

The blade assemblies shall be rubber covered for abrasion resistance.

The agitator speed shall be chosen to provide the minimum impeller tip speed necessary to satisfy the agitation requirement specified.

All impellers shall be statically balanced.

The agitator design shall include provisions for ensuring the accuracy of alignment of the drive and agitator components during assembly.

Replacement of bearings, seals, driver, and gear units shall be possible without dismantling other major parts, and without emptying the vessel.

If necessary, shaft couplings shall be furnished on agitator impeller shaft.

Carbon steel machined and flanged surfaces shall be coated with a heavy rust preventative.

The agitator shall have eyebolts suitable for lifting the entire drive assembly, motor, shaft and impeller assembly. To assure stability while lifting, attachment points will be arranged so that the complete unit can be lifted with the agitator shaft centre line vertical and the centre of mass directly below the crane hook.

Structural member connections shall be designed to withstand, within normal working stresses and deflections, all loads imposed on them by rotation of the assembly at maximum design speeds in water and in the dry and also loads which may be superimposed during or subsequent to erection while the tanks are empty. The Proponent will, during detailed design, provide sealed (P.Eng.) calculations to support the structural design of the support beams.

Shaft shall be adequately designed for the maximum power output of the drive unit. The impeller assembly shall be securely keyed to the shaft.

3.10.3 Clarifiers/Thickeners

3.10.3.1 Operational Requirements

The clarifier/thickener will be required to operate continuously, 24 hours per day, with scheduled shut down periods for routine maintenance.

The clarifier/thickener shall be capable of producing the required capacities as specified in the Process Design Criteria. In addition, the clarifier/thickener will be required to pass a maximum hydraulic flow which will be 1.33 times the overflow design flow, requiring that the feed launder and overflow launder are adequately sized for this condition (all other components will be sized based on the design flow). The maximum hydraulic flow is used purely to design the equipment such that this hydraulic load can be passed through the plant without overflowing tanks.

The clarifier/thickener shall be equipped with an energy dissipating feed well, suitable for the maximum and the minimum flow. The feedwell will allow proper blending of flocculent with feed slurries and to allow flocculated slurries to be introduced to the clarifier/thickener with minimum damaging shear at the low level.

The clarifier/thickener shall have a minimum 3 m sidewater depth.

Final

The rake arms shall be a streamlined "low drag" type to minimize sludge bed disturbance.

The operating noise level must be a maximum of 45 dBA at the outer rim of the clarifier/thickener (standing on the walkway above the launder).

The design life of the clarifier/thickener will be at least 25 years.

3.10.3.2 Clarifier/thickener Mechanism Drive

Where a mechanical drive is selected for the rakes, the drive shall have a heavy duty balanced type drive head.

Where a hydraulic drive is selected for the rakes and rake lifting mechanism, the supplier shall provide a complete and self contained hydraulic package including electric drive motor(s) hydraulic pump(s), hydraulic motor(s), oil reservoir and all interconnecting piping, valves, filters and fittings. The entire package shall be assembled at the drive head and shall provide, as a minimum, alarm signals with voltage free contacts for low oil level, high pressure and high temperature conditions for remote monitoring.

The mechanism shall be supplied with a torque measuring system with local indication and provision for remote indication (using sensor mounted on the clarifier/thickener). The mechanism will be controlled to ensure alarm conditions ("high torque" & "extreme torque") are responded to in a timely manner without damaging the clarifier/thickener.

The clarifier/thickener mechanism shall be capable of starting under full load. Shaft, couplings and rakes shall be capable of transmitting the full stalled torque of the motor.

The clarifier/thickener mechanism shall include an automatic rake lift on high torque reading, with automatic/manual setting to lower the rake on resumption of low torque reading. The rake shall have a minimum lift of 600 mm (to be reviewed during final design). Limit switches (local and remote use) for high and low travel shall be provided.

Provide anti-friction type bearings; bearing average life rating must exceed 5 years of continuous operation.

Drive guards shall be provided to enclose all rotating parts. The guards shall be fabricated from expanded metal or heavy wire screen with a minimum opening of 12 mm and shall be designed for quick and easy access to the drive components. Check against general guard spec.

3.10.3.3 Support Bridge and Rake

The support bridge shall be designed to carry the mechanism, walkway, handrails, feedwell, feed launder, monorail, and all operating and seismic loads. The bridge will be supported on the tank rim. The Proponent will, during detailed design, provide sealed (P.Eng.) calculations to support the structural design of the support beams.

The feedwell will be supported from the bridge structure.

A feed launder shall be provided, suspended from the bridge, terminating 300 mm outside the outer tank wall. The battery limit connection shall be a standard pattern ANSI flange.

A walkway shall be included with the bridge to provide access to the drive head and drive components. The walkway shall be fitted with handrails and kickplates and extend across the entire tank. Both ends shall be accessed from platforms (Proponent supplies as part of total scope).

Final

Cone scrapers shall be provided on the rake arms.

The concrete tank will include an overflow launder with a V-notched adjustable 316 stainless steel weir. The weir shall be attached to the concrete launder by cast-in or chemical set bolts.

The wetted rake components shall have a minimum corrosion allowance of 1.5 mm (1/16").

A lifting beam shall be provided to permit removal and installation of all the removable drive equipment and to assist in maintenance tasks on the mechanism drive. It is envisaged that equipment will be moved using a wheeled cart along the walkway and the walkway must be properly sized for this. At the outer end of the walkway a further lifting beam will be required to permit safe handling of equipment onto a truck or cart at grade level.

3.10.4 Lime Slaking System

The lime slaking system shall be capable of producing the required design capacity. The Proponent will state this capacity.

The lime slaking system will be installed in a dirty, wet and dusty environment.

The operating noise level must be a maximum of 45 dbA at one meter at any point outside the perimeter of the building containing the lime slaker. Specific attention to attenuation of the building ventilation system will be required.

The design life of the lime slaking system will be 25 years.

3.10.5 Lime Silo

The silo can be either fully welded or a bolted silo.

The silo shall be mild steel construction, consisting of a cylindrical section with cover. The discharge hopper shall have a cone angle of not less than 60 degrees to the horizontal.

The silo shall conform in design, workmanship, and material to AWWA D100 or API 650.

The silo will be supported on structural steel columns or steel skirt.

The cone discharge shall include an isolation valve to permit service of the discharge system. The isolation valve shall be manually operated knife gate valve. The valve shall be dust-tight and constructed of cast iron with 304 stainless steel knife gate. A limit switch shall be provided, operated by the silo knife gate to prevent operating of the vibrator if valve is closed. A flexible neoprene sleeve shall be provided with clamping plates and bolts suitable for connection to the lime feeder.

The lime silo shall include a dust collector. The unit shall be dust-tight, and weatherproof and shall be capable of discharging dust free air from the lime silo and guaranteed to meet applicable discharge limitations. All parts of the unit subject to service or maintenance shall be accessible by a person without the use of ladders or platforms.

The operating noise level of the dust collector must be less than 45 dbA at one meter from the unit, or from an enclosure around the unit. It is anticipated that the intermittent operation of this unit (particularly if reverse pulse jet) may be a potential source of noise related issues, if sound is not properly controlled.

Final

The silo roof shall have a suitable combination manhole and vacuum pressure relief valve, and the roof shall be sloped for drainage. Steel railings and kickplates shall be provided around the perimeter of the lime silo roof.

The lime silo shall be provided with an external fixed galvanized steel ladder. The ladder shall be provided with a complete safety cage throughout its entire length. One platform shall be supplied at midpoint of silo.

The lime silo shall include a bin vibrator/s bolted to the discharge cone.

The interior of the storage compartment shall be smooth with no inward projecting elements (except for plates to protect the bin level sensors specified herein). All stiffeners and lateral bracing necessary for stability shall be provided as required and shall be installed on the outside of the storage silo, except that bracing and stiffeners for the roof shall be placed on the inside of the silo.

The storage silo shall be completely dust-tight and water-tight (weatherproof). All connections to the storage compartments shall be by flanged and gasketed connections. Gaskets shall be full face neoprene, or equal. All bolted connections shall utilize Type 316 stainless steel nuts, bolts, and washers.

The lime silo shall be designed to receive lime delivered by bulk tank truck equipped with self-contained pneumatic unloading systems.

The silo shall be provided with a lime supply fill line. Pipe shall be 4" inside diameter seamless steel pipe, Schedule 80 wall thickness, in accordance with ASTM A53. The elbows shall be long radius ductile iron castings with a Brinell hardness of not less than 550 or provided with highly reinforced replaceable integral wearback plate of this same Brinell hardness. The fill line shall be supplied with a 4" Kamlock truck hose adaptor complete with dust cap.

3.10.6 Lime Feeder

The lime feeder should be dust tight and constructed of lime resistant and abrasion resistant materials.

3.10.7 Lime Slaker

The slaker shall be either a paste or detention type, consisting of one slaking compartment containing rotating paddles for mixing, a dilution chamber with rakes or vibrating screens for agitation, a classifier for grit separation, a dust and vapour arrestor, and a conveyor for grit removal. The slaker is to be furnished with grit remover to assure positive discharge of grit.

A dust and vapour removal system should be provided.

3.10.8 Blowers

Air blowers will be required to operate continuously, 24 hours per day, with scheduled shut down periods for routine maintenance and overhauls.

Blowers that may be damaged due to discharge closure during operation shall be fitted with non-adjustable relief valves (internal or external) capable of full flow bypass if required. The relief system should be designed such that the blower will not be damaged due to prolonged operation while discharge is shut.

Blowers should be of a design that adds no oil mist to the air flow. Water mist addition to the air flow is acceptable in small quantities.

Final

All air blower connections shall be ANSI Class 150.

The air blowers should be provided with some approved system for crane lifting, both of the assembly and the individual parts. Where eyebolts are used for this purpose these shall be securely fastened into a hole designed for the purpose of lifting (i.e. reinforced where necessary). The eyebolts shall be removable after installation of the air blowers.

The installation of the air blowers will require control of noise from the blower. This will include attenuation of both inlet and exhaust ventilation, as well as control of noise emitted from the blower to meet the requirements of 2.10.2.4. It is anticipated that the sound level at source for a blower may be ~100 dBA.

3.10.9 Tanks and Pump Boxes

Steel storage tanks shall be designed in accordance with the API 650 or AWWA D100 Code for Welded Steel Tanks.

Agitated tanks shall be provided with minimum 3.0 mm (1/8") wear allowance. Additional wear plates should be installed where erosion is anticipated to be significant (i.e. under the agitator in the area of flow into or out of the agitator).

All unlined tanks and pump boxes should have suitable corrosion/abrasion allowances added on the wetted surfaces, which shall be at a minimum 3.0 mm (1/8").

Pressure vessels shall be designed in accordance with CSA B51 latest edition and referenced specifications (e.g. ASME Code Section VIII), and registered with the appropriate BC provincial authority.

3.10.10 Piping

Piping materials shall be selected with due consideration of the fluid conveyed in terms of corrosion.

Acid feed water to the plant shall be piped in HDPE with appropriate wall thickness. For the fluid pressure, all HDPE pipe shall be continuously supported when installed above ground. PVC, ABS, or CPVC pipe shall not be used.

Power piping (instrument air) shall be designed to CSA B51.

3.11 Electrical Design Guidelines

This section presents guidelines to indicate the standard that will be acceptable to the Province. In the event that a Proponent wishes to establish design criteria that are different from the guidelines, the Proposal must clearly define the exceptions and present an explanation of the costs and benefits. Notwithstanding the above, variations from the Codes will not be permitted.

3.11.1 General

- 1) The electrical system is to be designed to comply the latest edition of all applicable Federal, Provincial and local Municipal codes including but not limited to:
 - National Building Code
 - I.E.S. (Illuminating Engineering Society)
 - CSA
 - CEC (Canadian Electrical Code Part 1)

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- IEEE
 - ULC
 - BC Hydro, Fire Department, Building Department, Workers Compensation Board and all other local authorities having jurisdiction.
- 2) The Proponent is to obtain and pay for all necessary permits, licenses, inspections as required, and arrange for inspection of all work by the respective authorities having jurisdiction.
 - 3) Include all necessary approval certificates for the Project. On completion of work present the final unconditional certificate of approval of the inspecting authorities.
 - 4) Seismic restraints of electrical systems are to be designed to meet NBCC and Electrical Contractors Association of B.C. "Seismic Restraint Manual".

3.11.2 Standard of Products

- 1) All products and materials used shall be new and be CSA certified. Where there is no alternative to supplying equipment which is not CSA certified, the Proponent is to obtain special approval from the British Columbia Electrical Inspection Department. Where required, the products and materials shall have CSA/ULC labels.
- 2) All electrical equipment must be new and not be older than one year from purchase order date, of current manufacture, with assurance that spare parts are locally available for the foreseeable future. Electrical equipment shall be chosen on the basis of durability, serviceability and proven technology.
- 3) Complete installation to be carried out in accordance with CSA C22.1, B.C. Building Code, B.C. Electrical Safety Branch amendments. Provide underground systems in accordance with CSA C22.3 No. 7-M. Abbreviations for electrical terms to CSA Z85.

3.11.3 Identification of Equipment

- 1) Products required having CSA, ULC, or other approval shall be properly identified or labelled indicating that the product has been approved.
- 2) Nameplates shall be provided for all electrical equipment such as power and distribution transformers, power and receptacle panel boards, Motor Control Centres, individual motor starters, fusible or non-fusible disconnect switches etc. Nameplates shall be engraved lamicoid identification plates with black letters on white background fastened by screws. Include the following information on nameplates:
 - i) Disconnects: indicate equipment being controlled and voltage.
 - ii) Terminal cabinets and pull boxes: indicate system and voltage.
 - iii) Transformers: indicate capacity, primary and secondary voltages.
- 3) Panel boards shall be complete with a directory giving load description of each circuit controlled. Directories shall be clearly typed and shall be mounted in a metal frame with clear plastic cover on the inside of panel door.
- 4) Provide fully detailed operation and maintenance manuals for the electrical systems.

Final

3.11.4 Power Supply

- 1) Power will be provided at 34.5 kV, 3 phase, 60 Hz from the existing BC Hydro 69 - 34.5 kV Britannia Substation. The available fault level is to be advised.
- 2) To accommodate this project and future needs, BC Hydro will eventually upgrade this substation and replace the 34.5 kV distribution in the area with a 25 kV system. Provision shall therefore be made at the WTP transformer for both primary voltages.

3.11.5 Site Voltage Distribution

- 1) Provide power to the site with a new power line from the existing Britannia Substation at 34.5 kV.
- 2) To accommodate the future 25kV supply, the WTP substation will have installed an autotransformer suitably sized for the installed capacity of the step down transformer to step down from the 34.5kV to 25kV. In the future, the autotransformer will be replaced with a direct connection from the 25kV supply to the transformer. (to be confirmed with BC Hydro) Alternatively, provide a step down transformer with both 34.5 and 25 kV primary windings.
- 3) The Project will use a step down transformer with a 600/347 volt wye secondary.
- 4) BC Hydro metering will be included at the existing 34.5 kV substation service point, although provision shall also be made at the Site substation, on the secondary (600V) side for future conversion.
- 5) The design of the electrical distribution system shall be based upon IEEE Standard No. 141 Recommended Practice for Electrical Power Distribution for Industrial Plants.
- 6) Power distribution will be accomplished with step-down transformers. The following distribution voltages will be used at site:
 - Medium Voltage Distribution 34.5 kV (future 25 kV)
 - Low Voltage Distribution 600 volts, 3 phase, 3 wire, 60 Hz
 - Small Power Distribution 120/208 volt, solidly grounded for lighting, convenience receptacles and small power applications
- 7) The Project shall be supplied with power through a main 600 V, 3 phase feeder originating at the Project substation.
- 8) The short circuit rating of the electrical equipment shall be specified based on the results of a short circuit study to be performed during the detailed design of the project.
- 9) Electrical coordination will be completed to minimize power interruption on operation of power system protective devices.

3.11.6 Emergency Power

- 1) Emergency battery power packs will supply back-up power to fire alarm system and emergency egress lighting fixtures.
- 2) Uninterruptible power supplies will be used to provide back-up power to critical control systems. The UPS equipment will be sized to permit operations to shut down

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and back-up the computer and control systems to facilitate start-up on resumption of normal power.

- 3) The 600 volt distribution system will include provision for the connection of a portable generator unit to provide power in the event of a prolonged power outage. This will provide power for essential equipment only as permitted through the process control system. Provide a 200 KW 600 V 3 phase emergency generator with all ancillaries; 8 hour day tank and auto start system.

3.11.6.1 Project Utilization Voltages

Motors 3/4 HP to 250 HP	575 volts, 3 phase
Motors under 3/4 HP	120 or 208 volt, 1 phase or 208 volt, 3 phase
Heaters over 1.8 kW	575 volts, 3 phase
Heaters 1.8 kW and under	120 volt, 1 phase or 208 volt, 1 phase
Lighting	
- HID	208 volt, 1 phase
- Fluorescent	120 volt, 1 phase
Instrumentation and control	120 volt, 1 phase

Rating limits may vary in isolated cases to meet design limitations.

3.11.7 Electrical and Control Rooms

- 1) Electrical and Control Rooms will be built to meet a one-hour fire rating. All openings will be sealed and made water and dust tight using approved fire retardant materials.
- 2) All electrical rooms will have two means of egress at opposite ends of the room. The floors will be elevated from adjacent process concrete floors a minimum of 200 mm. No liquid or fluid piping shall be routed through electrical rooms.
- 3) Doors to the rooms shall be supplied with panic exit type hardware. Each electrical room shall have an equipment door sized to permit the largest piece of equipment to be installed/removed without removing doors from hinges.
- 4) Electrical rooms and control rooms shall be pressurized and air conditioned and designed in accordance with occupancy regulations.

3.12 Major Electrical Equipment

This section presents guidelines to indicate the standard that will be acceptable to the Province. In the event that a Proponent wishes to use electrical equipment that is different from the guidelines, the Proposal must clearly define the exceptions and present an explanation of the costs and benefits. Notwithstanding the above, variations from the Codes will not be permitted.

3.12.1 Substation Equipment

The HV power supply will have circuit-interrupting equipment (Gang-operated Fused load break switch) rated for the available fault level available from BC Hydro.

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The BC Hydro service point will incorporate a new HV gang-operated fused load break switch rated for the service. Metering will comprise PTs, CTs and utility approved meters. Equipment will include two sets of meters, one for utility and one for the Province's use.

3.12.2 Power Transformer

The power transformer will be outdoor, oil filled with off-load manual tap changer. The transformer will be supplied with a 25 kV primary to meet BC Hydro's future standard voltage requirements. Initially the transformer will be fed from an autotransformer rated 34.5kV-25kV. The transformer will be sealed tank design with provision for future addition of one stage of fan cooling. The transformers will include HV and LV junction boxes. Alternatively, a power transformer with 34.5 and 25 kV primary windings may be used.

3.12.3 Motor Control Centres

The 600 volt MCC starters shall be combination type consisting of a motor circuit protector, magnetic contactor and ambient compensated solid state adjustable overload relay. Starters shall use "visible-break" protection. Motors up to and including 250 HP will be protected by solid state overload relays.

The magnetic trip settings and overload elements shall be selected to match the full load current of the motors. Magnetic starters shall be supplied with individual 120 volt control transformers with primary HRC fuses. Larger starters may employ a line voltage operating coil and auxiliary interposing relay.

Short Circuit bus bracing for 600 volt equipment will be 42,000 A RMS symmetrical.

3.12.4 Motors

All motors shall be high efficiency type. Motors will employ Class F or better insulation and shall have a horsepower rating based upon continuous operation at full load without exceeding 80°C temperature rise above 40°C ambient.

In general, motors will be totally enclosed fan cooled (TEFC) with cast iron frames and have a 1.15 service factor. Bearings shall be of the antifriction and regreasable type. Motor casing shall have porous plug breather drains at each end.

Motors will have NEMA design B characteristics with normal starting torque and low starting current for full voltage starting unless other characteristics are required by driven equipment. Starting methods will be full voltage except where reduced voltage starting is necessary.

Ratings of all motors 250 HP or less shall be to standard NEMA sizes, with 1200 or 1800 rpm synchronous speed, 'T' Frames unless the equipment load condition requires special motors.

Provide all 250 HP motors with two 100 ohm platinum RTDs per phase winding and one per bearing.

Terminal boxes shall be oversized and rotateable in 90° increments.

Stainless steel nameplates shall be provided.

Motors required for variable frequency drive applications shall be for inverter duty meeting or exceeding the requirements of NEMA MG-1, Part 31.

Final

3.12.5 Enclosures

In general all switchgear, starters, control system equipment and small power distribution equipment will be installed indoors in pressurized and air conditioned electrical and control equipment rooms. Enclosures shall be NEMA 1A with gaskets for all equipment located in these rooms.

Electrical, control equipment and instruments located in process areas or outdoors shall be in NEMA 4X enclosures and supplied with anti-condensation heaters.

Any equipment located in hazardous areas shall use enclosures approved for use with the specified materials.

Cables will preferably enter equipment in process areas and outdoors from the bottom.

3.12.6 Termination Cabinets and Boxes

Connection boxes shall be provided with adequate interior space to allow termination of Teck type cables and shall contain mounted terminal blocks with identification to match the Schematic drawings. Terminal blocks shall be tubular screw type with pressure plate, minimum width 5 mm (1/4") and marked with the wire number. Provide a minimum of 20% spare terminals for future use.

3.12.7 Power and Control Distribution

Cable installation shall be with Teck type armoured cable on heavy-duty galvanized steel ladder type cable trays with 300 mm (12") rung spacing and 150 mm (6") depth. The cables shall meet the CSA Flame retardant 'FT4' and the Low Acid Gas Emitting 'AG14' standards.

Cable connectors shall be watertight and approved for the use with the cable used. Minimum cable size shall be copper #14 AWG for control and copper #12 AWG for power.

Wire numbering shall be tubular plastic or heat shrink type only.

Conduit system where required shall consist of RW90 conductors and ground wire run in rigid galvanized steel conduit or liquid-tight flexible conduit complete with suitable watertight connectors. In corrosive area, rigid PVC conduits shall be used. Minimum size shall be 3/4" (19 mm) trade size.

Electrical Metallic Tubing (EMT) is not approved as an alternate for this application.

3.12.8 Small Power Distribution

Small power will be supplied from dry type transformers fed from MCCs and rated 600-120/208 volt, 3 phase 4-wire. The transformers shall be sized to meet the load with a minimum of 25% spare capacity for future loads. The transformers shall be indoor air cooled with standard taps, suitable for wall or floor mounting.

Panel-boards will be 120/208 volt, three phase four wire, surface mounted copper bus with bolt-on circuit breakers. Units mounted in electrical rooms shall be in NEMA 1 enclosures. Units in process areas or outdoors shall be in NEMA 4X enclosures.

Loads shall be balanced to insure equal loading of primary phases.

Final

3.12.9 Lighting

High Pressure Sodium lighting fixtures shall be used in all high bay, operating area and outdoor applications. Ballasts shall be high power factor energy saving type. Fixtures shall employ quick disconnect feature for installation/maintenance purposes.

Fluorescent lighting shall be used in all offices, electrical rooms and control rooms.

Minimum Lighting Levels shall meet the requirements of codes and regulations. The following is a guide for minimum acceptable levels:

- Process areas 350 lux
- Control rooms 550 lux
- Electrical rooms 350 lux
- Storage areas 200 lux
- Outdoor areas as required 15 lux
- Other areas not specified above Per IES Standards

Where outdoor areas require lighting, fixtures will be mounted on buildings. Building entrances and perimeters will be illuminated. Outdoor lights shall be photocell controlled. Concern shall be given to the surrounding area residents when designing the outdoor lighting system.

Emergency lights will be installed in stairways, exits and in process areas to provide sufficient light to allow safe egress of personnel from the building.

3.12.10 Fire detection

Supply a fire alarm system consisting of a microprocessor based advanced protection system. It shall use a network based, peer to peer design to communicate between various control and annunciator panels, distributed throughout the WTP connecting the panels together to act as a single system. The control panel, however, will be capable of stand-alone operation.

3.12.11 Communications

Supply a site communication system consisting of a multi-line telephone system as required and wireless mobile equipment for communicating between various areas of the plant and the WTP Control Room.

3.12.12 Grounding

All structures shall have a continuous grounding system installed.

All structures shall be connected to adjacent grounded systems with a minimum of two full capacity connections.

Major equipment shall be connected directly to the ground grid with a minimum of two ground connections. Transformers, switchgear and motors shall be equipped with ground connection to the enclosure or frame in addition to the Teck cable ground wires.

The electrical room shall have a ground bus installed with two connections to the structure ground grid.

Where conduit is used, a grounding conductor shall be installed.

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4.0 Instrumentation and Control System Design Guidelines

This section presents guidelines to indicate the standard that will be acceptable to the Province. In the event that a Proponent wishes to establish design criteria that are different from the guidelines, the Proposal must clearly define the exceptions and present an explanation of the costs and benefits. Notwithstanding the above, variations from the Codes will not be permitted.

4.1 Process Control Approach

Process control for this plant will be by a stand-alone Programmable Logic Controller (PLC) system. The PLC system and communication network will be of current technology that has been field proven to be efficient and reliable. The system shall be designed to have 20% spare I/O and the capability to be expanded in future to control additional equipment required to meet future expansion of the facility.

At least one spare of each module type used in the control system, shall be kept on-site for maintenance purposes.

The control system will be designed to utilize device-level network technology for all motor control ("Smart-MCC's"). All digital controls, interlocks, switches, indicator lights, analogue process control loops, process indicators and analogue control devices shall be hardwired into the PLC control system.

The Human Machine Interfaces (HMI's) shall provide the monitoring, alarming, data logging and reporting aspects of the process control system. The HMI's shall also permit operations personnel to view graphical representations of the plant process and process data. This will enable them to change process control setpoints, start and stop motors etc. The HMI's shall have multiple levels of security depending on user qualifications.

The HMI computer network shall be setup to allow remote monitoring only of the plant. This link will allow the viewing only of the plant process and process data from off-site remote locations.

Control system processors shall be connected on an independent high speed network to allow peer-to-peer communication between processors in the plant and the HMI computers in the control room. If required, a separate remote I/O network shall be provided to allow for communications between control system processors and its remote I/O racks.

4.1.1 PLC's

The control system processor shall consist of a single high performance controller linked via an Ethernet network to the plant control room computers.

The PLC and hardware shall be supplied by recognized industry manufacturers of control equipment.

The process PLC shall be equipped with a local operator interface panel for monitoring and set point adjustment. The local operator interface shall be mounted on the door of the process PLC panel.

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4.1.2 I/O Modules

The control system shall be capable of supporting digital and analog inputs and outputs. All I/O shall be individually isolated. All digital outputs shall be individually fused and digital inputs shall be fused based on logical functional groups.

Digital I/O modules shall be capable of supporting a minimum of 8 digital inputs or 8 digital outputs per module. Both inputs and outputs shall be 120Vac and the output channels shall have a minimum current rating of 3 Amps continuous with an inrush current of 5 Amps.

Analog I/O modules shall be capable of supporting a minimum of 8 analog inputs or 4 analog outputs at 4-20mA, 24Vdc.

4.1.3 Control System Remote I/O

The control system shall be capable of supporting remote I/O racks for distributing I/O in close proximity to the controls. Remote I/O racks shall be capable of supporting the operation of both discrete and analog I/O efficiently with a high speed communication link back to the main processor.

The remote I/O communications link will be capable of operating at speeds fast enough to support large volumes of I/O data from the remote racks. The remote I/O communication speed will not be below 1 Mbits/sec.

The update times of the remote I/O racks containing any amount of analog I/O will be less than 3 times the controllers scan rate.

4.1.4 Proponent Interface

The process plant control consoles (Human Machine Interface - HMI) shall be desktop PC-based units linked directly to the control system communication network (Ethernet). The control consoles shall be located in an air-conditioned control room.

A colour printer for printing reports and trends shall be supplied as part of the computer hardware in the control room.

The HMI console shall be setup to automatically backup historical data files.

At a minimum the HMI computer will consist of:

- 1) An Intel based PENTIUM(r) (2.8 GHz, 512 MB RAM, 2 x 120 GByte Hard Drive Raid 1 hot swappable, a Read/Write CD Rom Drive, 10/100 BaseT NIC) computer
- 2) An LCD Flat Screen Monitor (19" Minimum)
- 3) A graphics card and LCD screen combination capable of displaying 65536 colors at a resolution of 1024x768 pixels.
- 4) Uninterruptible Power Supply (to provide 30 minutes standby power in cases where a backup generator system is available. One hour standby power is required in cases where a backup generator system is not available.
- 5) Microsoft Windows 2000 Operating System
- 6) HMI Software.

Final

4.1.5 Ethernet Communications

The process control system shall be capable of linking directly through an Ethernet switch to an Ethernet communication network. The HMI computers shall use this link to collect data about the process from the PLC.

4.1.6 Control System Equipment Installation

Controller equipment shall be mounted in metal cabinets, rated either NEMA 12 for electrical or control room installation or NEMA 4X designed to exclude oil, dust and sprayed water, for process areas and outdoor installations. Cabinet environment will be maintained within the operational conditions recommended by the equipment manufacturer.

All cabling shall meet flame retardant and gas emission standards, and be suitable for installation in cable trays (see Section 2.11).

I/O equipment shall be mounted in a cabinet with the following hardware:

- Field wiring terminals for all inputs.
- Fused field wiring terminals for all outputs.
- Power supplies for instruments and control loops.
- Cooling fans or air conditioning units (as required by location).
- Fluorescent light and 120Vac convenience outlets.
- Uninterruptible power supply (UPS) with 1/2 hour backup minimum.
- Multi-conductor cables for wiring from input/output terminals to control panels or junction boxes.
- Controller outputs connected to inductive 120Vac loads shall be protected by transient suppressors connected across the load and as close to the load as possible.

4.1.7 Control System Programming

The program shall be programmed in an IEC-1131 programming standard.

Each drive or process control loop shall be separated into its own control segment within the program for ease of retrieval and manipulation.

Emphasis shall be placed on simplicity and ease of maintenance rather than complicated programming strategies.

4.1.8 Programming Documentation

Proper identification and location of all pieces of hardware along with any required DIP switch settings and inter-wiring connections shall be provided in CAD format.

The control system shall be fully documented with address, logic description and module descriptions. The use of abbreviations will be avoided unless limited by space considerations.

All electronic copies of programs will be given a drawing number, program name and date. Full revision control shall be implemented with documented changes to the program for each revision.

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4.2 Instruments

This section presents guidelines to indicate the standard that will be acceptable to the Province. In the event that a Proponent wishes to purchase instruments that are different from the guidelines, the Proposal must clearly define the exceptions and present an explanation of the costs and benefits. Notwithstanding the above, variations from the Codes will not be permitted.

4.2.1 General

Power supply to all two-wire devices shall be 120V, 60Hz.

All analog signals shall be 4-20mA DC. All input or output leads to any instrument must be sufficiently protected to be capable of being short-circuited or connected to ground without causing damage to any component in the system.

All discrete output signals shall be dry form 'C' contacts.

System internal wiring shall be rated 600V employing stranded PVC insulated machine tool wire rated 90°C.

4.2.2 Field Instruments**4.2.2.1 General**

All instruments used for measurement of parameters that affect payment or compliance with the the Provincial Guidelines or permits must be reliable, easy to calibrate and capable of verification. It is the responsibility of the Proponent to provide instruments that meet this requirement.

All measurements devices/transmitters shall be supplied with internally mounted indicators whose scales shall be application specific. Analog indicators are to be scaled to indicate the process variable as a percentage of full scale.

All instruments, components, housing and enclosures shall be suitably protected from adverse conditions such as dust, rainfall, freezing temperatures, process sprays, protective heating, sealing, insulating or purging.

The material of construction for any instrument component that will come into contact with the process fluid shall conform to the specification for that equipment or pipeline in which it will be installed.

The degree of instrumentation will be the minimum required for safe operation of the plant and efficient control of the process using a minimum number of operators.

The control and instrumentation will be available for continuous operation twenty four hours per day, seven days per week. The system shall be designed to go into a fail-safe mode in the event of a failure (refer to the process specification).

All instrumentation furnished shall be standard catalogue items of suppliers. Component interchange ability to minimize spare parts and to simplify service and repairs will be attempted by using identical components, where possible.

All vendor-supplied packages will utilize control systems and instrumentation similar as those selected for plant control, where practical. Control systems for the equipment contained in vendor packages shall be capable of interfacing and communicating with the plant control system.

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Field instruments will be suitably supported with due consideration given to accessibility and remoteness from heat, vibration etc.

Local indicators will be selected on the basis of readability, rugged construction and process connection.

4.2.2.2 Flow Instruments

Electromagnetic flow meters shall be used in slurry services where the fluid electro-conductivity is more than 10 micro-ohms per centimetre

Electromagnetic meters used in flow measurement applications (other than hydrocarbon applications) shall be supplied with lining material suitable for slurry applications and in all cases, provisions for appropriate grounding hardware (e.g. grounding rings, electrodes etc.) The associated converter/transmitter packages will allow for local indication of the measured process variable.

Ultrasonic flow meters, where used, shall be of the clamp-on transducer design with the signal processor / user interface package mounted near but independent of the pipe.

Rotameters may be used where low-flow linear characteristics and wide rangeability are desired.

4.2.2.3 Level Instruments - Liquids and Dry material

Ultrasonic measurement technique shall be used where continuous level measurement is required.

Capacitance type switches shall be used where distinct fixed level measurement is required.

4.2.3 Pressure Instruments

Pressure sensing elements used in slurry, dust or high corrosive scaling services that will limit the life or reliability of the sensing element, shall be isolated from the process medium by either a diaphragm seal or suitable purge seal complete with flushing connections.

Pressure instruments/transmitters shall be installed on all pump and compressor discharge lines, except for slurry pumps.

4.2.4 Temperature Instruments

Thermowells shall be installed at all process connections to permit the removal of the temperature sensing element.

Temperature (primary) elements shall be 100 Ohm platinum bulb RTD and shall be coupled to temperature transmitters.

4.2.5 Density Instruments

All density measurements of the product shall be made in the process pipeline directly.

The density shall be measured as mass in a given volume and not be inferred from another process variable.

The density instrument shall employ a fully automated sourceholder for remote shutter operation and failsafe shut-down of the radio-active source.

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4.3 Video Surveillance

The Province will require a video surveillance of the Britannia mine facilities during the operations phase. The video surveillance system is to provide visual coverage of critical areas of the facility as determined by the Province. Surveillance cameras shall provide the following features:

- 1) Provide either 10/100 Base T Ethernet connectivity or dial up modem connectivity.
- 2) Shall contain a built in HTTP server, an FTP Client and an internet mail system.
- 3) Shall provide terminals to connect a motion detector or intrusion alarm contact.
- 4) Will be programmable under normal conditions to send a picture at a specified time interval to a specified location.
- 5) To activate the camera during certain times of the day to accept alarm an alarm condition. If an alarm condition occurs, the camera will take pictures at a specified timer interval different from normal conditions and send the picture to a specified location or email the pictures to a specified location.

If the camera is outside or located in adverse environments, it shall be protected by a suitable enclosure. The enclosure shall provide heat during the winter time so that the camera will operate within its design range. During summer time, ventilation shall be available so as not to overheat the camera.

The AXIS Communications Model 2100 Camera meets the requirements as specified above.

5.0 Operational Requirements

In addition to activities that the Proponent must perform to satisfy obligations under other sections of this RFP, the Proponent is required to provide the following sampling and analytical services. All analyses are to be performed in accordance with the protocols and procedures specified in the Discharge Criteria (Appendix C).

5.1 Measurement of Volumes

The measurement of the volumes of water treated, and basis for payment, will be at the point where the treated water exits the WTP, before the addition of Contaminated Water that is by-passing the WTP. In addition, the Proponent is required to measure the volumes of water at the following locations:

- Volume discharging from the 4100 Level Plug.
- Volume by-passing the WTP.
- Volume pumped to the WTP from the groundwater collection system, which may include surface runoff.
- Volume of storm water pumped directly to the outfall system.

All of the above measurements are to be continuous and recorded electronically.

5.2 Measurement of Physical and Chemical Parameters

NOTE: The following is a provisional listing of sampling and analytical requirements that will be finalized once the Proponent is selected. These requirements are the minimum

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required by the Province. The Proponent may require more frequent sampling and analysis for process control.

Water is to be sampled and analyzed as follows:

- Mine water exiting the Workings.
 - Continuous – pH
 - Monthly – quantitative analysis for total and dissolved metals in accordance with the analytical protocol required in the discharge permit, and TSS.
- Groundwater pumped to the WTP
 - Continuous – pH and conductivity
 - Monthly – quantitative analysis for total and dissolved metals in accordance with the analytical protocol required in the discharge permit, and TSS.
- Storm water pumped to the outfall system
 - Quarterly – pH, quantitative analysis for total and dissolved metals in accordance with the analytical protocol required in the discharge permit and TSS.
- WTP effluent
 - Continuous – pH, turbidity.
 - 24 hour daily composite – semi-quantitative analysis for copper and zinc.
 - Weekly composite – quantitative analysis for total and dissolved metals in accordance with the analytical protocol required in the discharge permit.

Analysis for additional parameters specific to the process may be added.

The frequency of analysis will be reduced if the Proponent can demonstrate that the plant can operate reliably under varying conditions. If the semi-quantitative analysis indicates that the metal content exceeds the Provincial Guideline, as defined in Section 3.4.5 of this Appendix B, samples will be required to be sent for quantitative analysis until the cause is identified and resolved.

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Appendix B2**SCOPE OF SERVICES DURING OPERATIONS**

The Proponent will be responsible for the overall operation, repair and maintenance of the Project constructed in a manner that is in compliance with the requirements this RFP and RFP Documents, and that maintains the utility of the assets. The services during the operating phase include the following, as well as any services that are not listed but are required to sustain a fully functional facility.

This Appendix is in DRAFT form and will remain in DRAFT form until negotiations with the Preferred Proponent is complete.

1.0 Measurement Requirements

In addition to activities that the Proponent must perform to satisfy obligations under other sections of this RFP, the Proponent is required to provide the following sampling and analytical services. All analyses are to be performed in accordance with the protocols and procedures specified in the Discharge Criteria (Appendix C).

1.1 Measurement of Volumes

The measurement of the volumes of water treated, and basis for payment, will be at the point where the treated water exits the WTP, before the addition of Contaminated Water that is by-passing the WTP. In addition, the Proponent is required to measure the volumes of water at the following locations:

- Volume discharging from the 4100 Level Plug.
- Volume by-passing the WTP.
- Volume pumped to the WTP from the groundwater collection system, which may include surface runoff.
- Volume of storm water pumped directly to the outfall system.

All of the above measurements are to be continuous and recorded electronically.

1.2 Measurement of Physical and Chemical Parameters

NOTE: The following is a provisional listing of sampling and analytical requirements that will be finalized once the Proponent is selected. These requirements are the minimum required by the Province. The Proponent may require more frequent sampling and analysis for process control.

Water is to be sampled and analyzed as follows:

- Mine water exiting the Workings.
 - Continuous – pH
 - Monthly – quantitative analysis for total and dissolved metals in accordance with the analytical protocol required in the discharge permit, and TSS.
- Groundwater pumped to the WTP
 - Continuous – pH and conductivity
 - Monthly – quantitative analysis for total and dissolved metals in accordance with the analytical protocol required in the discharge permit, and TSS.
- Storm water pumped to the outfall system

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- Quarterly – pH, quantitative analysis for total and dissolved metals in accordance with the analytical protocol required in the discharge permit and TSS.
- WTP effluent
 - Continuous – pH, turbidity.
 - 24 hour daily composite – semi-quantitative analysis for copper and zinc.
 - Weekly composite – quantitative analysis for total and dissolved metals in accordance with the analytical protocol required in the discharge permit.

Analysis for additional parameters specific to the process may be added.

The frequency of analysis will be reduced if the Proponent can demonstrate that the plant can operate reliably under varying conditions. If the semi-quantitative analysis indicates that the metal content exceeds the Provincial Guideline, as defined in Section 3.4.5 of Appendix B, samples will be required to be sent for quantitative analysis until the cause is identified and resolved.

2.0 Operations and Monitoring Performance

Proponent is responsible for satisfying Scope of Services during Operations and self-monitoring performance. Failure to monitor and report performance has material consequences (depending upon the item not monitored or reported).

2.1 Scope of Services during Operations

The Proponent will be responsible for the overall operation, repair and maintenance of the Project constructed in a manner that is in compliance with the requirements this RFP and RFP Documents, and that maintains the utility of the assets over the Term. The services during the operating phase are described below in column “Scope of Services during Operations”. Proponent shall generally provide any services reasonably required, but not listed, to operate, repair and maintain the Project and sustain a fully functioning facility.

2.2 Monthly and Annual Reports to Province

Proponent must develop and maintain a system for documenting the operation of the Project, and preparing monthly reports to the Province, and submit same in the Operating Quality Control Plan. The information includes, but is not limited to that required for regulatory purposes and calculation of payments due. The Province may require additional information that the Proponent would normally be expected to compile as complete documentation of the operation of the Project.

Proponent shall prepare and certify the following reports:

- (a) **Monthly Performance Report.** This includes summaries of “Performance Indicator” items described in the column below. Monitor may request clarifications and additional information on details of report from time to time.
- (b) **Annual Performance Report.** Summary of calendar year activity and Performance Indicators described below. Province Monitor may request clarifications and additional information on details of report from time to time.

“Monitor” is the Province’s on-site supervisor/advisor.

“FE” means Failure Event.

“PP” means Periodic Payment.

“QE” means Quality Event.

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Ref. No.	Scope of Services during Operations	Performance Indicator	Proponent Response & Rectification Requirement ¹	Periodic Payment Deduction
PR1	Provide the relevant project management services that carry onwards from the construction phase, in particular the services and procedures related to quality control, document control, filing and reporting to both the Province and to the stakeholders.	General obligation of Proponent. Not monitored or reported.	Not monitored or reported.	No direct PP impact.
PR2	Develop and maintain a system for documenting the operation of the Project, and preparing monthly reports to the Province. The information includes, but is not limited to that required for regulatory purposes and calculation of payments due. The Province may require additional information that the Proponent would normally be expected to compile as complete documentation of the operation of the Project.	System should include Monthly Performance Report and Annual Performance Report as described in this section.	Province and Monitor to review from time to time. All reasonable changes requested by Province and Proponent must be included by Proponent in the documentation.	No direct PP impact.
PR3	Provide trained personnel to operate and maintain all facilities.	Training Monthly Report item. Summarize number of staff hours of training each month. Summarize annual calendar year training hours in Annual Performance Report. Target: 12 hours/1000 person	Quality Event if training differs from Target in calendar year.	Quality Event

¹ Failure to respond and rectify per the Performance Requirements has financial consequences (deducts) of varying intensity through the payment mechanism.

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		hours/ year.		
PR4	<p>Maintain adequate supplies of chemicals and reagents, lubricants, repair supplies such that the operation is not affected by shortages of these chemicals, reagents and repair supplies.</p> <p>Maintain an adequate inventory of spare parts to replace wearing components.</p> <p>Maintain an adequate inventory of critical process control instruments to repair or replace critical instruments.</p>	<p>Supplies are a general obligation and is not monitored/measured (beyond resulting other failures if inadequate supplies maintained). General obligation of Proponent. Not monitored or reported.</p>	<p>Not monitored or reported.</p>	<p>No direct PP impact.</p>
PR5	<p>Develop and implement a preventative maintenance program for all facilities including the 4100 Level adit.</p> <p>Maintain the concrete plug in the 4100 Level adit to provide for long-term structural integrity of the plug and minimize deterioration of the plug and the surrounding wall rock.</p> <p>Maintain the valves and reservoir control systems at the 4100 Level plug, together with all piping systems between the plug and the WTP. Repair and replace components as required.</p> <p>Repair and rehabilitate the 4100 Level adit as required to maintain compliance with the <i>Mines Act</i>. The level of effort may depend upon how the Proponent intends to supply</p>	<p>Proponent to update maintenance program for these items as part of the annual Financial Plan as described in the Project Agreement.</p> <p>Satisfactory inspection under the <i>Mines Act</i>.</p>	<p>Such submissions reviewed as part of the annual Financial Plan review as described in the Project Agreement.</p> <p>Remedy conditions as required.</p>	<p>No direct PP impact.</p> <p>Failure to rectify is a Failure Event</p>

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	Contaminated Water to the Project and whether the Proponent wishes to retain a qualified shift boss.			
PR6	Operate and maintain the Project, including the marine outfall, the groundwater collection and pumping system and the storm water collection system.	General obligation of Proponent.	Proponent responsible for performance and monitoring in accordance with Project Agreement.	In accordance with Project Agreement.
PR7	Perform all sampling and analysis in strict compliance with all Performance Requirements, per the Project Agreement.	General obligation of Proponent. Changes to sampling and analysis methodology to be reported in Monthly Report, as well as the reason for such changes.	Province may reject changes in sampling and analysis and require Proponent to return to original methodology. Failure to satisfactorily sample and analyze water and other data may result in a Failure Event.	Unsatisfactory sampling and analysis may deem sample and analysis to fail and trigger a Failure Event for such samples and analysis.
PR8	Manage the mine reservoir to maximize the volume of water treated and minimize the volume of Contaminated Water that by-passes the WTP.	General obligation of Proponent. Notify Monitor within 8 hours. Monthly Report summary of by-pass events. All by-pass events to be summarized (including volume, pH and other parameters monitored) with reasons for such by-pass. Monitor or Province may make proposals to Proponent for improvement of water flow management.	Self-monitoring and implementing. Proponent must respond in writing to proposals within 60 days of receiving a proposal, assessing costs and benefits to Proponent and Province of improvement proposals. Quality Event deduction if inadequate response from Proponent to Monitor proposals.	Quality Event
PR9	Collect and compile data related to snow pack, snow-melt rates,	General obligation of Proponent. Proponent to summarize	Failure to include such data in Monthly Report will trigger	Quality Event

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	reservoir levels, and use this information to manage the flow of water to the Project.	collected data in Monthly Report.	a Quality Event.	
PR10	Maintain all permits required to continue operation of the Project.	General obligation of Proponent. Proponent to immediately notify Province and relevant regulatory authority upon discovering a permit problem.	Failure Event to violate any permit or to violate the Mines act..	Failure Event 100% PP deduction if any permit for operations of the Project not maintained for any day during a month.
PR11	Management of the Sludge or by-products from the Project including the ultimate disposal of the Sludge or by-products.	. Province and Monitor to be immediately notified in writing of any regulatory violation of Proponent related to sludge management, transportation and disposal.	Quality Event deduction if any material problems with sludge treatment (as determined by Province, acting reasonably). Proponent must submit plan to address regulatory problems and complaints about sludge within 7 days of receiving complaint. Proponent to immediately take steps to obtain necessary regulatory approvals for sludge management.	Quality Event
PR12	Collect and compile all WTP operational data, including effluent chemistry, pH, and total suspended solids (TSS) parameters in accordance the Provincial Guidelines in Appendix B, Section 5.0.	Proponent must keep records of such data on-site for last seven (7) years. Proponent must provide a monthly and annual summary of performance to Province.	Failure Event for Proponent not to provide data requested by Province within 30 days of such written request for data up to two years old. Failure Event for Proponent not to provide data requested	Failure Event For first day in a month missing, 1/30 th of that month's PP. For second day in

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		It is critical Proponent always collect, compile and report operational data. Failure to perform this function will be deemed equivalent to the Project and Project being out-of-specification for Provincial Guidelines and Regulator requirements.	by Province within 60 days of such written request for data up to seven (7) years old.	a month missing, 1/10 th of that month's PP. Full PP deduction for three or more days per month missing. Proponent to reimburse Province for PPs from all months where data is missing in accordance with the above schedule.
PR13	Develop a long term budget for costs required to maintain, repair, and operate the Project.	Proponent to prepare budget as part of the annual Financial Plan as described in the Project Agreement.	Such submissions reviewed as part of the annual Financial Plan review as described in the Project Agreement. Province may require Proponent to perform maintenance, repairs and replacements in accordance with Project Agreement.	No direct PP impact.
PR14	Make capital expenditures required to maintain the condition of the Project and replace any elements of the Project that may require replacement.	General obligation of Proponent.	Province may require Proponent to make expenditures in accordance with Project Agreement.	In accordance with Project Agreement.
PR15	Perform routine maintenance, repairs and replacements, and annual rehabilitation in accordance with an annual operating and maintenance	General obligation of Proponent.	Province may require Proponent to perform maintenance, repairs and replacements in accordance	In accordance with Project Agreement.

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	audit, which will be performed by an independent contractor to the Province.		with Project Agreement.	
PR16	Maintain and repair all access roads and parking areas within the Site.	General obligation of Proponent. Proponent to prepare budget as part of the annual Financial Plan as described in the Project Agreement.	Such submissions reviewed as part of the annual Financial Plan review as described in the Project Agreement. Province may require Proponent to perform maintenance, repairs and replacements in accordance with Project Agreement.	In accordance with Project Agreement.
PR17	Maintain and repair all access roads from the WTP site to Jane Basin for seasonal access by four-wheel drive vehicle. If the Respondent intends to use Jane Basin, or other sites on the Province’s property, for Sludge impoundment, these roads are to be maintained to a standard suitable for the mode of transportation selected.	General obligation of Proponent. Proponent to prepare budget as part of the annual Financial Plan as described in the Project Agreement.	Such submissions reviewed as part of the annual Financial Plan review as described in the Project Agreement. Province may require Proponent to perform maintenance, repairs and replacements in accordance with Project Agreement.	In accordance with Project Agreement.
PR18	Maintain all utility systems from the point of connection with the utility provider.	General obligation of Proponent. Not monitored or reported.	Not monitored or reported.	No direct PP impact.
PR19	Perform “extraordinary work” related to the Project as requested by the Province.	General obligation of Proponent.	Province may require Proponent to make expenditures in accordance with Project Agreement.	In accordance with Project Agreement.
PR20	Manage Abnormal Circumstances, as defined in the Project Agreement, in coordination with the Province.	General obligation of Proponent.	Province may require Proponent to make expenditures in accordance with Project Agreement.	In accordance with Project Agreement.

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<p>PR21</p>	<p>Noise – less than 40 dBA (total peak for the plant) at the fence line. This requirement is due to the proximity of future residences. The Proponent will be required to demonstrate, with calculations, the anticipated peak sound at the fence, and will be responsible for mitigating any exceedances during Operations.</p> <p>Noise levels will be a particularly sensitive issue at night (ambient levels must not exceed ~30 dBA).</p>	<p>Ongoing requirement. All written, fax or e-mail complaints to be reported to Province in Monthly Report.</p>	<p>Quality Event.</p> <p>Summary must include description of Proponent plans to resolve problem.</p> <p>Proponent must respond in writing within 10 business days of receiving complaint. Summary must identify responses.</p>	<p>Quality Event</p>
<p>PR22</p>	<p>Dust – in addition to meeting all standards and permitting requirements established by the regulatory authorities, the facilities are to be designed and operated to minimize fugitive dust. Dust control must be designed into the Project.</p>	<p>Ongoing requirement. All written, fax or e-mail complaints to be reported to Province in Monthly Report.</p>	<p>Quality Event.</p> <p>Summary must include description of Proponent plans to resolve problem.</p> <p>Proponent must respond in writing within 10 business days of receiving complaint. Summary must identify responses.</p>	<p>Quality Event</p>
<p>PR23</p>	<p>Odour - in addition to meeting all standards and permitting requirements established by the regulatory authorities, the facilities are to be designed and operated to minimize the frequency and severity of odours. Odour control must be designed into the Project.</p>	<p>Ongoing requirement. All written, fax or e-mail complaints to be reported to Province in Monthly Report.</p>	<p>Quality Event.</p> <p>Summary must include description of Proponent plans to resolve problem.</p> <p>Proponent must respond in writing within 10 business days of receiving complaint. Summary must identify responses.</p>	<p>Quality Event</p>

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PR24	Aesthetics – due to the proximity of the historic community of Britannia Beach and the potential visual impact on existing and future communities, all building designs and colour schemes are subject to the approval of the Province.	General obligation of Proponent.		No direct PP impact.
PR25	Operate the Project and associated infrastructure/systems when water is available for treatment.	<p>Monthly report summary of daily operations (water treated). Report of all days when water was not treated and/or Project was not available for treating such water. Identify length of time Project was not in operation or at a materially low level. Report reason for such failures.</p> <p>Proponent must notify Monitor in writing within 72 hours for any failure to treat mine water or groundwater for a continuous period of more than 24 hours when mine water or groundwater is available. Such notice must explain reason for treatment failure and plan to fix problem.</p> <p>Target: Constant operation of Project when water available to treat.</p>	<p>Failure Event if Project is not available to treat water or does not treat water when water is available for 8 hours during any day.</p> <p>Varying deductions if Project is not operating while water is available to treat without reasonable cause. Reasonable cause shall be at discretion of Province or Monitor.</p> <p>Proponent to resume water treatment immediately upon being able to do so after problem is resolved.</p>	<p>FE</p> <p>For first day in a month, 1/30th of that month's PP.</p> <p>For second day in a month, 1/10th of that month's PP.</p> <p>Full PP deduction for three or more days per month.</p>
PR26	Maintain the Project and associated infrastructure/systems in standby condition when not treating water. (e. g. sludge re-cycling or disposing of	General obligation of Proponent. Not monitored or reported.	Not monitored or reported.	No direct PP impact.

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	any residuals).			
PR27	Operate and maintain the collection and pumping systems for groundwater and storm water.	<p>Monthly report summary of daily operations and collection/treatment of groundwater and storm water.</p> <p>Report of all days when water was not treated and/or Project was not available for treating such water. Identify length of time Project was not in operation and reason for such failures.</p> <p>Proponent must notify Monitor in writing within 72 hours for any failure to treat storm water or groundwater for a continuous period of more than 24 hours when mine water or groundwater is available. Such notice must explain reason for treatment failure and plan to fix problem.</p> <p>Target: Constant operation of Project when storm water and groundwater available to treat.</p>	<p>Failure Event if Project is not available to treat groundwater or storm water or does not treat such water when water is available for 8 continuous hours.</p> <p>Quality Event deduction if Project is not treating storm/groundwater for more than continuous 24 hour period while storm water and groundwater available to treat without reasonable cause. Reasonable cause shall be at discretion of Province or Monitor.</p> <p>Proponent to resume groundwater treatment immediately upon being able to do so after problem is resolved.</p>	<p>FE</p> <p>For first day in a month, 1/60th of that month's PP for each day groundwater or storm water system not available.</p>
PR28	<p>Operate the Project within the Permit and Province Guidelines for routine operation.</p> <p>Permit and Province Guidelines may change from time to time. Proponent is responsible for ensuring it satisfies such updated and changed permits.</p> <p>The current draft permit shall be deemed the permit in effect until a the</p>	<p>Water quality must be monitored and satisfy Province Guidelines.</p> <p>Detailed hourly, daily and continuous measurements to be retained by Proponent. Such data to be summarized for Province in the Monthly Report and Annual Report.</p> <p>Immediately notify Province as required under Project</p>	<p>Failure Event if violated.</p> <p>Increase monitoring frequency by 100% until 60 consecutive days of acceptable results achieved.</p> <p>Proponent to take immediate steps to implement short-term adjustments to bring water discharged back into</p>	<p>FE</p> <p>For first day in a month, 1/30th of that month's PP.</p> <p>For second day in a month, 1/10th of that month's PP.</p> <p>Full PP deduction for three or more</p>

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	permit is finalized by the Regulator.	Agreement.	<p>required levels.</p> <p>Proponent to temporarily utilize reservoir if water cannot be immediately brought back into regulatory required levels or Provincial Guideline levels. Reservoir use to be temporary.</p> <p>Proponent to present plan to repair Project to ensure violations are not repeated.</p>	<p>days per month.</p> <p>Province has the right to declare Proponent Default for [3●///] violations over a [3●///] month continuous period.</p>
PR29	Operate the Project in strict compliance with the Project Agreement.	<p>Proponent to notify Province of violations, reason for violation, and plan to rectify problem.</p> <p>Proponent must diligently implement all such plans to ensure problem is not repeated.</p>	<p>Province to make determination of seriousness of such failures to comply.</p> <p>Material violations of Project Agreement may trigger Proponent Default clause.</p>	No direct PP impact.

Other Operations Related Scope of Services during Operations

Ref. No.	Performance Requirement	Performance Indicator	Proponent Response & Rectification Requirement	Periodic Payment Deduction
PR30	Turbidity and pH are to be measured continuously, recorded and available to MSRMs in real time. The Proponent is to establish the relationship between turbidity measurements and total suspended solids (TSS).	Ongoing requirement. All deviations to be reported to Province. Summary report to be submitted to Province each month.	Seriousness of deviation from continuous measurement to be determined by Province. Material inadequacies in measurement may result in deemed Failure Events for each measurement day violation.	FE
PR31	Failure to monitor water quality or other material parameter regarding Project operations.	Ongoing requirement. All deviations to be reported to Province.	Failure Event on days with missed monitor data.	FE
PR32	Failure to accurately and adequately report material information about Project operations to Province.	Ongoing requirement. All deviations to be reported to Province.	Failure Event.	FE
PR33	Lost, stolen or otherwise unavailable records for any reason on water quality and other material parameters must be retained for at least 7 years.	Proponent to provide data upon request of Province for up to seven (7) years of history.	Failure Event for missing data if not produced within 30 days of request by Province for any period during the prior 7 years.	FE
PR34	Letter or e-mail complaint from general public or an interested party	Ongoing requirement. Summary of all written, fax or e-mail complaints to be reported to Province in Monthly Report.	Quality Event. Summary must include description of Proponent plans to resolve problem. Proponent must respond in writing within 10 business days of receiving complaint.	QE

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			Summary must identify responses.	
PR35	Educational or other visit	Ongoing requirement. Briefly summarize visits in monthly report.	Quality Event.	QE
PR36	Proponent must maintain good community relations with local Britannia Beach community and Squamish area	General requirement to maintain goodwill with community. Complaints in any area to be monitored and summarized (by issues) in monthly report	Quality Event. Summary must include description of Proponent plans to resolve problem. Proponent must respond in writing within 10 business days of receiving complaint. Summary must identify responses.	QE
PR37	Number of Safety Meetings	Ongoing requirement. Record meetings and attendance in monthly report.	Quality Event.	QE
PR38	Number of Medical Aid Incidents	Ongoing requirement. Describe all events in monthly report.	Quality Event.	QE
PR39	MEM/WCB Infractions	Ongoing requirement. Describe all events in monthly report. Describe all events in monthly report.	Quality Event.	QE
PR40	General Site Cleanliness (landscaping, aesthetics and proactive building repair and replacement)	Ongoing requirement. Monitor to assess on a periodic basis.	Quality Event. Monitor to notify Province in periodic report.	QE

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Appendix C

Guidance Regarding the Discharge Permit

The Province is in receipt of a letter, dated March 30, 2004, from the Ministry of Water, Land, Air Protection (MWLAP) regarding the terms and conditions of the Discharge Permit, and is preparing a response. Although some of the terms of the permit may change, the Province is not intending to take exception to the control parameters for the chemical and physical characteristics of the effluent, which are shown below.

The Ministry of Sustainable Resource Management's (MSRM) response is posted in the Britannia Mine RFP data room. The letter from WLAP, dated March 30, 2004, should be available on the WLAP Britannia correspondence website, which is available as a link from the project website (www.britanniamine.ca). If the WLAP website does not contain the March 30, 2004 letter, MSRM will post the WLAP letter in the Britannia Mine RFP data room along with the MSRM response. The Province will keep Proponents advised of developments during the proposal period by posting updated correspondence in the RFP data room.

Requirements of WMA Discharge Permit PE-17469

Discharge Characteristics

The permit for the discharge of effluent under the *Waste Management Act* (WMA) is currently in a draft form. The following listing presents the control parameters as stated in this draft Discharge Permit. An exceedance of the criteria established in the Discharge Permit is a violation of the WMA.

<u>Parameter</u>	<u>Limit</u>
dissolved copper	≤ 0.1 mg/L,
dissolved iron	≤ 0.1 mg/L,
dissolved zinc	≤ 0.2 mg/L,
dissolved aluminium	≤ 1 mg/L,
dissolved manganese	≤ 0.4 mg/L,
dissolved cadmium	≤ 0.01 mg/L,
total suspended solids	≤ 30 mg/L,
pH range	6.5 to 9.5, and
96HRLC50 fish bioassay	100% survival (non-acutely toxic)

Additional parameters specific to the treatment process may be added to the final permit.

Sampling and Flow Measurement Procedures

Sample collection and flow measurements shall be carried out in accordance with procedures described in the latest version of the *British Columbia Field Sampling Manual for Continuous Monitoring Plus the Collection of Air, Air Emission, Water, Wastewater, Soil, Sediment and Biological Samples, (1996 Permittee Edition)*, or by suitable alternative procedures as authorized by the Director.

Final

Chemical Analysis

Samples shall be analysed for chemical parameters in accordance with procedures described in the latest version of the *British Columbia Environmental Laboratory Manual for the Analysis of Water, Wastewater, Sediment and Biological Samples*, (1994 Permittee Edition), or by suitable alternative procedures as authorized by the Director.

Appendix D

PREDICTIONS OF INFLUENT WATER

1.0 Contaminated Water Chemistry

Contaminated Water chemistry at Britannia Mine has been monitored for many years. However, the existing data mainly represent the chemistry of water flowing through the mine workings in an unimpeded manner, and do not necessarily reflect the effects of storage. The effect of storage was assessed through a “plug test” conducted in 2002, and has been reported by SRK Consulting. The following tables, modified from the SRK report, present a summary of the projected variations. The information is provided solely to acquaint the Proponents with the range of water chemistry parameters that may be expected during operation of the plant. The Proponents must refer to the complete reports for background and qualifications on these figures. Neither the Province, nor its agents or consultants are liable for any interpretations or conclusions drawn from this information.

**SRK REPORT 1CB012.02.190
BRITANNIA MINE REMEDIATION
GEOCHEMISTRY AND WATER QUALITY OF THE MINE WORKINGS**

Table 1 (Modified from Table 4.5)

Expected Concentrations in the 4100 Drainage During Flow-Through Conditions

Water Type or Mixture	pH	Total Acidity	Sulphate	Ca	Mg	Al	Cd	Cu	Fe	Zn
	s.u.	mgCaCO ₃ /L	mg/L	mg/L	mg/L	mg/L	Mg/L	mg/L	mg/L	mg/L
Average Water Chemistry Prior to 2002 Plug Test	3.6	294	1427	334	65	30	0.11	27	11	23
Sample Collected Two Months After the 2002 Plug Test	3.4	338	1830	391	99	41	0.13	30	7.1	24

Notes: *Weighted average of the historical 2200 and 4100 data.

TABLE 2 (Modified From Table 4.6)
Statistical Summary of Water Chemistry During the 2002 Plug Tests

	pH s.u.	Total Acidity mgCaCO ₃ /L	Sulphate mg/L	Ca mg/L	Mg mg/L	Al mg/L	Cd mg/L	Cu mg/L	Fe mg/L	Mn mg/L	Zn mg/L
<u>Averages</u>											
Time Weighted	3.36	451	1889	401	116	52	0.116	38	33	8.1	24
Volume Weighted	3.36	415	1859	403	114	49	0.115	40	22	8.0	24
<u>Statistics</u>											
Standard Deviation	0.19	216	343	42	33	16	0.012	11	36	2.7	2.2
Median	3.30	473	1970	400	110	52	0.114	38	16	7.9	24
10 th Percentile	3.20	195	1454	351	70	26	0.103	25	2.6	4.6	22
90 th Percentile	3.70	686	2320	458	165	73	0.126	55	63	12	27
Maximum	3.90	1240	2780	496	193	91	0.163	66	206	14	29

TABLE 3 (Modified from Table 4.8)
**Predicted Average Annual Concentrations in Mine Drainage during
 Dry, Typical and Wet Years Assuming Various Storage Scenarios**

Event	pH s.u.	Total Acidity mgCaCO ₃ / L	Sulphate mg/L	Ca mg/L	Mg mg/L	Al mg/L	Cd Mg/L	Cu mg/L	Fe Mg/L	Zn mg/L
Wet	3.4	380	1763	387	102	44	0.12	36	18	24
Typical	3.5	346	1659	370	89	39	0.12	32	14	24
Dry	3.6	302	1456	339	68	31	0.11	28	12	23

2.0 Contaminated Groundwater Chemistry

The groundwater in the Fan Area has been sampled during several of the investigation programs and chemical characterization is described in reports prepared by URS Corporation which are in the electronic data room. A pumping well was established in the Fan Area in 2003 as part of an investigation of groundwater flows. The chemical characterization data obtained from this program are erratic, and do not necessarily represent the chemical composition of the groundwater that will be extracted from a full-scale groundwater management program.

Range	pH s.u.	Chloride Mg/l	Sulphate mg/L	Ca mg/L	Mg mg/L	Al mg/L	Cd Mg/L	Cu mg/L	Fe Mg/L	Zn mg/L
High		5000	1500	N.A.	N.A.	75	N.A.	20	200	75
Typical	4.0	2000	500	N. A.	N. A.	50	N. A.	10	50	20
Low		20	100	N. A.	N. A.	20	N. A.	10	10	20

Appendix E

Project Waste Management

1. General

1.1. *Waste Management Goals for the Project*

The Province has established that this Project shall generate the least amount of waste possible and that processes shall be employed that ensure the generation of as little waste as possible including prevention of damage due to mishandling, improper storage, contamination, inadequate protection or other factors as well as minimizing over packaging and poor quantity estimating,

Of the inevitable waste that is generated, the waste materials designated in this specification shall be salvaged for reuse and or recycling. Waste disposal in landfills or incinerators shall be minimized. On new construction projects this means careful recycling of job site waste, on demolition projects this also means careful removal for salvage.

1.2. *Section Includes*

Submission and implementation of a Project Waste Management Plan

1.1.1. Definitions

The following definitions apply:

Demolition: Rapid deconstruction of a building with or without prior removal of hazardous materials.

Reduce: decreasing the volume, weight or toxicity of materials entering the waste stream, including activities which result in greater ease or efficiency of reuse of a product.

Reuse: repeated use of a product in the same form but not necessarily for the same purpose.

Salvage: removal of structural and non-structural building materials from residential, industrial, commercial and institutional buildings demolition projects for the purpose of reuse or recycling.

1.3. *Code of Practice*

In addition to other requirements specified herein it is a requirement for the Work of this project that the Proponent complies with the GVRD's "3Rs Code of Practice for the Building Industry". Refer also to "Job Site Recycling: A Guide for Builders and Developers" and "Demolition & Salvage: A Guide for Developers and Renovators." All documents are available from the GVRD, Policy and Planning Department, Telephone: 604-437-GVRD(4873). Website address: www.gvrd.bc.ca/services/garbage/index.html.

1.4. *REGULATORY REQUIREMENTS*

Conform to applicable codes and regulations for disposal and removal of common and hazardous waste. Handle and dispose of all hazardous and banned materials in accordance with the BC Waste Management Act and Special Waste Regulation, and regional and municipal regulations. These hazardous and banned materials include but are not limited to asbestos, drywall (banned from disposal), underground storage tanks, Polychlorinated Biphenyls (PCBs), abandoned chemicals (gasoline, pesticides, herbicides, flammable and combustible

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substances), freon from cooling equipment, lead-based paints, smoke detectors, and mercury containing switches.

Licensed facilities: Only those brokerage, storage, transfer and disposal facilities which comply with the requirements of the “Greater Vancouver Sewerage and Drainage District Municipal Solid Waste and Recyclable Material Regulatory Bylaw No. 181, 1996 as amended by Bylaw 183, 1996” and those licensed by other jurisdictions shall be used by the Proponent for the recycling and disposal of waste materials generated at deconstruction and renovation projects.

1.5. Waste Management Plan

Within 10 calendar days after receipt of Notice of Award of Contract, or prior to any waste removal, whichever occurs sooner, the Proponent shall submit to the Province a Waste Management Plan. Attached is a sample format together with sample waste generation rates to aid the Proponent in formulating the Plan. The Proponent may use this form or provide a custom form containing the same information.

The Plan shall contain the following:

- 1) Analysis of the proposed job site waste to be generated, including the types of recyclable and waste materials generated (by volume or weight). In the case of demolition, a list of each item proposed to be salvaged during the course of the project should also be prepared (Refer to the Job Site Recycling Guide for a directory of service providers. This list is not necessarily complete. The Proponent may use any of these or other service providers).
- 2) Threshold: Should the Proponent be able to demonstrate to the Province that there is a cost advantage to disposal for a project or if the project generates less than 35 cubic yards, than the waste can be disposed at an approved facility in accordance with Section 1.3.
- 3) Alternatives to Land filling: the Proponent shall designate responsibility for preparing a list of each material proposed to be salvaged, reused, or recycled during the course of the Project (Refer to the Job Site Recycling Guide, Directory section).
- 4) List of compulsory materials to be recycled, shall include, at minimum, the following designated materials:
 - old corrugated cardboard;
 - clean dimensional wood, palette wood;
 - concrete/brick/concrete block/asphalt;
 - scrap metal;
 - drywall; and
 - landclearing debris.
- 5) List of optional materials to be salvaged (demolition projects only)
 - dimensioned lumber and heavy timbers;
 - wood siding;
 - structural steel;

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- wood panelling, moulding, trim and wainscoting;
 - heritage architectural elements such as mantle pieces, columns, etc;
 - cabinets and casework;
 - insulation;
 - brick and block;
 - electric equipment and light fixtures;
 - plumbing fixtures and brass;
 - windows, doors and frames;
 - hardwood flooring.
- 6) Meetings: The Proponent shall conduct Project Waste Management meetings. Meetings shall include subcontractors affected by the Waste Management Plan. At a minimum, waste management goals and issues shall be discussed at the following meetings:
- pre-bid meeting;
 - pre-construction meeting; and
 - regular job-site meetings.
- 7) Materials Handling Procedures: prevent contamination of materials to be recycled and salvaged and handle materials consistent with requirements for acceptance by designated facilities. Where space permits, source separation is recommended. Where materials must be co-mingled they must be taken to a processing facility for separation off site.
- 8) Transportation: The Proponent may engage a hauling subcontractor or self haul or make each subcontractor responsible for their own waste. In any case compliance with these requirements is mandatory.
- 9) The Proponent is required to maintain way-bills, invoices and other documentation confirming that all materials have been hauled to the required locations, and to submit this documentation at the completion of the project if requested by the Province.
- 10) Waste Management Plan Implementation:
- Manager: The Proponent shall designate an on-site party (or parties) responsible for instructing workers and overseeing and recording results of the Waste Management Plan for the project.
 - Distribution: The Proponent shall distribute copies of the Waste Management Plan to the Job Site Foreman, each Subcontractor, and the Province.
 - Instruction: The Proponent shall provide on-site instruction of appropriate separation, handling, and recycling to be used by all parties at the appropriate stages of the Project. On demolition projects the Proponent shall provide on-site instructions for salvage and requirements for reusing salvaged materials within the project, either in new construction or in a renovation.

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- Separation facilities: The Proponent shall lay out and label a specific area to facilitate separation of materials for recycling and salvage. Recycling and waste bin areas are to be kept neat and clean and clearly marked in order to avoid contamination of materials. The requirement for separation will only be waived if the Proponent can demonstrate to the Province that there is insufficient room to accommodate it. If this is the case the materials must be sent to a processing facility for separation off site. The Province may conduct periodic site visits to confirm that waste management procedures are being followed.
- 11) Project Waste Summary: The Proponent shall submit annually or at the end of the project, whichever occurs first, a summary of waste materials, recycled, salvaged and disposed of by the Project using the form appended to this specification or a form generated by the Proponent containing the same information.
- 12) Completion of project: The Proponent shall submit once the Project reaches Substantial Completion a summary of waste materials, recycled, salvaged and disposed of by the Project using the form appended to this specification or a form generated by the Proponent containing the same information. Submitted with this form will be documentation (receipts/scale tickets/waybills) showing the amounts and types of materials recycled and the amounts of material land filled.

The Summary shall contain the following information:

For each material salvaged and recycled from the Project, include the amount (in cubic yards or tonnes or in the case of salvaged items state quantities by number, type and size of items) and the destination (i.e. recycling facility, used building materials yard). For each material land filled or incinerated from the Project, include the amount (in cubic yards or tonnes) of material and the identity of the landfill, incinerator and/or transfer station.

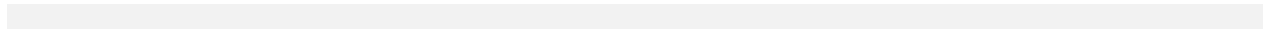
Waste Management Plan

Construction & Demolition Projects

Name of Company		Contact Person	Telephone No.
Project Site/Location		Project Type <input type="checkbox"/> Construction <input type="checkbox"/> Demolition	Project Size (in square feet)

	Pre-Project	Project Updates	
		For Period:	to
Material	Estimated Generation	Salvaged/Recycled/Disposed	Facility
Total			

Signature	Title	Date
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Explanatory note:

Column 1 - "Material" -- enter materials targeted for recycling and/or salvage and include a category for waste materials requiring disposal

Column 2 - "Estimated Generation" -- enter estimated volumes (cu.yd.) or quantities (metric tonnes) of recyclable and waste materials generated and state number of salvageable items

Column 3 - "Recycled/Salvaged/Disposed" -- enter volumes (cu.yd.) or quantities (metric tonnes) of materials recycled and disposed and state number of items salvaged

Column 4 - "Facility" -- enter end-destination of salvaged, recycled and disposed materials.

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Appendix F Proposal Form

Project Title: BRITANNIA MINE WATER TREATMENT PLANT (“Project”)

Location: Britannia Beach Community, British Columbia, Canada

Submitted to: Her Majesty the Queen in right of the Province of British Columbia, as represented by the Minister of Sustainable Resource Management (“Province”)
c/o Partnerships British Columbia Inc.
Suite 1250
999 West Hastings Street
Vancouver, B.C. V6C 2W2
Attention: Sue-Anne Fimrite

We, the undersigned (“Proponent”) hereby submit our proposal, including the attachments listed in Section 6 hereof (collectively, the “Proposal”), in response to the request for proposals made by the Province dated May 5, 2004 and all addenda issued to date in respect thereof (collectively, the “RFP”) and the draft project agreement annexed thereto (the “Project Agreement”) in relation to the Project.

1. Definitions

The RFP and the Project Agreement are collectively referred to in the RFP as the “RFP Documents”. Unless a contrary intention is clearly indicated, terms and expressions used in this Proposal and not defined herein but which are defined in the RFP Documents shall have the meanings given to them in the RFP Documents.

2. Proposal Firm and Irrevocable

This Proposal constitutes a firm offer to Province, which we agree is irrevocable, binding on us, and cannot be withdrawn until 120 days after the target date specified for Financial Close in the RFP (or as such later date as may be extended by Province by Addenda), or until the Project Agreement for the Project is executed and delivered by both Province and another Proponent, whichever is earlier.

The Proponent agrees that if the Proposal is accepted by the Province, the Proponent will deliver the deposit as described in the RFP as security for the obligation of the Proponent to execute the Project Agreement, complete with appropriate contract security requirements other requirements of the Project, as described in the RFP.

The Proponent agrees that if the Proposal is accepted by the Province, the Proponent will negotiate the final form of the Project Agreement in good faith with a view to completing negotiations and finalizing the Project Agreement generally in accordance with the Schedule described in the RFP and within one month of the public announcement by the Province of the “Preferred Proponent” for the Project. If such negotiations are not completed to the satisfaction of the Province during this time period then Proponent agrees and acknowledges that the Province is entitled to break off negotiations with the Proponent and make alternative arrangements for the provision of the Project, if the Province so chooses.

3. Performance

We agree to perform all obligations of Operator under the Project Agreement, to the quality, in the manner specified in, and in full compliance with the RFP Documents, and agree to assume all obligations and liabilities imposed upon Proponent by the RFP Documents.

4. Price

We agree:

- a) To perform the Project Agreement and to accept, as full compensation therefore, the applicable Periodic Payments specified in our Proposal.
- b) That the Periodic Payments will subsequently be adjusted by Province to address those options and alternatives (if any) included in our Proposal and which Province at its sole discretion, by notice in writing, accepts within the time periods (if any) for acceptance specified in our Proposal.
- c) That, unless otherwise expressly stipulated in the Project Agreement, we will receive no payment or other compensation under the Project Agreement.

All prices stated in our Proposal and in any submissions included with or incorporated into our Proposal are expressed in Canadian currency and are all-inclusive, including all taxes.

5. Conformance with Mandatory Proposal Requirements for Base Proposal

We represent and confirm that our Proposal, as defined in the RFP, is based on and conforms to all of the mandatory requirements as required by Section 10 of the RFP, including acceptance without qualification of the Draft Project Agreement (including the Payment Mechanism).

6. Attachments to Proposal

The following documents form an integral part of and are included in this Proposal:

Document/Schedule	Description
_____	_____
_____	_____
_____	_____

7. Professionals to be Engaged

The Proponent hereby declares that the following professionals and personnel will be engaged by the Proponent to design and supervise the project and to provide necessary documents and letters of assurances to the authority having jurisdiction.

Architect: _____

Structural Engineer: _____

Mechanical Engineer: _____

Electrical Engineer: _____

Geotechnical
Engineer: _____

Water Treatment
Designer: _____

Landscaping
Designer: _____

Legal: _____

Communications: _____

8. RFP and Project Agreement Provisions Reviewed

We agree that this Proposal is subject to the provisions of the RFP, including all exclusions and limitations of liability in favour of any one or more of Province and Partnerships BC contained in the RFP Documents.

Proponent has notified the Province of any deficiencies in or omissions from any RFP Documents and of any unusual conditions affecting the Site and surrounding area observed prior to the date hereof which may affect the Project.

The Proponent certifies that it has examined and is fully familiar with all of the provisions of the Draft Project Agreement; that it has carefully checked all the facts and figures and all statements made in this Proposal and the Financial Templates in the Proposal of the Proponent;

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that it has conducted such field investigations and additional design development as are prudent and reasonable in preparing this Proposal, including a thorough review of the Reference Documents; that it has satisfied itself with respect to the actual conditions of the Site and surrounding area and the nature and location of the Project, the general and local conditions to be encountered in the performing the Work and the Operations, and all such other matters which may in any way affect the Project or the Financial Templates described in Appendix I of the RFP and included in the Proponent's Proposal.

9. Information in EOIs

We hereby represent, warrant and confirm that all statements made in our original Expression of Interest submitted in response to the Request for Expressions of Interest for this Project are continuing representations and remain true and correct as of the date hereof, save and except only those which are expressly amended in this Proposal, in which case we have clearly identified them in this Proposal as corrections to or departures from the statements made in our Expression of Interest.

10. No Collusion or Conflict

In preparing and submitting this Proposal, we represent, warrant and confirm that we have not discussed or communicated, directly or indirectly, with any other proponent or any employee, agent or representative of any other proponent regarding the content or presentation of their proposals. This Proposal has been submitted without any connection, knowledge, collusion, comparison of figures or arrangement with any other proponent or any employee, agent or representative of any other proponent.

Neither we, nor any of our partners (if we are a partnership) or any of our members (if we are a joint venture or consortium) have any interest whatsoever in the proposal of any other proponent, either directly or indirectly, and we have not entered into any formal or informal arrangement, agreement or understanding before the submission of this Proposal that would have such a result.

11. Joint Ventures and Consortia

If a joint venture or consortium, we represent, warrant, confirm and agree that:

- a) Each of the members of our joint venture or consortium, as applicable, has executed this Proposal by its duly authorized representatives, on behalf of both the joint venture or consortium and on its own behalf, in the same manner and to the same legal force and effect as if it was the only one who was submitting this Proposal.
- b) By executing the Proposal and, if successful, the Project Agreement, each member of our joint venture or consortium, as applicable, is and will be jointly and severally liable to Province for all covenants, obligations and liabilities of the joint venture or consortium, including those contained in this Proposal, the RFP Documents and the Project Agreement.
- c) We agree that if the Proponent is a joint venture or consortium and if any of the members of the Proponent's joint venture or consortium are themselves a joint venture or consortium, then all of the foregoing representations, warranties and confirmations shall be deemed to be given by each and all of those other joint ventures and consortia.

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12. Evidence of Authority

By executing this Proposal, each of the undersigned parties and persons represent and warrant that they have full authority to do so and to bind the corporation(s), joint venture(s), consortium (consortia) and partnership(s) on whose behalf they have executed this Proposal, and that the Proposal is binding and enforceable against them in accordance with its terms. If required by Province, the undersigned will provide evidence of good standing of the corporation(s), the joint venture or the partnership(s) which constitute the Proponent, together with evidence that the person(s) signing this Proposal on their behalf and on behalf of the Proponent is/are authorized to bind the Proponent (and also each member of any joint venture, consortium or partnership forming the Proponent) to this Proposal and to the Project Agreement contemplated by this Proposal.

IN WITNESS WHEREOF we have executed this Proposal as of the _____ day of _____, 2004.

Proponent:

(Name)

(Street Address or Postal Box Number)

(Apply Seal if Available)

(City, Province & Postal Code)

Authorized Signatory:

Name & Title:

(Please Print or Type)

Witness:

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IF THE PROPONENT IS A JOINT VENTURE:

Executed and delivered by

[*NAME OF JOINT VENTURE/CONSORTIUM] by its duly authorized agent, and

by each of its Members:

[*NAME OF PROPONENT]

(Authorized Signatory)

(Authorized Signatory)

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Appendix G

DRAFT - Project Agreement

The Project Agreement is confidential and notwithstanding any disclosure of the RFP, exclusive of the Project Agreement, the Project Agreement itself will not be released save as provided in the confidentiality agreement to be signed by the Proponent as a condition of receiving the RFP.

Comments by the Proponents on the Draft Project Agreement are requested by the Project Team by June 1, 2004. The comments are to be presented in order of importance.

Appendix H

Permit Responsibilities and Status

PERMITS AND APPROVALS RELATED TO THE DESIGN AND CONSTRUCTION OF THE WATER TREATMENT PLANT					
Type of authorization	Decision maker	Issue	Responsible Party	Status	Estimated time to obtain
Permit	MEM	Mines Act permit for mine storage of ARD	SRM application	SRM to initiate in 2004Q2.	90 days
Effluent Discharge Permit	MWLAP	WMA effluent discharge permit for WTP	SRM application	Application submitted June 2003. MWLAP provided letter dated March 30, 2004, with an attached draft permit.	MWLAP may not issue permit until MSRM is committed to specific technology
Effluent Discharge Permit - Amendment Application	MWLAP	WMA effluent discharge permit amendment application for non HDS technology	Contractor application	If a non-HDS lime technology is proposed, MWLAP will require amendment of the permit or application, with technology specified, discharge parameters and concentrations, supporting technical information.	MWLAP may not issue permit until MSRM is committed to specific technology
Outfall Permit	DFO	New outfall requires Navigable Waters Protection Act permit	SRM application	SRM to initiate in 2004Q2.	60 days
Outfall Approval	LWBC	Marine portion of outfall requires License of Occupation.	SRM application	SRM to initiate in 2004Q2.	60 days
Outfall Approval	DFO	Effects of outfall on marine habitat.	SRM application	SRM to initiate in 2004Q2 if required by DFO	90 days
Outfall Approval	DFO/EC	Requirement for CEAA	SRM application	SRM to consult DFO/EC	Undetermined
Construction Permit	MEM	Construction activities associated with WTP plant and upland portion of outfall will require conformance with the Mines Act.	Contractor application	MEM has confirmed jurisdiction on mine site with respect to demolition and construction. Selected Proponent must submit designs for review.	60 days
Agreement or Approval	LWBC	Upland portion of outfall requires License of Occupation across Crown Land.	Contractor application	Selected Proponent to be responsible for implementation.	60 days
Agreement or Approval	BCR	Outfall line crosses BCR right of way.	Contractor application	SRM has had initial discussions with BCR. Selected Proponent to be responsible for implementation.	60 days
Agreement or Approval	MoT	Outfall line crosses Highway 99.	Contractor application	SRM has had initial discussions with MoT. Selected Proponent to be responsible for implementation.	60 days
Agreement or Approval	BCHydro	Authorization to encroach on BC Hydro right of way for interim sludge storage.	Contractor application	SRM has received approval in principle dated March 30, 2004. Selected Proponent to be responsible for implementation.	60 days
Permit	MWLAP	WMA refuse permit for the discharge of WTP sludge	Contractor application	Need depends on Proponents solid waste disposal strategy.	200 days

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Appendix I

Financial Templates

Proponents shall submit financial projections generally following the format of the templates below.

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I1: Capital Costs Template

Element	Total Cost	% of Total
Sitework		
On-site/off-site Services		
Grading, Access, Parking		
Landscaping	Cash Allowance	
Other		
Total Sitework		
Building Structure		
Excavation and all foundations for building and equipment		
Structure & Exterior (roof, floor(s), walls, windows)		
Partitions, Fitting & Finishes (doors, floors, ceiling)		
General Equipment (vehicles)		
Mechanical		
Electrical		
Foundations and Building Sub-Total		
Water Treatment Components (installed cost)		
Tanks/Storage & similar		
Clarifiers & similar		
Mechanical Dewatering equipment (filters or other)		
WTP Pumps/Piping		
On-site Storage & Sludge Management, if any		
Other Equipment (specify)		
Process Control Systems		
Odour Controls		
Licenses, if any		
Other Ancillary Work (specify)		
Total Water Treatment Components		
Ancillary WTP Work		
Site Power (incl. grounding, lighting)		
Outfall Distribution System (onshore section)		
Outfall Distribution System (offshore section)	Cash Allowance	
4100 Plug, Valves, Controls and Connection to WTP		
4100 Tunnel Rehab	Cash Allowance	
Other feed lines and WTP By-pass line		
Groundwater collection & pumping systems	Cash Allowance	
Surface water pumping to outfall	Cash Allowance	
Roadworks		
Other Ancillary Work (specify)		
Total Ancillary WTP Work		
Soft Costs		
Project Management Fees & Overhead/Admin		
Architectural, Engineering, Other Professional Fees		
Interest Costs & Financing Fees during construction		
Legal, Permits & Other Costs		
Total Soft Costs		
Contingencies		
Construction Contingency		
Escalation Allowance		
Total Contingencies		
Profit		
CONSTRUCTION TOTAL		
Commissioning & Start-Up Costs		
TOTAL DEVELOPMENT COSTS		
PST		
GST		
TOTAL CAPITAL COSTS (INCL. PST & GST)		

Proponents may add line items they deem relevant or material to the above.

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I2: Operating Costs Template.

Operating Costs	Start-Up & Commissioning	List Annually Over Term			
		Period 1	Year 2		Year 20
		\$'000	\$'000	\$'000
On-Site Labour & Supervisor					
Reagents, Chemicals etc.					
Power					
Supplies, Rentals, Support Services					
Analytical Services					
Sub-total, WTP Operating Cost					
Sludge Management					
Revenue, if any					
Transportation					
Disposal Costs and Fees, if any					
Treatment, if any					
Sub-total, Sludge Management					
Other Allowances					
4100 Level Annual Maintenance (plug, tunnel, site)					
Workings Annual Maintenance					
Roads Annual Maintenance					
Other (specify)					
Other (specify)					
Sub-total, Other Operating Costs					
Insurance					
Taxes and Fees					
Site Administration					
Corporate Overhead & Profit					
Third-party interest costs & fees					
Other (specify)					
Contingency					
TOTAL ANNUAL OPERATING & MAINTENANCE EXPENSES*					

Notes:

1. Proponents may add line items they deem relevant or material to the above.
2. Clearly identify water flow assumptions and water chemistry assumptions.

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I3: Capital Maintenance Cost Template.

Component	Design Life (Min.Years)	Capital Cost (\$000)	List Annually Over Term			
			Period 1 \$'000	Year 2 \$'000	Year 20 \$'000
Site Work						
Roadwork						
Landscaping						
Other						
Total Site Work						
Structure						
Building Fittings and General Equipment						
Water Treatment Equipment						
Tanks/Storage & similar						
Clarifiers & similar						
Mechanical Dewatering equipment (filters or other)						
WTP Pumps/Piping						
On-site Storage & Sludge Management, if any						
Other Equipment (specify)						
Process Control Systems						
Odour Controls						
Other Ancillary Work (specify)						
Total Water Treatment Equipment						
Ancillary Work						
Outfall						
4100 Connection, Other Feed Lines & Bypass						
4100 Tunnel Work						
Workings (reservoir, weather stations)						
Groundwater and storm water collection and pumping						
Roadworks						
Other Ancillary Work (specify)						
Total Ancillary Work						
TOTAL LIFE CYCLE COSTS (PER ANNUM)						

Proponents may add line items they deem relevant or material to the above.

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I4: Preliminary Capitalization Plan Overview.

<u>Shareholders' Equity</u>	<u>Amount</u>
Investor #1 Parent Company	Investor #1
Investor #2 Parent Company	Investor #2
Investor #3 Parent Company	Investor #3
etc.	etc.
TOTAL EQUITY:	

<u>Senior Debt</u>	<u>Amount</u>
Lender:	
Amount:	
Interest Rate:	
Term:	
Amortization:	
Monthly Payment:	
Breakage costs for early repayment, if any:	
Brief Summary of Security Requirements:	

<u>Third-Party Sub-Debt, if any</u>	<u>Amount</u>
Lender:	
Amount:	
Interest Rate:	
Term:	
Amortization:	
Monthly Payment:	
Breakage costs for early repayment, if any:	
Brief Summary of Security Requirements:	

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I5: Periodic Payment Calculations & Inflation Assumptions

NOMINAL Dollar Analysis

PROPOSED ANNUAL PERIODIC PAYMENT CALCULATION USING NOMINAL DOLLARS	TOTAL	List Annually Over Term			
	\$'000	Period 1 \$'000	Year 2 \$'000	Year 20 \$'000
Fixed Periodic Payment costs (fixed over the Term of the Agreement)					
Capital replacement reserve (entire Project and ancillary)					
On-site labour component of Periodic Payment (inflating)					
Routine repairs and maintenance					
Other inflating components of Periodic Payment costs (administrative overhead and other costs)					
Net sludge costs (transportation and tipping/disposal)					
Estimated cost for chemicals, reagents etc.					
Estimated Utility costs					
Quality Failures & Failure Events	0	0	0	0	0
Proposed annual Periodic Payments					

This is perhaps the most important Financial Template in the Appendix. It reflects the Proponent’s proposed payment schedule and will be used for RFP evaluation purposes as described in the RFP.

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I6: Sensitivity Analysis

Proponents to provide the following sensitivity analysis. Calculate for each scenario the impact on annual Periodic Payments charged to Province.

1. Base Case benchmark analysis.

Note Proponents are responsible for establishing their own water volume projections and water chemistry assumptions. Province provides no representations or warranties regarding future mine water volume and chemistry.

For comparative analysis purposes, the Province requests Proponents provide an analysis of the impact on their proposed Periodic Payment under the following "Base Case" assumptions:

Calculate the 12-month Periodic Payment under the following scenario.

- (a) Use the Standard Assumptions as identified in the RFP.
 - (b) Assume calculations are for 12-month calendar year 2008 (well after start-up phase).
- Express Periodic Payment in 2008 dollars (using inflations assumptions provided).

2. Water chemistry impact.

Assuming all other Base Case assumptions, calculate the impact on the Periodic Payment for following:

- (a) Assume water chemistry changes to consistently flow at **10th percentile level** (as described Appendix D, Section 1, Table 2) for 12 months.
- (b) Assume water chemistry changes to consistently flow at **90th percentile level** (as described Appendix D, Section 1, Table 2) for 12 months.

Assume "typical" groundwater chemistry for this analysis.

3. Water volume impact.

Assuming all other Base Case assumptions, calculate the impact on the Periodic Payment for following:

- (a) Annual water volume from the 4100 level of 3,500,000 m3 treated by WTP, plus 876,000 m3/year groundwater.
- (b) Annual water volume from the 4100 level of 6,500,000 m3 treated by WTP, plus 876,000 m3/year groundwater.

Assume "typical" groundwater chemistry for this analysis.

Notes:

- 1. For all of the above, it would be helpful if proponents could provide charts and step-up details for the Periodic Payment under each sensitivity scenario (for illustrative purposes).
- 2. All remarkable/relevant assumptions used by proponent in analysis should be clearly identified.
- 3. Results should be duplicatable by Province using Proponents spreadsheet.

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I7: Electronic Financial Model Delivery

- Provide the computer model used by Proponents to assess the Project:
- Electronically and which allows the viewer access to all internal formulas, data and assumptions.
- Compatible with Microsoft Excel 2000.
- Provide financial projections on a cash basis (cost and revenue projections without accruals and accounting adjustments) on an annual basis from Financial Close until the end of the Project Term.
- Be expressed in Canadian nominal dollars.
- Proponent must use inflation assumptions provided in this Financial Templates section plus allowable other inflation adjustments which are fully documented. Province reserves the right to change all inflation assumptions in Proponent analysis to 2% for the purposes of conducting the financial evaluation.
- Reconcile to other cost information provided by Proponents.
- A schedule of payments by Province that sets out the expected date of payment and the amount to be paid by Province.
- Capital maintenance schedule and cash flow (including identification of sources of cash funding as required).
- Funding schedules that specify the expected debt advances and repayment dates and the amount of debt service to be paid.
- The source and timing of any equity injections and details of the phasing, if appropriate.
- Project IRR, before financing and tax, assuming average water chemistry and flow rates as well as no deductions for Failure Events or Quality Event deductions/additions.
- Revenue or profit share payments, where relevant.

Proponent is solely responsible for risk of errors, accuracy, omissions, defects and deficiencies in their financial model. Province will not be verifying the accuracy of the model or otherwise accepting any risk associated with the financial model.

Final

Appendix J

Project Stakeholder List

NOTE: any changes to the project stakeholder list will be made in partnerships with the Province and the Province reserves the right, in its sole and absolute discretion, to unilaterally make additions, deletions, or revisions to this list.

NAME	COMPANY	PHONE	FACSIMILE
Eric Partridge (Director, of Waste Management)	Ministry of Water, Land & Air Protection	250-387-9974	250-387-8897
Frank Falzon	Frank Falzon Law Corp. (counsel for MWLAP)	250-384-3995	250-384-4924
Peggy Evans	Ministry of Water, Land & Air Protection	250-356-8386	250-387-9935
Brian Clarke	Ministry of Sustainable Resource Management	250-387-9730	250-356-7830
Nancy Brown	Ministry of Attorney General (counsel for MSRM)	250-356-5597	250-356-9154
Gerry O'Hara	Golder Associates (project manager for MSRM)	604-296-4216	604-298-5253
Terry Johnson	Mine Manager (on behalf of MRSRM)	604-921-8821	604-896-2260
Beverly Hobby	Environment Canada (legal counsel)	604-666-5881	604-666-7463
Rob McCandless	Environment Canada	604-666-2199	604-666-9107
Gregg Stewart	Ministry of Energy and Mines	250-952-0473	250-952-0481
Kirsten Clausen	BC Museum of Mining	1-800-896-4044	604-896-2260
John Turner	Squamish-Lillooet Regional District	604-896-0209	604-894-6526
David Allen	Squamish-Lillooet Regional District	604-894-6371	604-894-6526
Bill Andrews	Environmental Mining Council	604-924-0921	604-924-0918
Pam Tattersfield	Britannia Beach Representative	604-896-2434	604-896-0104
Gary Letcher	Edwards, Kenny and Bray (counsel for ARCO)	604-661-1073	604-689-5177
Rene Galipeau	CanZinco Ltd. C/O Breakwater Resources Ltd.	416-363-4798	416-363-1315
Theodore. L. Garret	Covington & Burling (counsel for ALCOA)	202-662-6000	202-662-6291
David Machina	Ivaco	519-978-1526	519-978-1527
Robert Macdonald	Macdonald Development Corporation	604-331-6018	604-331-6048
David Rittberg	Tanac Development Canada Corp.	604-896-2212	604-896-2232
Barry Azevedo	Ministry of Sustainable Resource Management	604-582-5309	604-584-9751
Chief Gibby Jacob	Squamish Nation	604-980-4553	604-980-9601
Peter Walters	Land and Water BC	604 586-2887	604-586-2900