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Iqaluit

REQUEST FOR PROPOSAL
FOR THE PROVISION OF OWNER'S ENGINEER FOR

LONG TERM WATER PROGRAM – RAW WATER SUPPLY AND STORAGE

PROPOSAL CALL: April 12, 2023

PROPOSALS DUE: May 25, 2023 @ 3:00pm EST (Iqaluit)

2023-RFP-048

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1. PROJECT OVERVIEW

The City is seeking to retain a Design Consultant to provide professional engineering and environmental services for the Long-Term Water Program's Raw Water Supply and Storage.

The Consultant's team will be retained to provide consultant services to execute permit(s) and license(s), and provide Project Definition, Preliminary Engineering, Detail Design, Tender Support, Construction Phase Services and Commissioning/Close-out for the project.

The City invites individual firms or consortiums of firms to submit Proposals for the above-referenced Project in accordance with the terms and conditions of this Request for Proposal document.

1.1 Background

1.1.1 Location

Iqaluit is the capital of the Nunavut Territory and is located at the south end of Baffin Island near the end of Frobisher Bay (63°45'N latitude and 68°31'W longitude). Access to Iqaluit is provided by regular scheduled commercial aircraft year-round, snowmobile trails from other Baffin Island communities in the winter, and sealift from the port of Montreal and Valleyfield in the summer.

1.1.2 Geology and Terrain

Iqaluit's location is above the tree line and within the permafrost zone of Canada. The region generally consists of glacially scoured igneous/ metamorphic terrain. In some locations, a thin layer of organic material is found.

1.1.3 Climate

Iqaluit has an Arctic climate with an average January temperature of -21.5°C and July average temperature of 8°C. The annual precipitation is made up of 19.2 cm of rainfall and 255.0 cm of snowfall for a total of 43.0 cm of precipitation. The prevailing winds are northwest at 16.7 km/hr.

1.1.4 City Growth and Population

The City is the newest Capital City in Canada and as a result has experienced a period of rapid development and growth. Iqaluit is the seat of government for the Territory of Nunavut and is the home base of many federal and territorial government departments. The City is rapidly developing into a regional center for the territory with many northern businesses in Inuit organizations making it their base of operations. The current population of Iqaluit is estimated at about 8,000 people with an average annual growth rate between three and four percent.

1.1.5 Land Ownership System

Iqaluit has a unique land ownership system. The major landowners in Iqaluit are the Commissioner of Nunavut, the City, and the regional Inuit associations. These entities in turn lease land to individuals, corporations, and other government departments. The City land is administered by a land acquisition by-law and by a Territorial Statute. Generally speaking, there is no private ownership of land.

1.2 Definitions

The following terms and definitions listed shall apply within this RFP:

City/ Client/ Owner	means the Municipal Corporation of the City; means the entity as defined in the Supplementary Conditions, which may be the same entity as the City as defined herein.
City Representative	means the individual, assigned to the Project, who will be representing the City.
City Website	means www.iqaluit.ca.
Class A Estimate	means an estimate that is accurate to +/- 10% that is used to establish cost for the construction of the Project and is based on 100% complete design package which is ready for tender.
Class B Estimate	means an estimate that is accurate within +/- 15% and is based on a 90% design development.
Class C Estimate	means an estimate that is accurate within +/- 20% and is based on a 50% design development.
Class D Estimate	means an estimate that is accurate within +/- 30% and is based on conceptual design sketches.
Closing Time	means the time set out in Section 2.8 of this RFP.
Contractor	means the entity who will be providing construction services to perform the work.
Construction Contract	means the executed agreement between the City and the Contractor for the work.
Evaluation Committee	means a committee appointed by the City in order to evaluate all submitted proposals in order to determine a preferred proponent.
Preferred Proponent	means the company or firm that has been selected by the City's Evaluation Committee and who will initially discuss the contract arrangements based upon acceptance of the proponent's proposal.

Consultant	means the Consultant who will provide the technical and professional services defined in the Request for Proposal.
Professional Services	means the technical and professional services to be provided by the Consultant for this contract.
Project	means the Long-Term Water Program – Raw Water Supply and Storage.
Project Manager	means the Project Manager assigned to the Project by the City.
Project Team	means the group of people which includes the City Representative, the Project Manager, the Discipline Design Leaders, and any other person invited from time to time by the City Representative of the Project Manager.
Proponent	means a company or firm intending to submit a Proposal and from whom a Proposal submission was received.
Proposal	means the document submitted in response to the Request for Proposal.
Supplementary Conditions	means the Supplementary Conditions forming APPENDIX B.
This contract	means the Consultant contract for which this Request for Proposal is issued.
User group	means the City or the users of the facility for which the City is responsible.

1.3 Project Scope

The City of Iqaluit requires extensive upgrades to its water supply and distribution infrastructure to address the challenges of a growing population faced with adverse climate changes affecting the sources of water. The Lake Geraldine reservoir is not sufficient to supply nor store the amount of water needed to support the current growth rate of the city, so additional water resources and storage are needed.

Over the last few years, the City has pumped water from Apex River to Lake Geraldine as an emergency measure to augment the over-winter storage requirements for the City. Given the variability of flows within Apex River and license constraints, seasonal pumping from Apex River is presently considered to be a temporary solution until a long-term water supply and storage solution is implemented.

The Unnamed Lake has a much larger catchment basin than Lake Geraldine with an estimated storage capacity of ~5,500,000 m³ of freshwater. Preliminary studies on Unnamed Lake have indicated that seasonal pumping from Unnamed Lake is viable to supply Lake Geraldine and the New Reservoir. Further, based on concept plans for the new reservoir, the amount of water available to the City is expected to increase by 65%.

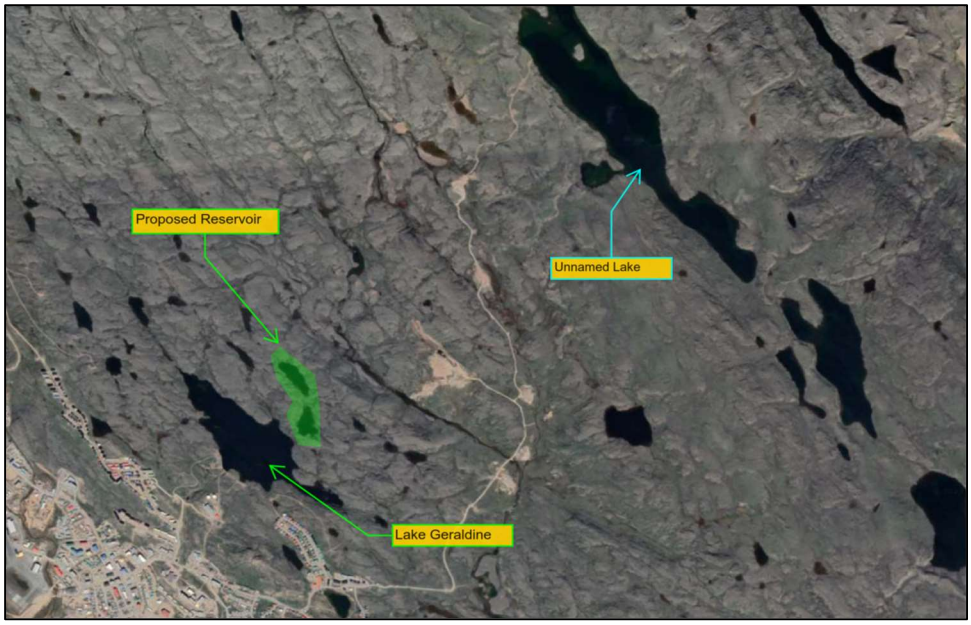

Figure 1: Location details

A pre-feasibility study for a new water source (Unnamed Lake) along with pumping and conveyance piping to Lake Geraldine has been carried out by Stantec in 2022 and a pre-feasibility study for a new storage reservoir has been carried out by EXP in 2020. Both documents are attached.

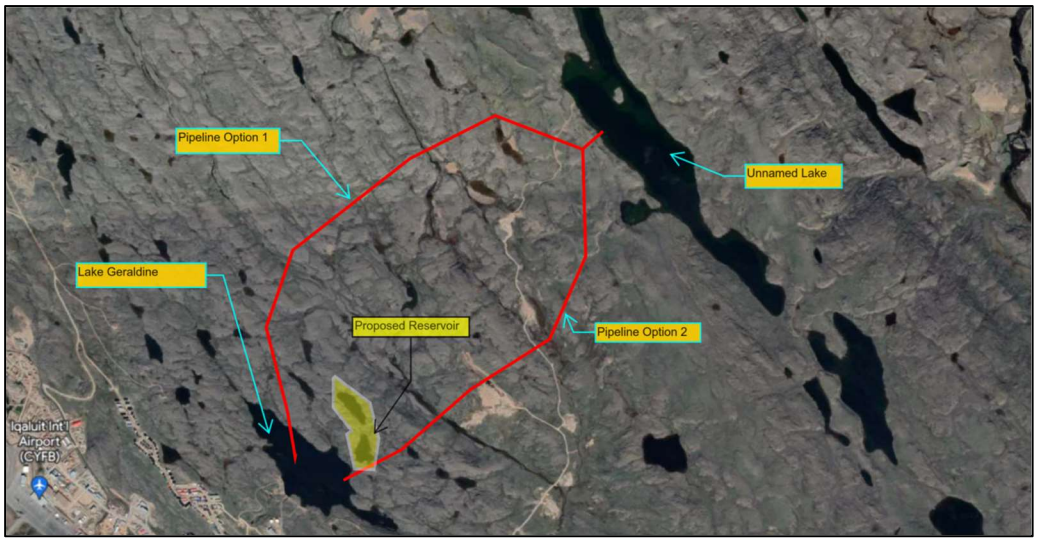

Figure 2*:* Proposed Pipeline Options based on the EXP Pre-feasibility Study.

To meet the projected population growth to year 2050 (high growth rate of 3.38% correspondence with a potential Iqaluit population of ~24,000 people) horizon it is anticipated that an additional 1,824,500 m^3 of raw water will be necessary annually. Of this amount approximately 1,247,500 m^3 will be required as additional storage to satisfy the over-winter water demand annually. A recommended site northeast of Lake Geraldine has been selected for the potential excavated and bermed/lined storage reservoir which will be hydraulically independent of Lake Geraldine and require a water transfer mechanism for the re-supply operation. Water supply for the new reservoir is expected to be continuous pumping from Unnamed Lake (~230L/s or ~3,700 USGPM) during spring/summer/ fall season and delivered via ~5 km of piping to discharge into Lake Geraldine and the new reservoir. Transfer of water from the new reservoir to Lake Geraldine will need to consider intermittent but year-round operation. For reference, Unnamed Lake surface water level is approximately 107m above the Lake Geraldine surface water level. Height of embankment dam sections of the reservoir could be in excess of 10 m.

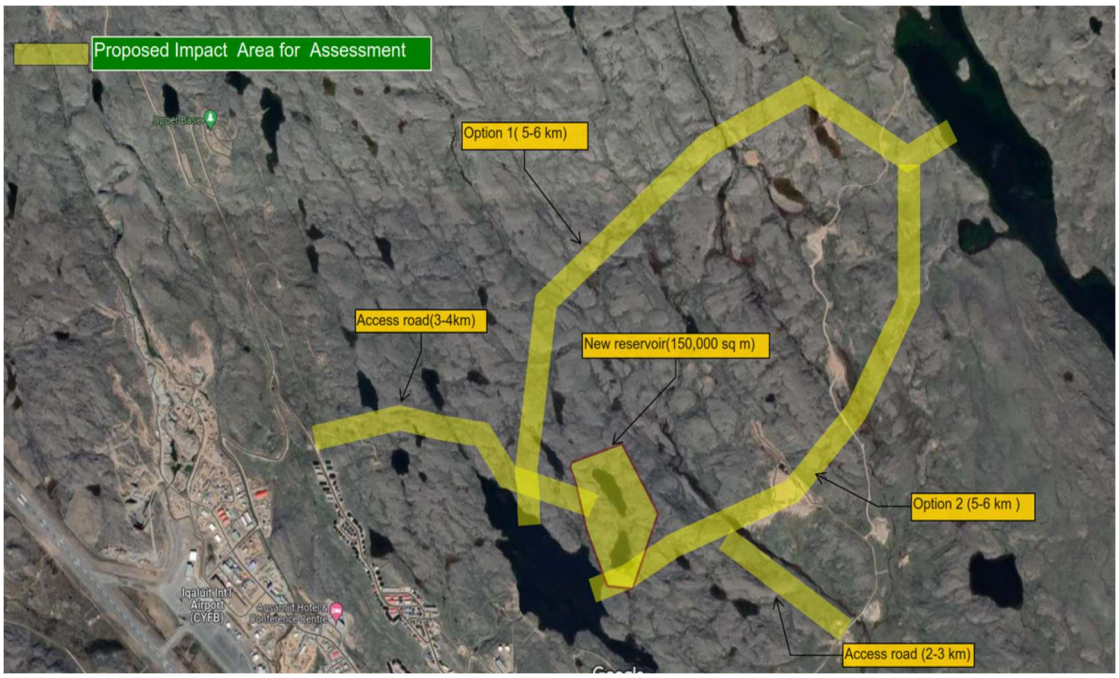

Figure 3: Proposed Impact Area

Annual water extraction volumes from Unnamed Lake are based on a water model developed by Golder in 2019 with assumptions made for current water outflows to the major downstream tributary Apex River. The model provides water balance calculations which were used in the Stantec report noted above.

In order to satisfy Water Board permit and licensing requirements the City has engaged Tetra Tech to update the Unnamed Lake water model (GoldSim) which will include field verification of stream flows to validate assumptions made in the original Golder water model. The City anticipates having the updated water balance model available prior to the Consultant's advanced design completion and submission to the Water Board.

Fish habitat assessments have been carried out at Unnamed Lake (WSP 2021) and Apex River (Stantec 2017).

A rough order of magnitude construction cost has been estimated at $110M (incl. contingencies) and will comprise the following three major work components:

- Component 1: Raw Water Extraction
- Component 2: Raw Water Conveyance
- Component 3: Raw Water Storage

In addition to the major work components there will be a requirement for temporary and permanent access roads, electrical power supply, site grading and drainage, earth, and rock excavation, borrow pit/quarry identification for suitable fill materials, site preparation, conveyance piping, intake structure, tanks, pumps and pumphouse,

water transfer piping / gates to Lake Geraldine, central control telemetry equipment and upgrades to the City's SCADA system.

Preliminary stakeholder engagements and risk workshops have commenced including meetings with permitting agencies. The critical path to construction will run through the Nunavut Impact Review Board (NIRB) screening process followed by an updated water license application processed through the Nunavut Water Board.

The first critical submission will be the project proposal to NIRB which includes project scope of work, environmental impacts and mitigations, socio-economic impacts, and stakeholder engagement strategies. We anticipate submission upon completion of the Preliminary Engineering Report. The City will submit the application but will require the Consultant to provide results of their initial studies to support the process. It is anticipated that this milestone can be achieved within 4 - 6 months from Consultant Notice to Proceed.

The second critical submission will be a more fully developed design which will be issued to the Water Board for review and amendment to the current City license. We anticipate this submission around the 70% design complete stage.

The City is looking for a design which will be durable, constructable, and low maintenance with appropriate consideration for redundancy and strict performance criteria with detailed commissioning and operations plan to affect a seamless transition to handover.

2. INSTRUCTIONS TO PROPONENTS

2.1 Submission

Proponents must submit their proposals by electronic submission (PDF format), through MERX before the time and date specified in Section 2.8. MERX can be accessed via the following website link – https://www.merx.com/. Proponents must address proposals to:

City of Iqaluit
Sumon Ghosh
Director of Engineering and Capital Planning
901 Nunavut Drive, P.O. Box 460
Iqaluit, Nunavut, X0A 0H0

Proponents will be required to submit a Technical and Financial Submission as part of their offer, in separate files. Files should be labeled as follows:

Technical Submission: *"TECHNICAL PROPOSAL – LTWP – Raw Water Supply and Storage – Proponent Name"*

Financial Submission: "*FINANCIAL PROPOSAL – LTWP – Raw Water Supply and Storage – Proponent Name"*

It is the Proponent's responsibility to confirm successful submission of the proposal to MERX prior to the deadline.

The final decision on whether to accept late Proposals is at the City's discretion.

2.2 Inquiries

All inquiries concerning this RFP are to be directed by email only to:

Richard Sithole
Senior Project Manager
Colliers Project Leaders
richard.sithole@colliersprojectleaders.com

and

Ramesh Krishnan
Assistant Project Manager
Colliers Project Leaders
ramesh.krishnan@colliersprojectleaders.com

To ensure consistency and fairness to all Proponents, all firms who have received the RFP will receive information with respect to significant inquiries in the form of written addenda or clarifications. Verbal explanations or instructions will not be binding.

The deadline for submitting inquiries will be on local Iqaluit time specified in Section 2.8 of this RFP.

2.3 Addenda

If it is determined that an amendment is required to this RFP, a written addendum will be posted via Merx and the City's website. It is the Proponents responsibility to check Merx and the City's website to confirm whether an addendum has been posted. The only way this RFP may be added to or amended in any way is by a formal written addendum. No other communication whether written or oral from any person will affect or modify the terms of this RFP or may be relied upon by any Proponent.

The City may amend, supplement, or otherwise modify this RFP at any time and from time to time prior to the Proposal submission date, only by written addenda.

2.4 Proponent Requirements

The successful Proponent must have a valid City of Iqaluit Business License prior to commencement of the Project. The Preferred Proponent shall apply for a license immediately upon notification of award, should they not hold a valid license.

2.5 Opening of the Proposals

There will be no public opening of the Proposals.

2.6 Not used.

Nil.

2.7 Validity of Offer

The proposals shall remain open for acceptance for a period of not less than sixty (60) calendar days from the closing date of this Request for Proposal.

2.8 Intended RFP Process Schedule

The City estimates the schedule for the Request for Proposal process milestones will be as follows:

***Table A** – RFP Process Schedule*

Milestone	Date
Issue RFP	April 12, 2023
Last Day for Proponent Questions	May 16, 2023 @ 3:00:00pm Local Iqaluit Time
RFP Closes – Submission Deadline	May 25, 2023 @ 3:00:00pm Local Iqaluit Time
Evaluation	May 26 – June 2, 2023
Approvals	June 5 – June 27, 2023
Contract Creation/ Circulation for Signatures	June 28 – 30, 2023
Contract Award	June 30, 2023
Project Kick-Off Meeting	July 6, 2023

3. PROPOSAL REQUIREMENTS

Proponent submissions should be prepared in sections, with the content of each section as specified below. Concise submissions which address the section requirements are encouraged. Where a maximum number of pages are specified, each page is based on a single side of an 8 ½ x 11 sheet, with text no smaller than size 11 Arial font. There are no page limits or restrictions to the financial submission.

The technical submission must not have any financial details included. If aspects of the financial offer are included in the technical submission, the City may choose to disqualify the Proponent.

3.1 Technical Submission Requirements

3.1.1 Section A – Understanding of the Project (**5 points**)

Provide a written statement demonstrating the Proponent's understanding of:

- Problem definition
- Scope of Work of the overall Project
- Goals and objectives of this assignment
- Functional design requirements
- Permitting schedule and critical milestones
- Challenges, risks, and potential solutions

3.1.2 Section B – Reference Projects (**15 points**)

Provide information for Projects completed in the last 10 years that are relevant to this project. Provide four (4) reference projects. **Maximum two (2) pages per reference project.**

2 x dams (embankment type preferred) – (**10 points**)

1 x water intake/pump station (**2 points**)

1 x water conveyance pipeline (**3 points**)

The projects listed should illustrate experience in the following areas:

.1 Design / construction of a similar sized reservoir / embankment dam type structure.
.2 Design / construction of a water intake structure and pump station facility.
.3 Hydrology/Hydraulics design expertise related to pumping and storage.
.4 Designs which include major earthworks with rock excavations / fill.
.5 Related heavy civil projects managed with value in excess of $50M.
.6 Northern / Arctic design & construction experience

The Proponent should describe their roles and responsibilities on each of the projects, whether the projects were joint ventures along with the names of the other parties of the joint venture, and a brief description of the project/ assignment. For each project, identify a Client contact and provide contact information (email and phone number). The Evaluation Committee may consult with the persons indicated as references by the Proponents in order to obtain feedback on the Proponent's performance on previous Projects and to understand the relationship between the Client and the Proponent. The technical ratings may be adjusted, based on the interviews and feedback from reference consultations. Proponents must ensure that phone numbers and e-mail addresses of references are accurate and still valid.

Proponent shall indicate if any of the proposed team members worked on the four (4) reference projects.

Proponent should identify how their project relates to the assignment described in this RFP, along with the goals and objectives of the overall Project. Photographs representing each reference project are encouraged.

Each project example provided under this evaluation section shall also include the following key pieces of data:

- Project name, location, and client contact details (as requested above).
- Initial proposal design fee and actual final design fee.
- Initial overall tendered cost for construction and actual cost for construction at project completion (both inclusive of design costs only if delivered through design-build or alternate procurement methods).
- Services provided on the project and proponents role (e.g., Prime / sub / peer review / geotechnical investigations / survey / hydrogeology).
- Project commencement date, design completion date, and project construction completion date.
- Current status of the project and if the original client objectives were fulfilled.
- Any relevant and unique methods employed, issues encountered, and risks addressed, and how the proponent developed unique solutions to address challenges.
- Team members directly involved in the project.

3.1.3 Section C – Methodology & Work Plan (**25 points**)

Provide a work plan detailing the methodology and approach to be taken to deliver the assignment, reflecting the schedule outlined in this Request for Proposal. Ensure you are clear on how you will meet the requirements. Focus your response on the following areas (**10 points**). **Maximum fifteen (15) pages for Section C (Methodology & Work Plan) including schedule and work plan.**:

- Proposed systems, procedures & tools used to effectively manage the delivery process.
- Management of cost, schedule, change, risk, and procedures for constructability reviews
- Schedule with major milestones indicated.
- Work plan with breakdown of tasks and staff level of effort (hours). Do not include staff rates or fees.

In addition to your approach, methodology and work plan; proponent to provide clear answers to the following:

1. Explain how your Project Execution Plan and reporting system will guide your delivery process and aid in the risk management process. (**2 points**)

2. Provide a detailed description of how you will ramp up staff resources during the first critical 90 days in order to meet the project schedule milestones and permitting requirements. (**2 points**)

3. What is your approach to design management and the integration of various disciplines and sub-consultants (**2 points**)

4. Describe your approach to cost control and value engineering exercises (**2 points**)

5. How can the City ensure a seamless transition to project handover and operations. Include discussion of performance criteria testing (leak testing the reservoir for instance) and how a structured commissioning process will inform the design. Would an extended warranty for operations or a specific proving period be considered in a construction tender. (**2 points**)

Describe the process for how you will consistently deliver high quality design and engineering services. Due to the complexity of this assignment the City expects a comprehensive QA/QC program in which engineering calculations, drawings, specifications, and estimates must be checked in detail by a qualified independent engineer. Include the following (**5 points**):

- Firm quality certifications and provide copy of your quality management manual (as an appendix)
- How will your design work incorporate the following:
  - Independent or peer reviews of key deliverables
  - Constructability reviews
  - Calculation checks
- Your processes for identifying, tracking, resolving, and documenting errors and omissions on design work performed internally and by sub-contractors.
- Your process for identifying and tracking non-conformance during construction.
- How do you manage change and change orders

The Proponent shall describe what Inuit, local and Nunavut content, if any, shall be utilized.

3.1.4 Section D – Corporate Qualifications and Experience (**5 points**)

Provide a statement of qualifications for the Proponent and other major consultant firms included in the Design Team (civil, structural, mechanical, electrical, and process control engineers) including:

.1 Year founded as current corporate entity.
.2 Permanent office address; and
.3 List a maximum of 5 reference Projects (do not provide Project details as these should be listed in Section B. (**2 points**)

.4 Provide a description of your firm's capacity to support the program with supporting tables indicating your overall bench strength and back-up company resources which could fit positions denoted in Section E below. List current and future commitments and proponents' ability to complete project tasks in a timely manner. (**3 points**)

3.1.5 Section E – Qualifications and Experience (**30 points**)

Provide an organizational chart describing the Proponent's Project Team for the assignment. Provide detailed description of each team member responsibilities and propose key positions such as:

Project Manager (**10 points**)
This position is designed for an experienced program director with the ability to perform in a management capacity, excellent written and oral communications skills, and a thorough knowledge of industry practices and regulations are also required. This person will be the single point of contact for the City. In addition, must be knowledgeable of current technology and how it can be effectively utilized on the project. Provides direction and management for every phase of significant projects or programs to assure on-schedule completion within or below budget and in accordance with contractual obligations. The Project Manager must be capable of managing a project or program valued up to $100 million in total installed cost. Minimum requirements include:

- Bachelor's Degree in Engineering from an accredited university.
- 10 years verifiable experience in water resource engineering, particularly with dam and water reservoir construction is preferred.
- Prior experience in contracts management and risk management of projects valued at $50 million and above.
- Prior experience working with municipal, provincial, and federal government agencies.
- Knowledge of government laws / regulations and permitting processes with regulatory bodies and coordination with external stakeholders for water license renewal and reporting
- Registered as a Professional Engineer in a Canadian jurisdiction.
- PMP Certification preferred.

Following key positions require bachelor's degree in engineering, professional engineer designation in Canada (with eligibility to become a member of Nunavut Associate of Professional Engineers and Geoscientists) and a minimum 10 years related and verifiable experience:

- Design Manager (**3 points**)
- Hydrology / Hydraulics Engineer (**3 points**)
- Geotechnical Lead (**3 points**)
- Embankment Dam Engineer (**3 points**)
- Construction Planner / Constructability Lead (**2 points**)

Remaining positions will be scored based on their collective experience (**4 points**). Examples of positions (but not limited to), as follow:

- Quality Control Lead
- Contract Administrator
- Hydrogeologist
- Civil Engineer
- Mechanical Engineer
- Electrical Engineer
- Telemetry / SCADA lead
- Professional Quantity Surveyor (requires a PQS designation)
- Project Scheduler
- Site Inspectors
- Sub-consultant key staff

Construction Contract Administrator:
The Contract Administrator shall have minimum 10 years related experience and have: sound knowledge of design standards, municipal specifications, standard drawings, materials, and methods associated with pump stations, water conveyance piping, reservoirs or dams/roadways, earth/rock excavation construction. Proven analytical, communication, and negotiation skills. Ability to interpret critical path schedules. Demonstrated experience on similar large and complex civil engineering efforts having a value of not less than $20,000,000. Designations such as P.Eng., CET, RCCA, CCCA or similar is preferred.

Construction Inspector
Construction inspectors shall have minimum 7 years' experience with municipal construction projects and be capable of demonstrating experience with Inspection and Test Plans, quality control procedures, materials testing, surveying with transit and level equipment, earth and rock quantity calculations, compaction requirements and related equipment, concrete construction, etc. Designations such as CET, RCSI or similar is preferred.

Describe your relationship or account management system and how you will ensure service delivery issues with the City are being addressed and a continuous improvement culture is enforced (**2 points**)

Proponent to include all Sub-Consultant's (if applicable) along with their position within the Project Team. Provide a summary of key Project Team personnel, and include the information below:

.1 Name.
.2 Corporate affiliation.
.3 Role and title on the Project, including the period for which the individual is to be associated with the Project, and the extent of the individual's time that will be devoted to the Project during that period; and

.4 List any reference Projects provided in Section B (do not provide Project details) and describe the individual's role on each of the Projects.
.5 Demonstration of previous project experience with the prime consultant.

Include the individual's resume immediately after the individual's summary. It is the City's understanding that the Project Team proposed by the Proponent in this section will be committed to the full delivery of the assignment. Changes to the Proponent's Project Team must be approved by the City.

3.1.5 Section F – Value Add (**5 points**)

Describe any unique contributions your organization can deliver to the City within your submitted fee proposal. Do not include any value-added service which is not priced/included in your fee proposal. You may wish to discuss one or more of the following:

- Training opportunities for local Inuit / local youth / disadvantaged persons
- Indicate innovation that is being brought to the team that is relevant to the project and clearly explain the value added by it to the project and how it is significant.
- Use of BIM
- Your proposed value-add not captured elsewhere in the response.
- Proposed additional functionality to meet the City's program requirements.

3.1.6 Not Used

3.1.7 Section H – Mandatory Submission Requirements (pass/fail)

Provide all mandatory requirements, as identified in Section 4.3. Proponents who fail to submit mandatory items will not proceed to the next phase of evaluation.

3.2 Financial Submission Requirements

3.2.1 Consultant's Professional Fees (**15 points**)

Submit a completed and unqualified Cost Submission Form, included in Appendix A, along with a Consultant's corresponding level of effort fee table, complete with positions, hours, rates, and fee breakdown, based on the work being requested under this RFP for a Fixed Fee. The level of effort table must be broken up based on major project tasks/ phases (i.e., project definition, preliminary engineering, detailed design phase, tender support, contract administrator/ site inspection, etc.).

The fee table must also include a breakdown on expenses/ disbursements, based on the requirements described in the Terms of Reference. The Proponent must use per diem rates established by the National Joint Council for the Territory of Nunavut. The Proponent will be responsible for transportation requirements and must include this in their fee proposal for expenses/ disbursements.

The completed Cost Submission Form and level of effort fee table shall form part of the contract document to be used between the City and the Preferred Proponent. The rates included in the fee table will be used in the event the scope of work is changed and provisions of the contract value to be changed during the project period.

Note: Proponent fees and staff charge rates shall include all miscellaneous project expenses such as printing, copying, plotting, film, presentation materials, courier, computers, field equipment, cell phones, office supplies etc. The City will not pay for any flat rate administration charges on top of invoices and there will be no mark-up allowed for any sub-consultant fees. Proponent to assume 2-week turnaround times for all submittals to the City with these considered as hold points and any design work progressed during this time is at the Proponents risk. **Any other financial qualifications which are not priced within the proposal may be subject to the bidder being disqualified.**

Additional fees for annual inflation will not be entertained. Proponent to ensure annual staff rates presented ion Appendix A cover any escalation and inflation costs.

The Financial Submission will not be opened until after the evaluation of the technical submission has been completed and satisfied per the required criteria.

4. EVALUATION

4.1 Evaluation Committee

The evaluation of Proposals will be undertaken by an Evaluation Committee appointed by the City. The Evaluation Committee may consult with technical, financial, and other advisors, as the Evaluation Committee, in its sole discretion, may decide. The Evaluation Committee will reach a consensus through discussions internal to the Committee.

4.2 Evaluation Stages

Proposals will be evaluated in four stages:

4.2.1 Evaluation of Mandatory Criteria

Proposals that do not meet the mandatory criteria will be rejected (Refer to Section 4.3 below).

4.2.2 Technical Evaluation – Total Value 85 Points

Subject to the Evaluation Committee's right to reject an unacceptable Proposal under Section 4.4, the Evaluation Committee will evaluate and score the Proposal information provided using Table 2 in Section 4.5 as a guide to assign scores. For each criterion, each Proposal will be assessed, and points will be awarded on the basis of the extent to which the requirements of the Request for Proposal documents are satisfied, and the comparative merit of the individual Proposal as compared to other Proposals.

Proposals will be ranked from highest to lowest in terms of meeting the City's requirements and containing technical merit. Proponents are required to achieve a minimum score of 70% (59.5/85 points) on the Technical Evaluation, in order to qualify for review of the Financial Submission.

Technical scores will be computed based on each category weighting multiplied by a rating value as follows:

Rating Key:
1 = Does Not Meet Basic Criteria
2 = Partially Meets Basic Criteria
3 = Meets Basic Criteria
4 = Exceeds Basic Criteria
5 = Significantly Exceeds Basic Criteria

An evaluation with rating values of 2 or less may be subject to disqualification at the City's discretion.

The City may request to interview any of the technically qualified firms if further clarifications are required.

4.2.3 Financial Evaluation – Total Value 15 Points

Financial evaluation of cost criteria will be conducted after evaluation of the technical criteria and reference checks.

A total of 15 points will be awarded on the basis of the Fixed fee Proposal, and the distribution of fees to each phase of the Project.

The points for price will be awarded as follows:

The score for the Financial Submission will be in accordance with the following formula:

$$\textit{Proponent Score} = \frac{\textit{Lowest Financial Offer}}{\textit{Proponent Financial Offer}} \times 15 \text{ points}$$

Note: The costs are initially assessed to determine if they represent a viable level of funding for the workload. Those that are deemed unviable may be rejected. For example, if in the City's experience, the costs represent a level of staffing that is known to be too low to accomplish the work, the proposal may be rejected on that basis. Conversely, if in the City's experience, the costs represent a level of staffing that far exceeds the workload, then the proposal may be rejected.

4.2.4 Selection

The Evaluation Committee will rank the Proponents, using the combined Technical and Financial score, from which it will select the Preferred Proponent. The Preferred

Proponent's Proposal will be recommended to the City for the award of a contract for Consultant services based on the Proponents standing in the evaluation review process.

4.3 Mandatory Requirements

As indicated in Section 1 of this Request for Proposal, Proponents may be individual firms, or consortia of firms. In order for Proponent's Proposals to be considered for further evaluation they must demonstrate in their Proposals that the following mandatory requirements can be met.

Proponents must:

.1 Provide evidence satisfactory to City from the Proponent's insurer that the Proponent is able to obtain the insurance coverage as specified in APPENDIX E City's Standard Service Agreement.

.2 Proponent's latest valid WSCC/ WSIB Certificate of Clearance – to be submitted within 30 days of award.

.3 Include a completed sign-off of Proposal submission, as per the requirements in APPENDIX F; and

4.4 Rejection of Unacceptable Proposals

The Evaluation Committee may at any time reject a Proposal without completing a full evaluation (including a Proposal from a Proponent that complies with the Mandatory Requirements), if in the judgment of the Evaluation Committee further consideration of the Proposal would not be acceptable as the basis for a contract considering the evaluation criteria indicated in Section 4.5 below.

The City reserves the right without liability, cost, or penalty, in its sole discretion to disqualify any Proposal before its full evaluation if the Proposal reveals a conflict of interest, incorrect information, or misrepresentation by the Proponent of any information provided in its Proposal. The City further reserves the right without liability, cost, or penalty, in its sole discretion to disqualify any Proposal where there is evidence that the Proponent, its employees, agents or representatives colluded with one or more other Proponents or any of their respective employees, agents or representatives in the preparation of the Proposal.

4.5 Evaluation Criteria

The Evaluation Committee will evaluate eligible Proposals to determine the Proposal which best meets the needs of the City, using the weighting criteria indicated in Table B below as a guideline.

***Table B** – RFP Evaluation Criteria*

EVALUATION CRITERIA	WEIGHTING

Technical Submission	
Section A – Understanding of the Project	5 points
Section B – Reference Projects	15 points
Section C – Methodology & Work Plan	25 points
Section D – Corporate Qualifications and Experience	5 points
Section E – Qualifications and Experience	30 points
Section F – Value Add	5 points
Technical Score Sub-Total:	**85 points**
Financial Submission	
Consultant Fees – Cost Submission Form	15 points
Financial Score Sub-Total:	**15 points**
Total RFP Evaluation Score:	**100 points**

5. TERMS AND GENERAL CONDITIONS

5.1 Terms and Conditions

5.1.1 Submission of a Proposal constitutes acknowledgement that the Proponent has read and agrees to be bound by all the terms and conditions of this Request for Proposal.

5.1.2 The City will not make any payments for the preparation of a response to this Request for Proposal. All costs incurred by a Proponent will be borne by the Proponent.

5.1.3 This is not an offer. The City does not, by virtue of this Proposal call, commit to an award of this Proposal, nor does it limit itself to accepting the lowest price or any Proposal submitted, but reserves the right to award this Proposal in any manner deemed to be in the City's best interest.

5.1.4 Proponents may not amend their proposal after the closing date and time but may withdraw their proposal at any time prior to acceptance by the City and issuing a Letter of Intent.

5.1.5 The City has the right to cancel this Request for Proposal at any time and to reissue it for any reason whatsoever, without incurring any liability and no Proponent will have any claim against the City as a result of the cancellation or reissuing of the Request for Proposal.

5.1.6 The City will not be responsible for any Proposal that does not indicate the Request for Proposal reference, and the Proponent's name.

5.1.7 The City will not be responsible for any Proposal that is delivered to any address or in any manner other than that provided in Section 2.1 of this Request for Proposal.

5.1.8 If a contract is to be awarded as a result of this Request for Proposal, it will be awarded to the Proponent whose Proposal for each service, in the City's opinion, provides the best potential value to the City and is capable in all respects to perform fully the contract requirements and has the integrity and reliability to assure performance of the contract obligations.

5.1.9 If the City decides to award a contract based on a submission received in response to this Request for Proposal, the Successful Proponent will be notified of the intent to award in writing, and the subsequent execution of a written agreement shall constitute the making of a Contract. Proponents will not acquire any legal or equitable rights or privileges whatsoever until a Contract is signed by both parties. In the event of any inconsistency between this Request for Proposal, and any ensuing contract, the contract shall govern.

5.1.10 The contract will be in the form of the City's standard "City of Iqaluit Services Agreement" and it will contain the relevant provisions of this Request for Proposal, the accepted Proposal as well as such other terms as may be mutually agreed upon, whether arising from the accepted Proposal or as a result of any negotiations prior or subsequent thereto. The City reserves the right to negotiate modifications with any Proponent who has submitted a Proposal.

5.1.11 A copy of the Services Agreement is included as APPENDIX 'E'.

5.1.12 Any amendment made by the City to the Request for Proposal will be issued in writing and sent to all who have received the documents.

5.1.13 An Evaluation Committee will review each Proposal. The City reserves the exclusive right to determine the qualitative aspects of all Proposals relative to the evaluation criteria.

5.1.14 Proposals will be evaluated as soon as practicable after the closing time. No detail of any Proposal will be made public except the names of all parties submitting Proposals.

5.1.15 The proposal and accompanying documentation submitted by the proponents are the property of the City and will not be returned.

5.1.16 Proponents must acknowledge receipt of any addenda issued by the City in their Proposal.

5.1.17 Proponents shall disclose in its Proposal any actual or potential conflicts of interest and existing business relationships it may have with the City, its elected or appointed officials or employees. The City may rely on such disclosure.

5.1.18 Proponents and their agents will not contact any member of the City Council, City Staff or City Consultants with respect to this Request for Proposal, other than the City Representative named in section 2.2, at any time prior to the award of a contract or the cancellation of this Request for Proposal.

5.2 No Collusion

By submitting a Proposal, the Proponent, and each firm, corporation or individual member associated with the Proponent's Proposal submission, represents, and confirms to the City, with the knowledge and intention that the City may rely on such representation and confirmation, that its Proposal has been prepared without collision or fraud, and in fair competition with Proposals from other Proponents. Include confirmation of this under Item 3.1.8 of the Proposal submission.

5.3 Conflict of Interest

Proponents shall disclose any potential conflicts of interest and existing business relationships they may have with Colliers Project Leaders, the City, its elected officials or employees, or any known participants in the Project. The City may rely on such disclosure.

Under Item 3.1.8 of the Proposal submission, include confirmation of the Proponent's agreement to conform to the conflict-of-interest requirements and disclosures as indicated in Supplementary Conditions SC2 – CONFLICT OF INTEREST.

5.4 Accuracy of Information

While the City has used considerable efforts to ensure an accurate representation of information in the Request for Proposal, the information contained in this Request for Proposal is supplied solely as a guideline for Proponents. The City gives no representation whatsoever as to the accuracy or completeness of any of the information set out in this Request for Proposal, or any other background or reference information or documents prepared by third parties and made available to Proponents. Proponents will make an independent assessment of the accuracy and completeness of such information and will have no claim whatsoever against the City or its representatives, agents, consultants, and advisors, with respect to such information.

5.5 Confidentiality

Proponents shall treat all information received through this Request for Proposal process and subsequent contract award as confidential and will not disclose such information to any person except with the prior written consent of the City.

Under Item 3.1.8 of the Proposal submission, include confirmation of the Proponent's agreement to conform to the confidentiality requirements as indicated in Supplementary Conditions SC1 – CONFIDENTIALITY. The Consultant shall ensure that all drawings, specifications, and other documentation prepared for the Project and designated as confidential by the Owner, are prominently stamped on each page or sheet of each document with the word "CONFIDENTIAL" prior to release for construction bidding purposes or during the course of the Work.

5.6 Working Language

All Proposals must be written in English.

5.7 Terms of Payment

The Proponent shall be reimbursed monthly for works completed for each service provided. Invoices are to be submitted on a monthly basis, and shall include:

.1 the project title.

.2 the service contract number.

.3 a description of the work completed.

.4 billing summary, which includes the tasks as set forth in the costing submission, the proposed costs, cost to date, percentage invoiced to date, and the percentage of work completed to date for each task.

.5 backup for all disbursements (time sheets may be requested).

.6 Consultant will be required to provide breakdown on lump sum items against key deliverables.

The monthly invoice should be reviewed as a draft by the Consultant and the Project Manager in order to validate the fee and services being claimed. The Proponent is to update the invoice (as required), as per comments/ feedback received from the Project Manager. The Project Manager and Proponent are to determine at the Project Kick-Off meeting the date which draft monthly invoices are to be reviewed.

The final invoice is to be submitted to the Project Manager for processing with the City. Invoices that are issued directly to the City's Accounts Payable Department will not be processed. Invoices must be submitted for payment by the 15th of every month, for previous months work (e.g., invoice must be submitted by February 15th for work completed up to January 31st).

No payment will be made for the cost of work incurred to remedy errors or omissions for which the contractor is responsible. No additional invoicing will be accepted beyond what the City has agreed to as per the contract. At no time shall the contract upset limit be exceeded without prior written authorization from the City.

5.8 Cash Flow Expenditure Forecast

The Proponent is to submit a cash flow expenditure forecast identifying how the Proponent anticipates invoicing the City on a monthly process, based on the established schedule, and status of key deliverables. An update cash flow expenditure forecast is to be submitted with every monthly invoice including earned value reporting metrics and graph. Submit an initial cash flow expenditure forecast within ten (10) business days of contract award.

5.9 WSIB/ WSCC Certificate

Under Item 3.1.8 of the Proposal submission, include submission of the Proponent's latest WSIB or WSCC Certificate of Clearance (failure to submit a certificate or letter of exemption from coverage with the Proposal may result in disqualification of the Proposal). Proponents with no WSCC coverage must apply to the Government of Nunavut with 10 working days of starting operations.

5.10 Health and Safety

The successful Proponent shall provide the City a copy of its Health and Safety plan within 10 calendar days of execution of the contract for any field services or site investigations to be completed as part of this scope of work. The successful Proponent shall comply at all times with the City's health and safety requirements while working in Iqaluit.

5.11 Project Status Reporting

The Consultant will be required to provide monthly status reports, which must communicate the following: assignment status, work completed to date, work remaining, balances outstanding, schedule progress (baseline and approved changes), and financial status (original contract value, current contract value, % complete vs. % spent). The Consultant shall also include key high-level risks and issues (including potential mitigations) that have the potential to affect the Consultant's scope of work or the Project's overall objectives. For the Preliminary Design (Phase II) submission and beyond to design completion, the Consultant shall also provide list of all anticipated design drawings for the project, with corresponding percentage complete listed. The Project Status Report is to be submitted to the City's Project Manager.

The schedules for the work efforts in the project will be established, tracked, and controlled through the continuing use and updating of a CPM network scheduling program. This will provide project management staff with the schedule status of each task on a monthly basis and will identify any task which is behind schedule and could adversely affect the overall project schedule.

5.12 Consultant Performance Evaluation Reporting

As part of The City's commitment to a continuous improvement process the successful Proponent's services will be evaluated on an annual basis and at project completion to ensure level of service is satisfactory and in line with Contractual commitments. The completed evaluation will be issued to the Consultant and a meeting will be arranged with the City to discuss any corrective actions required.

6. CONSULTANT SCOPE OF WORK

The scope of work is based primarily on the completed studies by Stantec (2022) and EXP (2020). The full scope of work for construction is to be reviewed and revised after field investigations are completed and during the design development process.

Currently there are three major components to the Project:

- Raw Water Extraction
- Raw Water Conveyance
- Raw Water Storage

The overall design process for this project will generally proceed through the following Phases:

Phase I – Project Definition and Concept Design
Phase II – Preliminary Design Report
Phase III – Design Development (50%)
Phase IV – Final Design (90%, 100%)
Phase V – Tender Support
Phase VI – Contract Administration and Site Supervision
Phase VII – Closeout

The project will incorporate the NMS specifications format and utilize a CCDC standard construction Contract.

6.1 Phase I: Project Definition and Concept Design

This task will include:

1. Attend project kickoff meeting.
2. Review of background documents including previously completed studies and concepts.
3. Prepare Gap Analysis reporting.
4. Perform the following investigations. The detailed requirements for each investigation can be found in Appendix G - Supplementary Scope of Work Details:
    a. Topographic Survey
    b. Geotechnical Investigation
    c. Environmental Site Assessment
    d. Physical/Biological/Socio-Economic Environment Impact Assessment

5. Define more fully the City's project requirements and develop Project Scoping and Work Breakdown Structure, Master Schedule, and Construction Budget.

6. Project Execution Plan
Develop and submit for review and approval a Project Execution Plan which will outline the Consultant's responsibilities and task deadlines and include the agreed scoping, budget, and project requirements details. The Project Execution Plan is a combination of a work plan for the project team and a detailed project delivery plan that will be the basis for managing the project. The plan will incorporate key program design and construction elements such as:

- Project Description and Objectives
- List of Deliverables
- Project Tasks and Schedule (Work Plan)
- Project Schedule and Critical Path
- Team Organization
- Team Responsibilities
- Communications & Stakeholder Engagement
- Quality Control
- Design Management
- Project Controls (Schedule & Cost)
- Change Management
- Risk Management
- Construction Management

The Plan will be issued to the City shortly after project inception and will be followed as a guide during all subsequent project activities. On a regular basis, the Plan itself is reviewed and updated to remain current with any changes in project scope, schedule, staffing or administrative procedures.

7. Quality Assurance and Quality Control
Prepare and submit for approval a project specific Quality Control Plan. Include detailed descriptions of how the consultant will manage the quality of design and construction activities and the quality of sub-consultant work. Provide details for typical QA/QC checks at various stages of the design and/or deliverables:

- Process review
- Design analysis review
- Preliminary design review
- Value engineering review
- Documented checking for all calculations, drawings, specifications, bid analysis, shop drawings, O&M manuals, etc.
- Specifications review
- Safety review
- Constructability review
- Operability review
- Maintainability review

- Interface/interference review
- Independent or Peer review

8. Concept Design Report
Prepare a concept design narrative which includes a description of all major systems, components, and methods to achieve the design intent. Include a Basis of Design (BOD) document which records the general business expectations, performance criteria and special requirements as they relate to the space, site, and technical design elements. The BOD shall include as a minimum:

- Systems design service life
- Economic parameters for life cycle costing
- Codes and Standards
- Regulatory and Permitting requirements
- Engineering design criteria
- Permanent power source
- Energy performance
- Emergency power control
- Fire / life safety criteria
- Information regarding ambient conditions (climatic, seismic, geologic, structural, etc.)
- Performance criteria linked to the City's project requirements
- Unusual or specific codes, standards, and guidelines to be used
- Specific design methods, techniques, software used in design
- Stand-alone and integrated sequences of operation, including set points and control parameters
- System redundancy requirements
- Structures requirements
- Availability, type, and location of existing utilities
- Operations and maintenance considerations

Include conceptual level design layouts and schematics, general arrangement drawings, and cross sections to define the project base solution.

9. It is anticipated that a number of Technical Memorandum's (TM) will be developed to support on-going design activities. TM's may be required throughout the design process and could include items such as:

- Existing condition reporting
- Granular material requirements and local sources
- Dam safety and monitoring of small movements, water pressure, and leakage
- Systems testing, commissioning, and trial operations for final acceptance (minimum extended proving period and warranty)
- Central telemetry process and control philosophy including normal state operations, seasonal shut down, emergency procedures, maintenance activities, safety alerts, etc.
- Material durability and lifecycle assessment

- Power supply sources and feasibility of implementing hydropower devices
- Long lead materials assessment and factory visit requirements (pipe, liner, pumps, etc.)
- Construction planning, sequencing of work, temporary works, staging requirements, and site access constraints
- Water quality assessments of water bodies affected by new reservoir location

10. Chair and minute bi-weekly meetings with the Project Team for the duration of this phase of the design. Consultant Project and Design Manager to attend as a minimum. Allow for one (1) virtual Phase Deliverable(s) Presentation / Review Meeting for this phase of the project with design leads as necessary. Complete updates to design documentation following receipt of stakeholder comments.

Deliverables:

1. Project Execution Plan
2. Topographic survey
3. Geotechnical investigation
4. Blasting Assessment report
5. Environmental Assessment report
6. Socio-Economic Assessment report
7. Concept Design Report, Concept Drawings, Basis of Design
8. Technical Memoranda
9. Granular fill material requirements and suitable borrow sources
10. Master Schedule
11. Participate in quarterly risk workshops
12. Meeting Minutes
13. Phase Deliverable(s) Workshop and Presentation

6.2 Phase II: Preliminary Design Report (30% Submission)

This task will include:

1. Provide schematic level design drawings and information to support the City in finalizing and procurement of all permits, certificates of authorization, etc. to allow for construction and operation of the intake, conveyance, and reservoir.

2. Prepare and submit a Preliminary Engineering Report the requirements of which can be found in the Terms of Reference for the Reservoir, Conveyance, and Intake in Appendix G - Supplementary Scope of Work Details.

3. Prepare and submit a Basis of Estimate to document critical aspects of the project cost estimate for the purpose of mitigating project cost risk. The Basis of Estimate report shall be developed in accordance with AACE best practice and include as a minimum:

- Scope of work - major elements description and schedule milestones
- Markups – prime contractor general conditions, prime contractor overhead, prime contractor profit, builders' risk and liability, payment performance bond, level of design contingency, escalation rate.
- Estimate Classification – include accuracy level
- Estimate methodology – provide bottoms-up approach with breakdown of labor, equipment, and materials.
- Cost resources – such as RS Means, consultant historical data, vendor quotes, estimator judgement.
- Labor Costs – describe labor cost breakdown including workers compensation, unemployment taxes, fringe benefits, medical insurance.
- Taxes
- Major Assumptions – production rates, construction techniques, processes for installations, costs for mobilization/demobilization, unit rate costs reference, insufficiently detailed cost assumptions, excluded costs.

4. Prepare draft plans and reports to support funding, regulatory approvals and construction and operation of the intake, conveyance, and reservoir. Reports will be prepared and forwarded for review and approval by the City, and will include but not necessarily be limited to:

1. Infrastructure Canada Greenhouse Gas Emissions Assessment Report. Details of the requirements can be found at: https://www.infrastructure.gc.ca/pub/other-autre/cl-occ-eng.html (Section 2)

2. Environmental Management Plans (EMP) that accounts for all project phases (construction, operating, decommissioning) and provides a framework by which to assess, track and document the project's environmental compliance requirements and provides a basis for the systematic management of environmental risks. The EMP is designed to implement, and form a basis for, the environmental protection and mitigation measures described in the Environmental Protection Plan (EPP) for this project. The EMP acts as the overarching document for both the EPP and Emergency Response Plan (ERP) by outlining the roles and responsibilities for project personnel for both documents and describes the legislation governing these documents. The EPP describes the environmental protection measures to be implemented throughout the project and acts as a resource for the City and its contractors to avoid or mitigate potential adverse environmental effects to receptors. The ERP provides guidance to project personnel for responding to an emergency situation, as well as it covers all aspects of emergency planning and response.
    i. Emergency Response Plan (ERP) including Comprehensive Spill Prevention and Response Plan – must consider hazardous waste, fuel handling, storage, disposal, spill prevention measures, staff training and equipment list, and emergency contacts and reporting procedures.

ii. Environmental Protection Plan (EPP) that provides regulatory context, project roles and responsibilities, Environmental considerations (vegetation, wetlands and watercourses, wildlife and wildlife habitat, fish and fish habitat, species at risk or species of special status, heritage, and cultural resources), Environmental protection measures, monitoring and inspection, contingency, and emergency response plan.

iii. Erosion and Sediment Control Plan (ESCP) that identifies the project components, areas susceptible to erosion and sedimentation, site specific mitigation measures and monitoring approach.

3. Prepare preliminary operations and maintenance manual.

5. Support the City as required with the regulatory approvals and permitting process. This may include, but not limited to corresponding with Authorities Having Jurisdiction, government and permitting bodies, addressing comments, and participating in public consultations. As the level of effort related to the permitting support is difficult to quantity, a cash allowance has been established and work will be completed on a Time and Material basis. Approval shall be received from the City prior to utilizing the Cash Allowance and an estimated cost shall be provided by the Consultant based on the requested task prior to commencing.

6. Assume participation in team workshops in Iqaluit with Key consultant and City staff. Assume three (3) visits with three (3) day working sessions each at City offices.

7. Chair and minute bi-weekly meetings with the Project Team for the duration of this phase of the design. Consultant Project and Design Manager to attend as a minimum. Allow for one (1) virtual Phase Deliverable(s) Presentation / Review Meeting for this phase of the project with design leads as necessary. Complete updates to design documentation following receipt of stakeholder comments.

Deliverables:

1. Draft Environmental Management Plan (EMP) and related plans (ERP, EPP, ESCP)
2. Draft Operations and Maintenance Manual
3. Infrastructure Canada Greenhouse Gas Emissions Assessment
4. Preliminary Engineering Report (30 % Submission Milestone)
5. Basis of Estimate
6. Results and reports of five (5) investigations in 6.1.2.
7. Preliminary Design Drawings (30%)
8. Class C Cost Estimate
9. Construction and Commissioning Schedule
10. Meeting Minutes
11. Participate in quarterly risk workshops
12. Phase Deliverable(s) Workshop and Virtual Presentation

6.3 Phase III: Design Development (50% Submission)

This task will include:

1. Prepare Preliminary 50% Drawings and Specifications (NOTE- where applicable, the City of Iqaluit will provide their "front-end" specification and standard specification sections to be used by the proponent in preparing the procurement documents). The requirements of the 50% submission can be found in the Terms of Reference for the Reservoir, Conveyance, and Intake in Appendix G - Supplementary Scope of Work Details.

2. Commissioning Plan: The consultant shall prepare a Commissioning Plan for the Long-Term Water Project. The Commissioning Plan shall be developed by the Consultant in an effort to plan, organize, schedule, execute, and document the commissioning tests, activities, and deliverables associated with the Project. Inclusion of the Commissioning Plan with the contract documents shall provide Contractor awareness of the level of effort the City requires during commissioning. The Commissioning Plan shall be included as an appendix the associated technical specifications.

   Pre-commissioning:
   - Contractor's Commissioning Plan, test plans, and test forms
   - Consultant's draft operations manuals
   - Factory acceptance tests
   - Delivery acceptance inspections
   - Storage and maintenance of equipment
   - Structural water tightness tests
   - Piping system pressure/leakage tests and cleaning/flushing
   - Verification of installed assets per design database (recording of installation dates)
   - Electrical equipment tests (e.g., power distribution systems, wire and cables, motors, and variable frequency drives
   - Mechanical equipment pre-operational checkouts and manufacturers' installation certifications
   - Instrumentation and control system tests (e.g., network and communication systems, signals & cables, instrument calibration, and input/output checkouts)
   - Auxiliary system tests (e.g., cathodic protection systems, heating, ventilation, and air conditioning (HVAC) systems, public address systems, access control systems, closed circuit television (CCTV) network systems, fire detection and alarm systems, and fire suppression sprinkler systems)
   - Vendors' and Consultant's training lesson plans
   - Site Acceptance Tests (SATs)

   Start-Up:
   - Reliability Acceptance Tests (RATs)
   - Loop tuning
   - Performance tests

- Maintenance of equipment
- Field Inspection (Contractor's punch list)
- Consultant's Final Operations Manual
- Substantial Completion

Activation:

- Maintenance of equipment
- Vendor Final O&M manuals
- Final Inspection
- Field Acceptance and Notice of Completion (Commencement of warranty periods)
- Final Acceptance

The Commissioning Plan is to include a detailed matrix of commissioning activities, deliverables, and responsibilities.

3. Prepare the Final Operations and Maintenance Manuals.

4. Prepare the Final Environmental Management Plan (EMP) and related plans (ERP, EPP, ESCP)

5. Support the City as required with the regulatory approvals and permitting process. This may include, but not limited to corresponding with Authorities Having Jurisdiction, government and permitting bodies, addressing comments, and participating in public consultations. As the level of effort related to the permitting support is difficult to quantity, a cash allowance has been established and work will be completed on a Time and Material basis. Approval shall be received from the City prior to utilizing the Cash Allowance and an estimated cost shall be provided by the Consultant based on the requested task prior to commencing.

6. Participate in team workshops in Iqaluit with Key consultant and City staff. Assume 2 visits to Iqaluit with 3 day working sessions at City offices.

7. Prepare and deliver design summary presentation to City Council

8. Conduct a constructability review of the 50% level documents. The constructability review of design packages is considered by the City to be an integral part of the Proponent's quality assurance program. It is one of the keys to claims avoidance and is accomplished by a number of select specialists prior to advertising a tender package and has the following specific objectives:

1. Improve quality of designs, drawings, specifications, and related documents.
2. Review the project specifications and contract drawings and identify any ambiguities, omissions, conflicts, and design oversights.
3. Verify the identification and appropriateness of construction milestones.
4. Consider maintainability aspects of the design.

Part 1: Provide a detailed narrative describing the sequencing of how each major element of work will be constructed from mobilization to completion. Compliment

this with a month-by-month plan view of the site pointing our major activities and color coding to visually show anticipated progression of activities.

Part 2: Review construction documents for completeness of scope and report on any anomalies with respect to the following:

- Site logistics and constraints
- Environmental impacts of proposed construction methods
- Clarity of documents
- Compatibility of plans, specifications, and standards
- Subsurface soil data
- Reasonableness of construction schedule
- Construction sequencing & phasing
- Methods of construction
- Construction restrictions
- Erosion and sedimentation control
- Maintenance and protection of traffic
- Construction site access for each phase
- Material delivery and lay down areas
- Specialized equipment needs
- Local event conflicts
- Material acquisition

9. Chair and minute bi-weekly meetings with the Project Team for the duration of this phase of the design. Consultant Project and Design Manager to attend as a minimum. Allow for one (1) virtual Phase Deliverable(s) Presentation / Review Meeting for this phase of the project with design leads as necessary. Complete updates to design documentation following receipt of stakeholder comments.

Deliverables:

1. Final Environmental Management Plan (EMP) and related plans (ERP, EPP, ESCP)
2. Commissioning Plan
3. Final Operations and Maintenance Manual
4. 50% Preliminary Design Drawings and Specifications
5. Constructability review report and drawings sequence
6. Preliminary Bill of Quantities
7. Construction and Commissioning Schedule
8. Class B Cost Estimate
9. Participate in quarterly risk workshops
10. Meeting Minutes
11. Phase Deliverable(s) Workshop and Virtual Presentation

6.4 Phase IV - Final Design (90 % and 100 % Submission Milestones)

This task will include:

1. Following the 50% design submission, the City will conduct an independent 3rd party constructability review. Comments arising from this review are to be captured and addressed as part of the 90% submission.

2. Prepare 90% and 100% Drawings and Specifications. The requirements of the 90% and 100% submissions can be found in the Terms of Reference for the Reservoir, Conveyance, and Intake in Appendix G - Supplementary Scope of Work Details.

3. In the event that cost estimates exceed City budget and contingency limits by 10%; coordinate a value engineering exercise to determine if any potential cost savings are available. The objective of this exercise will be to test and challenge design solutions to precipitate value engineering ideas which can be ranked as options for alternative solutions to be brought forward to the City for consideration. Agreed alterations to the design to be incorporated in subsequent design submissions at no additional cost to the City.

4. Finalize related plans and reports.

5. Support the City as required with the regulatory approvals and permitting process. This may include, but not limited to corresponding with Authorities Having Jurisdiction, government and permitting bodies, addressing comments, and participating in public consultations. As the level of effort related to the permitting support is difficult to quantity, a cash allowance has been established and work will be completed on a Time and Material basis. Approval shall be received from the City prior to utilizing the Cash Allowance and an estimated cost shall be provided by the Consultant based on the requested task prior to commencing.

6. Assume participation in team workshops in Iqaluit with Key consultant and City staff. Assume two (2) visits with three (3) day working sessions at City offices.

7. Chair and minute bi-weekly meetings with the Project Team for the duration of this phase of the design. Consultant Project and Design Manager to attend as a minimum. Allow for one (1) virtual Phase Deliverable(s) Presentation / Review Meeting for this phase of the project with design leads as necessary. Complete updates to design documentation following receipt of stakeholder comments.

8. Contractor Pre-qualification:

   Develop a Contractor pre-qualification document which shall include mandatory items such as:

   1) Minimum bonding requirements
   2) Financial capacity
   3) Safety record
   4) Past project change order metrics
   5) Quality management program

6) Minimum experience and qualifications levels for Contractor's Project Manager and Site Superintendent.
7) Technical support team minimum qualifications
8) Sub-contractor qualifications and experience levels (piling, blasting, crushing, concrete, dam construction, mechanical/electrical, etc.

Deliverables

1. 90% design deliverables including drawings and specifications.
2. 90% Bill of Quantities
3. Class B cost estimate with 90% submission
4. Value Engineering report (as needed)
5. 100% design deliverables including drawings and specifications. Drawings provided in PDF and AutoCAD
6. 100% Bill of Quantities
7. Final construction and commissioning schedule with 100% submission
8. Class A cost estimate with 100% submission
9. Finalize all related facility specific plans and reports.
10. Participate in quarterly risk workshops
11. Meeting Minutes
12. Phase Deliverable(s) Workshop and Virtual Presentation

6.5 Permitting Requirements

This task will include:

1. Submit a Project Proposal to Nunavut Planning Commission (NPC) during the Preliminary Engineering Phase work. Proponent should assume an extensive review program and allow for three stages of NIRB comments and related design document updates and re-submission. Project Proposal requirements available at nirb.ca and will generally include the following:

    - Project description including purpose, complete scope of work, timing, authorizations, and alternatives. Include any quarry or borrow pit operations.
    - Preliminary engineering drawings & sections describing the functional design complete with site layouts, access roads, temporary haul roads, general limits of construction etc.
    - Description of the existing environment (biophysical and socioeconomic).
    - Identification of potential environmental and socio-economic effects.
    - Identification of potential cumulative effects.
    - Identification of mitigation measures and potential residual impacts.
    - Non-technical summary description of the proposed project
    - A map of the project which is included in the mapping portion of the application identifying the local scale and any major components for the project (i.e., roads, camps) and include the requested electronic files.

2. Submit 75%+ level design documents to Nunavut Water Board in association with City's requirement for amendment to the Class A water license. Similar to the NIRB review assume 3 x iterations of potential comments and updates to design documents.

6.6 Phase V – Tendering Support

This task will include:

3. Tender services including issuing addenda, responding to clarifications, evaluating bid submissions, and providing an award recommendation.

4. Prepare and Issue Issued for Construction (IFC) drawings, incorporating any addenda or clarifications.

Deliverables

1. Responses to bidder clarifications (as required) during the tendering period
2. Tender Analysis and evaluation of submitted tender responses
3. Recommendation of award letter
4. IFC Drawings

6.7 Phase VI - Contract Administration, Site Inspection and Engineering Support Services

Administer the construction contract, and complete full-time inspection of the construction work to ensure compliance with the design documents and City's Type A water license 3AM-IQA1626.

1. Be a representative of the City.

2. Advise and consult with the City and other project stakeholders (e.g., CIRNAC).

3. Have the authority to act on the City's behalf to the extent provided in this RFP and the Contract Documents.

4. Develop a site-specific Quality Control Plan describing tasks, methodology, deliverables, and internal audit procedures. The Plan will cover the following tasks as a minimum:

- Risk Identification
- Pre-Start Meeting with Contractor – Requirements
- Review of Contractor's Required Submission and/or Plans
- General Inspection & Test Plan for all Construction Categories
- Health & Safety Plan incl Emergency Response Procedures
- Environmental Reporting
- Site Meetings
- Special Meetings

- Monitoring the Contractor's QC Plan and other Project Plans
- Progress Payments, Change Orders, Substantial Completion and Final Completion
- Communication protocols with the Contractor and City
- Document Procedures
- Issue Resolution
- Contractor's Performance Reviews
- Submission of Record Documents
- Record Drawings
- Construction Reports
- Review compliance with Quality Control Plan – Internal Audit

5. Construction Safety

   .1 All construction projects performed by the Contractor are subject to federal and territorial safety regulations.

   .2 The Contractor to provide Site Specific Health and Safety Plans in accordance with the contract that is to include emergency response plans, fire plans, and the identification of any additional site-specific issues. The Consultant is to ensure that these plans are adequate and are adhered to.

6. Develop a detailed Inspection & Test Plan (ITP) to cover all construction activities. The ITP shall include:

   - Product characteristics to be inspected, methods of inspection and test, acceptance criteria, frequency, and the report format for documenting the results of an inspection or test.
   - Inspection and test equipment
   - Qualified independent laboratories
   - Appropriate safety and environmental conditions
   - Mandatory inspection hold and witness points beyond which work shall not proceed without specific recorded consent of the authorized representative
   - Requirements for qualifications of the personnel performing inspections or test.
   - Non-conformance procedures
   - Non-conformance root cause analysis and issuing corrective actions
   - Contract substation completion checklist
   - Contract completion and handover checklist
   - Consultant internal audit process

7. Shop Drawings, Contractor Designs and Construction Materials Submissions
   The Consultant is to:
   a) specify in the construction specifications the shop drawings; materials data sheets/information and temporary works designs to be submitted by the Contractor

b) review within five (5) business days of receipt of shop drawings/designs/materials submissions provided by the Contractor to determine conformity with the design concept; intent of the construction documents and indicate to the Contractor general conformance
c) provide comments to and request re-submissions from the Contractor, as necessary
d) provide the Departmental Representative within five (5) business days of receipt of accepted submission, a signed "Reviewed and Accepted" and dated electronic copy

8. Site Visits by the Design Engineers
The Consultant's design engineers are to:
a) perform site technical visits only when work in progress pertains to their respective discipline
b) advise Contractor as to elements to be inspected and the associated timing of their inspections
c) record and report to the Departmental Representative on the progress, quality of work observed at each site meeting, and provide the Contractor and City with written progress reports and lists of deficiencies observed with corrective actions

9. Design services during Construction
The Consultant services during construction are to include, but are not limited to the following activities:
.1 submitting updated drawings and specifications that include amendments and issues raised during tendering
.2 attending and participating in project meetings as requested by the City
.3 performing site inspections for conformance of work as requested by the City
.4 reviewing and replying to Contractor's submittals
.5 advising the City with respect to alternative construction methods or alternative materials proposed by the Contractor
.6 modifying design as required to provide for unexpected field conditions
.7 submitting Site Instructions to the Contractor
.8 providing technical details, cost estimates, drawings, and sketches for contemplated change notices (CCN) and change orders (CO)
.9 assist in the commissioning activities as requested by the City
.10 inspect the completed work, provide list of deficiencies after substantial completion to be addressed prior to issuance of final certificate of completion
.11 review Contractor's end-of-construction deliverables by preparing a list of deliverables, reviewing and ensuring that all end-of-construction deliverables from the Contractor, including but not limited to warranties, as-built record drawings and Operations and Maintenance manuals, have been submitted in specified quantities and format to the City.
.12 review and provide feedback on Contractor's marked-up record drawings for preparation of as-built record drawings
.13 edit CADD files to incorporate Contractor's as-built markups to generate and submit final as-built record drawings
.14 review and comment on O&M Manuals

10. Schedule Review:

The Contract Administrator shall receive and review the Contractor's critical path schedules submitted by the Contractor for practicality/achievability and in conformance with the Contract documents. Analyze the originally submitted (as-bid) critical path schedule in detail. Identify any deficiencies or impracticalities. Deficient, non-conforming schedules shall be returned to the Contractor, noting error(s), and requesting a resubmission. Develop a schedule checklist for monthly reviews and include in tender documents. Impracticalities (e.g., operations which appear out of order, questionable production rates) shall be documented and brought to the contractor's attention.

The Contract Administrator shall review the contractor's progress with respect to the schedule and/or critical path. The schedule and progress should be reviewed with the contractor at every site meeting. Monitor the contractor's progress throughout the construction period and take action as appropriate in the event that the planned schedule is not maintained. If the Contractor is behind schedule, the Contract Administrator shall request an action plan for schedule recovery.

The Contract Administrator shall apply knowledge gained from the critical path schedule to arising issues, including but not limited to delays, deleted, change in the Work or additional Work, potential acceleration, claim negotiations, and/or issue resolution processes, and provide input and detail recommendations to the City with recommended actions.

Provide review and acceptance of contractor baseline schedule submission. Provide monthly reviews of schedule and critical path status.

6. Extension of Contract Time Requests:
   The Contract Administrator shall be familiar with contract completion dates, the charging of working days/calendar days, and any seasonal milestone constraints, if applicable. The Contract Administrator shall receive and evaluate the Contractor's requests for extension of time and provide a comprehensive written report with recommendations to the City within the timeframes specified in the contract.

7. Contractor's Progress Claims
   The Consultant is to:
   a) request from the Contractor prior to the issuance of the first progress claim, a cost breakdown of the Construction award price in detail appropriate to the size and complexity of the Project, or as may otherwise be specified in the Construction Contract and submit the cost breakdown to the City.
   b) review Contractor submitted monthly progress claims (with cost breakdown, statutory declaration and WSIB certificate) in a timely manner and, if acceptable, certify the progress claims for work completed and materials delivered pursuant to the construction Contract and submit them to the City for approval and processing.
   c) measure and record the quantities of labor, materials and equipment involved for the purpose of certifying progress claims if the construction is based on unit prices
   d) verify at each progress payment claim that the Contractor has accurately recorded information on the site as built set of construction documents.
   e) update schedule of work progress.

8. Inspectors Diaries will require the following daily documentation:
    - Date
    - Weather conditions
    - Contractor's hours of work
    - General progress of work
    - Equipment being moved or arriving on the job and its purpose
    - Site visits from City officials, and any specific instructions
    - Instructions given to the Contractor
    - Contractor's claims or complaints
    - Stoppage of work by the Contractor for any reasons
    - Separate time and materials records
    - Complete description of how cuts are excavated, type of equipment used, and difficulties encountered due to either improper equipment or nature of material
    - The source and nature of excavated material and its final disposition including the equipment involved and the time and duration of the work
    - Record of any environmental incidents
    - Record of non-compliance/non-conformance
    - Obtain and record accurate measurements of work done by the Contractor
    - All equipment that is on the contract must be recorded and hours used
    - The number and type of labour shall be recorded
    - The actual hours worked shall be recorded
    - The actual hours not worked shall be recorded
    - Inspection activities and verification results
    - Documented verification of all contract items

9. Instruction Notices to Contractor

    Instruction Notices to the Contractor shall be issued to document concerns and deviations, clarify requirements of the contract, communicate information, and transmit documentation. Instruction Notices shall be signed by the Contract Administrator and the Contractor to acknowledge receipt of the Notice. Examples for the use of Instruction Notices to the Contractor include the following:
    - Approvals
    - Transmittal of documents
    - Safety issues
    - Non-compliance of the contract
    - Warnings
    - Suspension of work/stop work order issued by City or its agents
    - Specific Instructions from the City

10. Change Orders:

    The Consultant is to:

    a) submit to the City in writing, for approval, all requests, and recommendations for changes; and to identify impact on the Contract

b) obtain quotations from the Contractor for contemplated changes, review, assess the effect on construction progress and completion date, and submit recommendations to the City in writing
c) All changes, including those not affecting the cost of the project, must be covered by change orders.

11. Performance Tracking
    Track and report monthly on agreed project KPI's for the purpose of identifying schedule or productivity concerns and negative trends. KPI's could include the following:

Category	KPI
COST	Cost performance index (CPI)
	Estimate at Completion vs Budget
SCHEDULE	Schedule Performance index (SPI)
	Activity Starts & Completions % on time
	Milestone completions on time
CONTRACT ADMIN	Open change items as % of contract value
	Submittals and change orders (aged)
	Approved schedule (age)
SAFETY	Near Miss Recorded
	Lost Time Incidents
RISK	Key Risks Reviewed (%)
	Overdue Risk Mitigation Actions
QUALITY	Non-Conformance outstanding

12. have access to the Work while in progress.
13. Forward all instructions from the City to the Contractor.
14. Carry out and coordinate as applicable Field Reviews / Site Inspections of the work.
15. Examine, evaluate, and report to the City upon representative samples of the work. Document progress of the work through site photographs.
16. As a minimum, complete daily site reviews to determine general conformity of the works and provide weekly written updates on site progress and exception reports.
17. Participate in bi-weekly progress meetings (or more frequently, if required early in the project) with the Contractor, Project Manager and City.
18. Complete shop drawing / submittal reviews and provide engineering support services, as issues arise during construction.

19. Keep the City informed of the progress and quality of the work, and report to the City defects, deficiencies, or contravention of regulatory requirements in the work observed during site reviews.

20. In the first instance, interpret the requirements of the Contract Documents and make findings as to the performance thereunder by both the City and the Contractor.

21. Render interpretations in written and graphic form as may be required with reasonable promptness on the written request of either the City or the Contractor.

22. Render written findings within reasonable time, on all claims, disputes, and other matters in question between the City and the Contractor relating to the execution or performance of the work or the interpretation of the Contract Documents.

23. Render interpretations and findings consistent with the intent of and reasonably inferable from the Contract Documents; showing partiality to neither the City nor the Contractor.

24. Have the authority to reject work which does not conform to the Contract Documents, and whenever it is necessary or advisable for the implementation of the intent of the Contract Documents, have the authority to require special inspection or testing of work, whether or not such work has been fabricated, installed, or completed.

25. Review and take other appropriate action with reasonable promptness upon such Contractor's submittals as shop drawings, product data, and samples, for conformance with the general design concept of the Work as provided in the Contract Documents.

26. Maintain an electronic log to evidence the status and disposition of Shop Drawings and other required Contractor submittals. The log shall be provided and reviewed at every Project meeting.

27. Respond to Requests for Information (RFI) and maintain an electronic log to accurately document the status of all RFI's. The log shall be provided and reviewed at every Project meeting.

28. Prepare Contemplated Change Notices and Change Orders for the consideration of the Project Manager and for the City's approval and signature in accordance with the Contract Documents and maintain electronic logs to accurately document the status of all issued and contemplated CCN's and CO's. The logs shall be provided and reviewed at every Project meeting.

29. Have the authority to order minor adjustments in the Work which are consistent with the intent of the Contract Documents when these do not involve an adjustment in the contract price or an extension of the contract time.

30. Furnish supplemental instructions to the Contractor with reasonable promptness.

31. Receive from the Contractor and forward to the City for the City's review the written warranties and related documents.

32. Receive from the Contractor and review and approve the Contractor's as-built drawings and provide to the City a complete set of electronic as-built drawings.

33. Review any defects or deficiencies which have been observed and reported during that period and notify the Contractor in writing of those items requiring attention by the Contractor to complete the Work in accordance with the Contract.

34. Determine the amounts owing to the Contractor under the Contract, based on the observations and evaluation of the Contractor's application(s) for payment. Verify that amounts owing are reasonable given the level of effort required in labour and materials to perform the work.

35. Issue certificates for payments in the value proportionate to the amount of the Contract and the Contractor's Schedule of Values, of work performed and products delivered to the place of the Work.

36. Review Contractor's plan, schedule and procedures including detailed deficiency list with estimated values; list of outstanding submittals including Contractor's consultants review letters, authority having jurisdiction acceptances, maintenance manuals and record drawings; training, commissioning and start up procedures; hand-over procedures; and any other contract requirements.

37. Substantial Completion of the Project
    The Consultant is to:
    a) review the construction work with the City and the Contractor, and record all unacceptable and incomplete work detected
    b) develop a deficiency list of incomplete items and issue to the Contractor and City
    c) request from the Contractor, review for completeness and adequacy, and provide the City with, all supporting documents in accordance with the Construction Contract
    d) prepare and submit to the City for approval and processing, a Certificate of Substantial Completion as required by the Construction Contract, together with supporting documents properly signed and certified

38. Determine the date of Substantial performance of the work. Issue the Substantial Performance certificate.

39. Verify the validity of the Contractor's application for final payment and issue a certificate of final payment.

40. Complete as built drawings using contractor's redline markup drawings. Coordinate review of contractor warranty, test, and material records.

A non-exhaustive list of required deliverables for this project is provided below:

1. Project initiation documentation, including records of insurance, Works insurance, bi-weekly status reports etc.

2. Quality Control Plan

3. Site specific Health & Safety Plan

4. Inspection and Test Plan
5. Inspector Daily Diaries
6. Weekly Summary Reports with summary of quantities installed
7. Quantities of materials verification documents
8. Monthly construction report
9. Baseline schedule review and monthly critical path schedule reviews
10. Earned value and KPI monthly tracking
11. Safety Plan / Risk Assessments for any on site work (including any COVID-19 mitigation measures).
12. Provide meeting agendas, chair, and provide project meeting minutes for all meetings.
13. Anticipated progress billing milestone.
14. Site visit / inspection reports.
15. Site Instructions to the Contractor
16. Contract administration documents including CCN's, CO's, RFI's, SI's, payment recommendations, submittal records and completion records. This includes claim reviews and extension of time assessments.
17. Substantial and final completion certificates
18. Photographs.
19. Close out report for distribution to regulatory authorities as necessary.
20. Any exception reporting.
21. As built records.

6.8 Phase VII – Closeout Phase

1. For the purposes of this RFP, the Closeout Phase commences the day after the date of Substantial Completion and ends at the end of the warranty period on the 365th day after Substantial Completion.

2. In the Closeout Phase, Services may include the following:

   a. Provide contract administration services throughout the Closeout phase.

b. During Warranty period receive monthly reports from the Contractor on status of warranty and deficiency items and provide Owner with monthly Project status reports.

c. During Warranty period receive information from the Owner, and/or Contractor with respect to any noted warranty items and circulate to all relevant parties in a timely way.

d. At least 15 days but no more than 45 days in advance of the expiry of the Warranty period, ensure that the Contractor provides a detailed Deficiency status report and Warranty Inspection report.

e. Based upon submitted documentation, and within 15 days of the expiry of the Warranty period, advise the Owner with respect to status and value of any outstanding contract deficiencies and warranty items.

.3 Provide record drawings showing all new and existing infrastructure identified during the works, within the project limits. Consultant to allow for the preparation of five (5) hardcopy drawing set and a digital copy (pdf and native electronic file e.g., dwg CAD files).

.4 Prepare City standard project closeout forms / checklist (Consultant and Contractor) to ensure that the project can be financially closed through the City accounts department.

7. SCHEDULE

7.1 Timelines

The Proponent must satisfy the general timelines identified below for the work.

Table C – *Project Schedule*

Milestone	Date
Project Kick-Off Meeting	July 6, 2023
Phase I: Project Definition and Concept Design	September 15, 2023
Phase II: Pre-Design (30% Submission)	January 15, 2024
NIRB Submission	January 30, 2024
Phase III: Preliminary Design (50% Submission)	April 15, 2024
NWB Submission	June 14, 2024
Phase IV: Final Design (90% Submission)	January 20, 2025
Estimated NWB Regulatory Approval	June 14, 2025
Phase IV: Final Design (100% Submission)	July 15, 2025

Contractor Award	October 31, 2025
Commence Construction Activities	November 1, 2025
Substantial Completion	October 31, 2028
Closeout/Warranty Phase	October 31, 2029

7.2 Submission Requirements

Proponent to prepare project schedule in the form of a Gantt chart. The schedule is to include dates for the commencement and completion of each major element of the work, as per the requirements of Table 3. The key elements of the schedule will detail the various assignment milestones. The schedule will form the baseline for assignment.

The schedule will form part of the contract documents. Changes to the project schedule must be approved by the Project Manager by means of a change order. A revised schedule must be submitted describing the approved changes.

APPENDIX A – COST SUBMISSION FORM

Proponent's Name: _____

Proponent's Address: _____

Proponent Email/ Telephone: _____

Provide the following cost breakdown for the services detailed herein that the Proponent is proposing to offer the City of Iqaluit. Proponent to include a fee breakdown per year for consulting fees and disbursements.

Table A1 Fee Table

Item	Description	Unit	Total
1.0	**Phase I: Project Definition**		
1.1	Project Execution Plan	LS	$
1.2	Concept Design Report	LS	$
1.3	Technical Memorandum (assume 10)	LS	$
1.4	Disbursements	LS	$
2.0	**Phase II: Preliminary Design (30% Submission)**		
2.1	Topographic Survey	LS	$
2.2	Geotechnical Investigation (12 x boreholes @ 5 m depth	LS	$
2.3	Geotechnical investigation (12 boreholes @ 10 m depth)	LS	$
2.4	Geotechnical reporting	LS	$
2.5	Geotechnical Baseline Report for Construction	LS	$
2.6	Recommendations for additional Geotechnical Investigation **(Cash Allowance)**	LS	$100,000
2.7	Environmental Site Assessment Phase 1	LS	$

2.8	Environmental Site Assessment Phase 2 **(Cash Allowance)**	LS	$50,000
2.9	Physical/Biological/Socio-Economic Environmental Impact Assessment	LS	$
2.10	Designs, Reports, Plans and Other required Submissions	LS	$
2.11	Disbursements		
3.0	**Phase III: Design Development (50% Submission)**		
3.1	Designs, Reports, Plans and Other required Submissions	LS	$
3.2	Disbursements	LS	$
4.0	**Phase IV: Final Design (90% Submission)**		
4.1	Designs, Reports, Plans and Other required Submissions	LS	$
4.2	Disbursements	LS	$
5.0	**Phase IV: Final Design (100% Submission)**		
5.1	Designs, Reports, Plans and Other required Submissions	LS	$
5.2	Allowance for two (2) additional tender packages	LS	$
5.3	Disbursements	LS	$
6.0	**Regulatory & Permitting**		
6.1	Prepare Application for NPC/NIRB Screening	LS	$
6.2	Permitting Support (Coordinate Review Comments from NIRB Review Process – 3 x iterations)	LS	$
6.3	Prepare Application Update for NWB	LS	$
6.4	Permitting Support (Coordinate Review Comments from Intervenors including NWB, DFO, CIRNAC etc. – 3 x Iterations)	LS	$
6.5	Permitting Support (Not specified elsewhere) – (**Cash Allowance**)	LS	$150,000
7.0	**Phase V: Tendering Support**		

7.1	Tender Support Services	LS	$
7.2	Allowance for two (2) additional tender packages	LS	$
8.0	**Phase VI - Contract Administration, Site Inspection and Engineering Support Services**		
8.1	Contract Administration (assume 1,560 hrs./yr. x 3 seasons and site based)	LS	$
8.2	Site Inspection Services (assume 3,120 hrs./yr. x 3 seasons and site based)	LS	$
8.3	Engineering Support Services (assume 200 hrs./yr. x 3 seasons and site based)	LS	$
8.4	Engineering Support Services (assume 400 hrs./yr. x 3 seasons)	LS	$
8.5	Disbursements	LS	$
9.0	**Phase VII– Closeout Phase**		
9.1	Closeout and Warranty/Deficiency Services (Assume 500 hours)	LS	$
9.2	Supply of As Built Records (including hardcopy and digital files) and Supply of Project History File	LS	$
9.2	Pre-Warranty Expiry Inspection (Subject to City confirmation)	LS	$

COST SUBMISSION SUMMARY		
A	Sub-total (Pre-Contingency)	$
B	Contingency (5% of Sub-total (***Item A***) Above)	$
C	**Sub-Total (Including Contingency – Item A + Item B):**	$
	GST (5%):	**$**
	TOTAL:	**$**

Note: Estimated costs for disbursements (travel, accommodation, per diems) will be reimbursed based on actual cost with no allowance for mark-up.

Use and allocation of contingency included in the Cost Submission Form above (Item B) shall be at the sole written discretion of the City of Iqaluit.

Fees for changes to the work shall be as agreed upon prior to the commencement of services for the change as set out under the contract. For additional work, the proponent shall use the rates detailed below.

POSITION	TEAM MEMBER	Hourly Rates 2023 ($/hr.)	Hourly Rates 2024 ($/hr.)	Hourly Rates 2025 ($/hr.)	Hourly Rates 2026 ($/hr.)	Hourly Rates 2027 ($/hr.)	Hourly Rates 2028 ($/hr.)
Principal / Project Sponsor							
Project Manager							
Design Manager							
Project Engineer							
Contract Administrator							
Inspector							
Insert Position (s)							

Consultant to add positions, as necessary. Each discipline shall provide names for each position, as necessary.

END OF APPENDIX A

APPENDIX B – SUPPLEMENTARY CONDITIONS

Amend the General Conditions as follows:

Add SC1 Confidentiality

SC 1 Confidentiality

.1 The Consultant and the Consultant's employees and sub-Consultants shall not use, copy, disclose or otherwise communicate and information not available to the general public that was gained by them in the course of their duties related to this Contract, except as is necessary in the proper discharge of those duties. This obligation survives the Contract.

.2 All information provided by the Consultant is subject to the disclosure and protection provisions of applicable freedom of information and privacy legislation. Such Act allows any person a right of access to records in the Client's custody or control, subject to limited and specific exceptions.

Add SC2 Conflicts of Interest

SC 2 Conflicts of Interest

The Consultant and the Consultant's employees:

.1 shall conduct their duties related to this Contract with impartiality and shall, if they exercise inspection or other discretionary authority over others in the course of those duties, disqualify themselves from dealing with anyone with whom a relationship between them could bring their impartiality into question.

.2 shall not influence, seek to influence, or otherwise take part in a decision of the Client, knowing that the decision might further their private interests. Any communication with the City's elected officials before contract award shall result in disqualification of the Proponent.

.3 shall not accept any commission, discount, allowance, payment, gift, or other benefit that is connected, directly, or indirectly with the performance of their duties relating to this Contract, that causes, or would appear to cause, a conflict of interest, and

.4 shall have no financial interest in the business of a third party that causes, or would appear to cause, a conflict of interest in connection with the performance of their duties related to this Contract, and if such financial interest is acquired during the term of this Contract, the Consultant shall promptly declare it to the Client.

Add SC3 Project History File

SC 3 Project History File

.1 All project documentation shall be considered deliverables and shall form the core of the Project History File. A project history file is to be submitted to the Client prior to project closeout. It is the Consultants responsibility to ensure that the requirements for all deliverables be applied to all sub-consultants and vendors.

.2 All supporting and originating data (calculations, graphs, data, pictures, drawing checks, tables, etc.) that are developed and incorporated into the deliverable documentation shall be included in Project history file.

.3 All data collected as part of the Project and relating to the deliverables that have been organized into database tables and spreadsheets shall be included electronically as supporting data for the deliverable. This information will be incorporated into the project history file.

.4 The project history file will be submitted electronically in a logical file folder structure.

Add SC4 DMAF & Community Employment Benefits

As part of the City's funding obligations under the Long-Term Water project (through Infrastructure Canada's Disaster Mitigation and Adaptation Funding (DMAF)), the following conditions will apply to this contract engagement:

1. The Consultant will keep proper and accurate financial accounts and records, including but not limited to its Contracts, invoices, statements, receipts, and vouchers, in respect of the Project for at least six (6) years after the Agreement End Date and that the City of Iqaluit has the contractual right to audit them.

2. All applicable labour, environmental, and human rights legislation is respected.

3. Canada, the Auditor General of Canada, and their designated representatives, to the extent permitted by the law, will at all times be permitted to inspect the terms and conditions of the Contract and any records and accounts respecting the Project and will have reasonable and timely access to the Project sites and to any documentation relevant for the purpose of audit.

4. As part of the City's project funding obligations and to encourage planned initiatives to recruit, hire and train members of federal Target Groups, the successful Proponent will be required to report annually on Community Employment Benefits (CEB) for three (3) federal Target Groups identified below. The successful proponent will also be required to report total cumulative hours worked by all workers engaged on the project (including

subcontractors and administrative employees) through to project completion. The Three (3) Target Groups are:

Target Group	***Definition***	***CEB Annual or Contract Reporting Requirement***
Indigenous Peoples	*Self-Identified*	*Total Hours Worked for Individual Target Group*
Women	*Self-Identified*	*Total Hours Worked for Individual Target Group*
Persons with disabilities	*Self-Identified*	*Total Hours Worked for Individual Target Group*

END OF APPENDIX B

APPENDIX C – SUB-CONSULTANT LIST

The Proponent will engage and fully coordinate the work of the following sub-consultants listed to deliver the work:

Table D1 List of subconsultants

Consultant Name	Project Office Address	Discipline

END OF APPENDIX C

APPENDIX D – INFORMATION PROVIDED BY THE CITY

This schedule forms part of the contract for consulting services on the Long-Term Water Program Raw Water Supply and Storage Owner's Engineer. The City will provide the following information to the Consultant:

a. Municipal Design Guidelines, City of Iqaluit – 2005

b. Good Building Practices Guideline, Government of Nunavut – 2020

c. Iqaluit Water Storage Pre-Feasibility Study (EXP 2020)

d. Comparative Evaluation of Sylvia Grinnell River and Unnamed Lake as Long-Term Water Supply for the City of Iqaluit (Nunami Stantec 2022)

e. Water Balance Assessment for Unnamed Lake – Modelling Report (Golder 2021)

f. Review of Golder Associates Ltd. Unnamed Lake Water Balance Assessment Draft Report (Stantec Memorandum 2021)

g. Options Evaluation for Raw Water Supplementation from the Sylvia Grinnell River (Nunami Stantec 2018)

h. Conceptual Design Advancement for Raw Water Supplementation from the Sylvia Grinnell River (Nunami Stantec 2019)

i. Unnamed Lake Fish and Fish Habitat Assessment Technical Report (WSP 2021)

j. Fish and Fish habitat assessment of the Niaqunguk (Apex) River, Lake Geraldine, and the Lake Geraldine Drainage Channel (Nunami Stantec 2017)

k. Iqaluit DFO Bathymetric Lake Surveys (Tetra Tech 2019)

l. UNL Lidar report (Aethon Aerial Solutions 2019)

m. Long-Term Water - UNL Water Quality Sampling Memorandum (Nunami Stantec 2019)

n. Long Term Water - UNL Data Collection Summary Memorandum (Nunami Stantec 2021)

o. Iqaluit SCADA System User Manual - Reduced - Stantec 2020

p. Iqaluit Type A Water Licence – No 3AM-IQA1626

q. Iqaluit Type A Water Licence – No 3AM-IQA1626 (Amendment No. 4)

END OF APPENDIX D

APPENDIX E – CITY OF IQALUIT SERVICES AGREEMENT

BETWEEN: THE MUNICIPAL CORPORATION OF THE CITY OF IQALUIT

(hereinafter referred to as the "CITY OF IQALUIT")

OF THE FIRST PART

AND: CONSULTANT NAME.

(hereinafter referred to as the "Consultant")

OF THE SECOND PART

WHEREAS the CITY OF IQALUIT has requested the Consultant to provide engineering services for the <insert project name/ contract title>;

AND WHEREAS the Consultant has agreed to provide such services to the CITY OF IQALUIT in its proposal dated **<insert proposal date>**;

AND WHEREAS the CITY OF IQALUIT and the Consultant wish to set out the terms and conditions relating to the provision of such services;

THEREFORE the CITY OF IQALUIT and the Consultant agree as follows:

1. SERVICES AND PAYMENT

1.1 The Consultant agrees to provide to the CITY OF IQALUIT those services set out in the job description and scope of work provided on **<insert proposal date>**. A copy of the proposal is attached as Appendix "A".

1.2 The CITY OF IQALUIT agrees to pay for the services described above, a total amount not greater than **<insert proposal amount>**, for the provision of professional services based on the Proposal dated **<insert proposal date>.**

2. TERM

2.1. This Contract shall commence on the **<insert contract start date>** and terminates on the **<insert contract termination date>** unless otherwise terminated in accordance with the provisions of this Contract.

3. NOTICE AND ADDRESS

3.1 Any notice required to be given herein or any other communication required by this contract shall be in writing and shall be personally delivered, sent by facsimile, or posted by prepaid registered mail and shall be addressed as follows:

i) If, to the CITY OF IQALUIT:

Rod Mugford
Acting Chief Administrative Officer
City of Iqaluit
P.O. Box 460
Iqaluit, NU
X0A 0H0
Fax: 979-5653

Reference:

ii) If to the Consultant at:

<Insert Consultant Representative Name>
<Insert Consultant/ Company Name>
<Insert Address>

3.2 Every such notice and communication, if delivered by hand, shall be deemed to have been received on the date of delivery or if sent by prepaid registered mail shall be deemed to have been received on the seventh day after posting, or if by facsimile, 48 hours after the time of transmission, excluding from the calculation weekends and statutory holidays.

4. COMPLETE AGREEMENT

4.1 This Contract and its attachments constitute the complete Contract between the parties. Except as provided herein, it supersedes and shall take effect in substitution for all previous agreements. It is subject to change only by an instrument executed in writing by the City.

4.2 If this Contract arises from a request for proposals or tender call, the provisions of the request for proposals or tender call and the Consultant's bid or proposal submission are incorporated into this Contract and may be used to clarify, explain, or supplement this Contract, but shall not be used to contradict any express terms of this Contract.

4.3 In the event of a conflict between this Contract, the Consultant's bid or proposal submission, and the City's original tender bid instructions or Request for Proposals, the more recently prepared document shall govern to the extent of such inconsistency.

5. GENERAL TERMS

5.1 Any information obtained from or concerning any department of the CITY OF IQALUIT or clients of any department of the CITY OF IQALUIT, by the contractor, its agents, or employees in the performance of any contract shall be confidential. The Consultant shall take such steps as are necessary to ensure that any such information is not disclosed to any other person and shall maintain confidential and secure all material and information that is the property of the CITY OF IQALUIT and in the possession of or under the control of the Consultant. This clause survives the termination of this contract.

5.2 Time shall in every respect be of the essence. The Consultant shall deliver the services specified in the contract and according to the project schedule on costs. The CITY OF IQALUIT may grant

reasonable extensions to the Consultant for delays, if the Consultant can show those delays were caused by circumstances beyond the control of the Consultant.

5.3 The Consultant is an independent Consultant with the CITY OF IQALUIT and nothing in this contract shall be construed or deemed to create the relationship of employee and employer or of principal and agent between the CITY OF IQALUIT and the Consultant. The Consultant is solely responsible for payments of all statutory deductions or contributions including but not limited to pension plans, unemployment insurance, income tax, workers' compensation, and the Nunavut Payroll Tax.

5.4 This contract shall be interpreted and governed in accordance with the laws of Nunavut and the laws of Canada as they apply in Nunavut.

5.5 No waiver by either party of any breach of any term, condition or covenant of this contract shall be effective unless the waiver is in writing and signed by both parties. A waiver, with respect to a specific breach, shall not affect any rights of the parties relating to other or future breaches.

5.6 The failure of either party at any time to require the performance of any provision or requirement of this contract shall not affect the right of that party to require the subsequent performance of that provision or requirement.

5.7 Title to any report, drawing, photograph, plan, specification, model, prototype, pattern, sample, design, logo, technical information, invention, method or process and all other property, work or materials which are produced by the Consultant in performing the contract or conceived, developed or first actually reduced to practice in performing the contract (herein called "the Property") shall vest in the CITY OF IQALUIT and the Consultant hereby absolutely assigns to the CITY OF IQALUIT the copyright in the property for the whole of the term of the copyright. The Consultant shall not be responsible for any loss or damage suffered by the City of Iqaluit or any third parties resulting from any unauthorized use or modification of the property, errors in transmission of the property, changes to the Property by others, the consequences of design defects due to the design of others, or defects in contract documents prepared by others, and the City of Iqaluit agrees to defend, indemnify, and hold the Consultant harmless from and against all claims, demands, losses, damages, liability and costs associated therewith. Subject to the foregoing, the Property may be relied by the City of Iqaluit for design and construction work undertaken by other parties with respect to the Services provided that such parties verify the accuracy and completeness of the Property to their satisfaction.

5.8 It is intended that all provisions of this agreement shall be fully binding and effective between the parties, but in the event that any particular provision or provisions or a part of one is found to be void, voidable or unenforceable for any reason whatever, then the remainder of the agreement shall be interpreted as if such provision, provisions, or part thereof, had not been included.

5.9 This contract may be extended by the written consent of the parties.

5.10 The CITY OF IQALUIT may delegate any of its authority and undertaking pursuant to this contract to any employee or contractor the CITY OF IQALUIT by notice in writing to the Consultant.

5.11 This contract shall ensure to the benefit of and be binding on the respective administrators, successors, and assignment of each of the parties hereto.

6. CONSULTANT RESPONSIBILITIES

6.1 The Consultant shall indemnify and hold harmless, the CITY OF IQALUIT, its officers, employees, servants, and agents from and against all claims, actions, causes of action, demands, losses, costs, damages, expenses, suits, or other proceedings by whomsoever made, brought, or prosecuted in any manner based upon or related to the negligent acts, errors, or omissions of the Consultant under this contract.

6.2 The Consultant shall be liable to the CITY OF IQALUIT for any loss or damage to property or equipment that is supplied to or placed in the care, custody, or control of the Consultant for use in connection with the contract if such loss or damage is attributable to the negligence or deliberate acts of the Consultant or its employees or agents.

6.3 If, in the opinion of the CITY OF IQALUIT acting reasonably, the Consultant is in default in respect of any obligation of the Consultant hereunder, the CITY OF IQALUIT may rectify such default and pursue a claim against the Consultant for any direct costs associated with any such remediation, including a reasonable allowance for the use of the CITY OF IQALUIT's own employees or equipment.

6.4 The Consultant may not assign or delegate work to be done under this contract, or any part thereof, to any other party without the written consent of the CITY OF IQALUIT. In the case of a proposed assignment of monies owing to the Contractor under this contract, the consent in writing of the CITY OF IQALUIT must be obtained.

6.5 The Consultant shall keep proper accounts and records of the services for a period of 3 years after the expiry or termination of this agreement. At any time during the term of this contract or during the three years following the completion or termination of this agreement, the Consultant shall produce copies of such accounts and records upon the written request of the CITY OF IQALUIT.

6.6 The Consultant shall notify the CITY OF IQALUIT immediately of any claim, action, or other proceeding made, brought, prosecuted or threatened in writing to be brought or prosecuted that is based upon, occasioned by or in any way attributable to the performance or non-performance of the services under this contract.

6.7 If at any time the Consultant considers their estimates indicate costs will exceed the project budget, they will immediately advise the City of Iqaluit. If in the opinion of the City of Iqaluit, acting reasonably, the excess is due to design, costs factors or matters under the control or reasonably foreseeable by the Consultant, the CITY OF IQALUIT may require the Consultant to do everything by way of revision of the design to bring the cost estimate within the project budget. Costs of completing such revisions shall be based upon a level of compensation reasonably appropriate to the circumstances, including the reason for the revisions.

6.8 Except as required in the performance of services set out in this agreement, the Consultant must maintain as confidential all data and information made available to the Consultant, the CITY OF IQALUIT, or any other parties which is generated by or results from the Consultant's performance of the Services described in this Contract. All such data and information is the property of the City of Iqaluit. This clause shall survive the termination of the Contract.

7. TERMINATION

7.1 The CITY OF IQALUIT may terminate this contract at any time upon giving written notice to this effect to the Consultant if, in the opinion of the CITY OF IQALUIT, the Consultant is unable to deliver the

service as required, the Consultant's performance of work is persistently faulty, in the event that the Consultant becomes insolvent or commits an act of bankruptcy, in the event that any actual or potential labor dispute delays or threatens to delay timely performance of the contract or the (Consultant Contractor) defaults or fails to observe the terms and conditions of the contract in any material respect.

7.2 This contract shall terminate as of the day for termination set out in the written notice and the Consultant shall forthwith invoice the CITY OF IQALUIT for work performed to the date of termination.

7.3 Any invoice submitted by the Consultant pursuant to clause 7.2 shall be reviewed by the CITY OF IQALUIT to assess the amount which is properly due and owing for work done by the Contractor prior to termination.

8. FINANCIAL

8.1 The CITY OF IQALUIT, having given written notice of a breach, may withhold or hold back in whole or in part any payment due the Consultant without penalty, expense or liability, if in the opinion of the Contracting Authority, the Consultant has failed to comply with or has in any way breached an obligation of the consultant. Any such hold back shall continue until the breach has been rectified to the satisfaction of the CITY OF IQALUIT.

8.2 The CITY OF IQALUIT may set off any payment due the Consultant against any monies owed by the Consultant to the CITY OF IQALUIT.

8.3 The City of Iqaluit will pay the Goods and Services Tax (GST).

8.4 Provided all terms and conditions on the part of the Consultant have been complied with, each invoice will be paid thirty (30) calendar days after receipt of the invoice, or thirty (30) calendar days after delivery of the services, whichever is later.

8.5 The CITY OF IQALUIT may, in order to discharge lawful obligations or to satisfy lawful claims against the Consultant or a Subconsultant arising out of the execution of work, pay any amount, which is due and payable to the Consultant under the contract, if any, directly to the obligee of and the claimants against the Consultant or Subconsultant.

9. INSURANCE AND LIABILITY

9.1 The Consultant's liability to the City of Iqaluit for claims arising out of this Agreement, or in any way relating to the Services, will be limited to direct damages and to the re-performance, without additional compensation, of any Services not meeting a normal professional standard of care and such liability will, in the aggregate, not exceed the amount of $1,000,000.00. The limitations of liability will apply, to the extent permitted by law, whether Consultant's liability arises under breach of contract or warranty; tort, including negligence; strict liability; statutory liability; or any other cause of action, and will extend to and include Consultant's directors, officers, employees, insurers, agents, and sub-consultants.

9.2 In no event will either party be liable to the other party for indirect or consequential damages including without limitation loss of use or production, loss of profits or business interruption.

9.3 The Consultant shall, without limiting his obligations or liabilities hereto, obtain, maintain, and pay for during the period of this agreement, the following insurance with limits not less than those shown:

a) Workers' Compensation insurance covering all employees engaged in the work in accordance with the statutory requirements of the Territory or Province having jurisdiction over such employees. If the Consultant is assessed any additional levy, extra assessment or super-assessment by a Workers' Compensation Board as a result of an accident causing injury or death to an employee of the Consultant or any sub-consultant, or due to unsafe working conditions, then such levy or assessment shall be paid by the Consultant at its sole cost and is not reimbursed by the CITY OF IQALUIT.

b) Employer's liability insurance with limits not less than $500,000 for each accidental injury to or death of the Consultant's employees engaged in the work. If Workers' Compensation insurance exists, then in such event, the aforementioned Employer's Liability insurance shall not be required but the Comprehensive General Liability policy referred to in item (d) herein shall contain an endorsement providing for Contingent Employers' Liability insurance.

c) Motor Vehicle, water craft and snow craft standard liability insurance covering all vehicles and/or craft owned or non-owned, operated and/or licensed by the Consultant and used by the Consultant in the performance of this agreement in an amount not less than five million dollars ($5,000,000.00) per occurrence for bodily injury, death and damage to property; and with respect to busses limits of not less than five million dollars ($5,000,000.00) for vehicle hazards and not less than five million dollars ($5,000,000.00) for Bodily Injury to or death of one or more passengers and loss of or damage to the passengers property in one accident.)

d) Comprehensive General Liability Insurance with limits of not less than ten million dollars ($10,000,000.00) (inclusive) per occurrence for bodily injury, death and damage to property including loss of use thereof. Such insurance shall include but not be limited to the following terms and conditions:

- Products & Completed Operations Liability *
- Consultant's Protective Liability
- Blanket Contractual Liability
- Broad Form Property Damage
- Personal Injury Liability
- Cross Liability
- Medical Payments
- Non-owned Automobile Liability *
- Contingent Employers Liability *
- Employees as Additional Insureds *

**WHERE APPLICABLE*

e) Professional Liability Insurance with limits of not less than five million dollars ($5,000,000.00) per claim and ten million dollars ($10,000,000.00) in the annual aggregate, to cover claims arising out of the rendering of or failure to render any professional service under this contract or agreement.

f) Unmanned aerial vehicle liability insurance with respect to owned or non-owned aircraft (if used directly or indirectly in the performance of the Work), shall have limits of not less than

$5,000,000 per occurrence or accident for bodily injury, death and damage to property or such amounts as required by any applicable law or regulation.

All policies shall provide that thirty days written notice be given to the CITY OF IQALUIT prior to any cancellations of any such policies.

The Comprehensive General Liability Insurance policies shall name the CITY OF IQALUIT and any permitted sub-consultants as additional insureds only with respect to the terms of this contract and shall extend to cover the employees of the insureds hereunder.

The Consultant shall be responsible for any deductibles, exclusions and/or insufficiency of coverage relating to such policies.

The Consultant shall deposit with the CITY OF IQALUIT prior to commencing with the work a certificate of insurance evidencing the insurance(s) required by this clause in a form satisfactory to the CITY OF IQALUIT and with insurance companies satisfactory to the CITY OF IQALUIT.

IN WITNESS WHEREOF the parties hereto have set their hand and seals as of the date and year entered below.

FOR THE CITY OF IQALUIT:	FOR THE CONSULTANT:
_____	_____
Name/Title	Name/Title
_____	_____
Signature	Signature
_____	_____
Date	Date
_____	_____
Witness	Witness

END OF APPENDIX E

APPENDIX F – SIGNING SHEET

I/We, agree that we have received addenda ____ to ____ inclusive, and the Proposal Pricing includes provisions set out in such addenda.

I/We confirm agreement to conform to the confidentiality requirements as indicated in Supplementary Conditions SC1 – Confidentiality.

I/We confirm agreement to conform to the conflict-of-interest requirements and disclosures as indicated in Supplementary Conditions SC2 – Conflict of Interest.

Signer must have authority to bind the company.

Signed, and delivered at this _____ day of _____ 2023.

_____
Signature of Name (Authorized official or principal who has authority to bind the company)

_____
Legal Company Name

_____
Address: # Street, Municipality, Province/ Territory, Postal Code

_____
Name: Print or Type

_____
Title

_____
Email

_____
Telephone #

END OF APPENDIX F

Appendix G – Supplementary Scope of Work Details

Contents

A – Preliminary Engineering Report

The Consultant will be required to submit a Preliminary Engineering Report which will be the basis for describing the project base solution, evaluating alternative designs, and making final recommendations to proceed to construction. As a minimum the report shall include the following:

1. Executive Summary
2. Introduction – location, background, statement of problem
3. Project base solution
4. Findings from Phase I activities
    - Geotechnical investigation
    - Environmental assessments
    - Stakeholder engagements
    - Permitting requirements and regulatory approvals
    - Topographic survey
5. Discussion of existing conditions and site characterization
6. Design Criteria and Basis of Design
7. Discussion of any Technical Memorandum results
8. Siting of the intake structure, conveyance pipe and storage reservoir
9. Geophysical and geotechnical considerations for storage reservoir
10. Suitable fill material specifications and borrow pit sources
11. Permafrost and climate change considerations
12. Reservoir design:
    - Site characterization
    - Foundation considerations
    - Excavation cut/fill quantities
    - Blasting assessment and monitoring
    - Ground treatment prior to construction
    - Embankment cross section and alternatives evaluation
    - Embankment material zones and impervious layers
    - Flooding / spillway review
    - Permafrost considerations during construction and long term
    - Seepage considerations / grout curtains, cut-off walls
    - Liner systems
    - Slope protection
    - Settlement analysis
    - Stability analysis
    - Seismic analysis
    - Dam safety and failure mode analysis
    - Back-up liner / leak detection
    - Conveyance pipe outfall design
    - Sedimentation

- Long term monitoring for deformation, pore pressure, etc.
- Phased approach to reservoir construction
- Construction staging
- Construction methods and compacted fill requirements

13. Intake structure:
    - Structure type and alternatives evaluation
    - Structure functional layout and geometry
    - Intake pipe installation risk-benefit considerations
    - Pump selection and alternatives evaluation:
        - Performance
        - Power requirements
        - Reliability of operation
        - Serviceability and service life
        - Maintenance and safety
        - Planning for abnormal operating conditions
        - Cost effectiveness
    - Intake structure piping, mechanical systems, valves
    - Electrical power and emergency back-up power
    - Pump house / MCC / telemetry:
        - Control room layout
        - Battery room
        - Bathroom
        - Building materials
    - construction staging
14. Conveyance pipe:
    - Evaluation of routing alternatives
    - Cut/cover vs above ground installation
    - Wildlife and snowmobile crossings
    - Plan /profile layout and system hydraulic profile
    - Break-pressure tanks, air release, drains
    - Heating station and re-circulation station considerations
    - Cover material type and quantities
    - Pipeline effect on surface drainage
    - Hydroelectric generation plant with connection to QEC
    - Pipe outfall at Lake Geraldine and Reservoir
    - Water transfer mechanism and protection against freezing
    - Pipe materials evaluation and selection
    - Pipe insulation and heat tracing
    - Valves, actuators, thrust restraints, anchoring, gates
    - Seasonal shut-down considerations
    - Monitoring flow

- Construction staging

15. Temporary access roads and infrastructure
16. Site civil works:
    - Site grading and foundations preparation
    - Granular borrow and stockpile area delineation
    - New access road route evaluations
    - Road layout and horizontal geometry
    - Roadway Plan/profile and cross section elements
    - Cut/fill quantities
    - Electrical power poles installation
    - Street lighting / security lighting / fencing
    - Drainage and stormwater control
    - Environmental mitigation measures
17. Electrical power:
    - Intake and reservoir needs
    - Connection to Iqaluit grid (QEC)
    - Generator based power
    - Emergency back-up power
    - Hydro-generation
18. Central Telemetry Monitoring & Control Systems
19. Emergency procedures and abnormal operating conditions
20. Systems performance testing criteria and commissioning procedures
21. Factory acceptance testing for materials
22. Evaluation of alternative solutions and recommended project
23. Construction methods, planning, phasing, interface
24. Operations and maintenance
25. Preliminary yearly operating costs
26. Preliminary Design Drawings (30%)
27. Outline specifications
28. Construction cost estimate
29. Construction and Commissioning Schedule
30. Recommendations for any further field investigations or additional studies

B - Topographic Survey

The Consultant will be required to complete topographical surveying as specified within this RFP. The general survey boundary area is generally as described in the project RFP Figure 3: Proposed Impact Area. The Consultant shall provide results of all investigations and coordinate its work with the City for incorporation into the final design. A combination of Lidar and ground-based survey will be considered. Although the Consultant shall ultimately determine the scope

and level of survey required for this assignment, the following minimum requirements are anticipated:

The Consultant will:

- Conduct on-site reviews and field work required for, and to complete, the design of this project including survey work required to locate / identify existing features, utilities, obstructions, etc. and as required to provide measurement for tender quantities.
- The Consultant will conduct total station survey as necessary to define the work.
- Verify the accuracy and correctness of any digital mapping and control points provided by the City or publicly available.
- Verify elevation and position data to confirm all critical existing pipe inverts, outlet invert elevations, potential conflicts and surface features potentially affecting the proposed works.
- Establish vertical and horizontal project control points and monuments using Canadian national standards best practice.
- In general, the minimum positional accuracy of topographic features with respect to the nearest project control is: 2 centimeters horizontal and vertical for hard constructed surfaces such as pavement, concrete, gravel, culverts etc.; 5 to 10 centimeters horizontal and vertical for natural original ground features.
- Identify all existing features, including watercourses and overflow invert levels, which may affect the work.
- Perform detailed inventory of existing facilitates and features to ensure that construction reinstatement will closely match existing conditions.
- General site topography including landscaping, ground elevations, property boundary and drainage.
- Survey data required ten (10) meters in every direction within the limit of work and the identification of major site features.
- Roads to access the site and the road passing along the northern edge of the site.
- Road ditches and invert elevations.
- Other site features such as gravel roadways, paved areas, culverts, existing pipe routes, water main valves, fences, etc.
- Provide site contours at 0.5 m intervals.
- CAD Base Plans should include North-south and east-west grid lines on a 100-metre pattern, labelled beyond the perimeter of surveyed detail. Also, a note that the plan contains photogrammetric and ground survey information, if it is a hybrid plan; a note that the plan contains Lidar survey data, if applicable; Water body names and flow arrows, with water body elevations dated; elevation of flood water mark evidence on structures or shore; underground utilities and descriptions where requested, and utility cautionary note; earth and rock cut height labels; bedrock outcrops

C – Geotechnical Investigation

Work will be performed in the summer of 2023 as time is of the essence. The successful Proponent will be required to coordinate with all utilities and with the City to allow for execution of the work. The

successful Proponent shall provide the results of all investigations and coordinate its work with the City for incorporation into the final design. A cash allowance has been established for the geotechnical investigation.

Geological and subsurface investigations at the sites of structures and at possible borrow areas must be adequate to determine suitability of the foundation and abutments, required foundation treatment, excavation slopes, and availability and characteristics of embankment materials. This information frequently governs selection of a specific site and type of dam. These investigations should cover classification, physical properties, location and extent of soil and rock strata, and variations in piezometric levels in groundwater at different depths.

Foundation rock characteristics such as depth of bedding, solution cavities, fissures, orientation of joints, clay seams, gouge zones, and faults which may affect the stability of rock foundations and slopes, particularly in association with seepage, must be investigated to determine the type and scope of treatment required.

Subsurface investigation for foundations should develop the following data: (a) Subsurface profiles showing rock and soil materials and geological formations, including presence of faults, buried channels, and weak layers or zones; (b) Characteristics and properties of soils and the weaker types of rock; (c) Piezometric levels of groundwater in various strata and their variation with time including artisan pressures in rock or soil.

Describe investigation of ground-water conditions. Note water levels or piezometric surfaces and their seasonal fluctuation, the occurrence of unconfined and confined aquifers, seepage potential, water-producing capabilities, chemistry, and related ground subsidence.

Prepare geotechnical investigation report for design and geotechnical baseline report for construction documents.

1. Field Component

- Coordinate with the City for access to the Site.
- Identify the recommended total number of boreholes, piezometers, and thermistors (as applicable) required to complete the assessment for the intake, conveyance, and reservoir in order to inform the design.
- Provide a methodology for the field investigation identifying planned locations, planned depths of boreholes, access requirements, sampling methods and any other items deemed necessary to perform the investigation.
- Ensure that all underground services are located before drilling and provide all required locates prior to drilling. Provide the City with a copy of locates performed.
- Record geodetic elevation of ground surface at borehole locations and relate to a known benchmark.
- If permafrost is present, record the ice content.
- If unfrozen soil is present, perform Shelby Tube tests, Atterberg limits, sieves, and soil chemistry.

- Determine Rock Quality Designation (RQD) of recovered rock core.
- Collect and preserve samples of intact bedrock core for determination of unconfined compressive strength, shear strength and associated parameters.
- Carry out permeability tests at the borehole locations
- Determine in-place unit weights for soils and rock samples
- Install monitoring wells in all boreholes and collect information on stabilized groundwater levels to infer groundwater flow direction.
- Install Thermistors in select boreholes to allow for long-term ground temperature monitoring
- Report before equipment is removed from the Site, the following:
    - Extremely poor or unexpected soil conditions are encountered, necessitating drilling to a greater depth to locate bearing stratum.
    - Variable conditions, potentially necessitating more boreholes or dynamic cone penetration tests.
    - Recommendation for additional piezometers to support reliable tests; and
    - Good and / or uniform soil conditions which could reduce the number of boreholes.
- Obtain written approval before exceeding the estimated cost of work, either in field or in the laboratory.
- Obtain samples of each soil type encountered, the first sample being at a depth not greater that 750 mm and succeeding samples at not more than 1500 mm increments of depth. Record whether samples are dry, moist, or wet.
- Record penetration values of Standard Penetration Test at the top of each soil stratum commencing at 750 mm depth and at increments not greater than 750 mm down to appropriate bearing stratum.
- Restore Site to its original state upon completion of on-Site work.
- Remove monitoring wells per provisional regulations upon completion.

2. Reporting

- The Geotechnical Report shall take into consideration the following factors: projected temperature increase, precipitation, extreme weather events and the rise of sea level.
- Submit a soil/rock investigation report, complete with a Site Plan identifying the borehole locations and the proposed building footprint.
- Include (but not be limited to) in the report the following:
    - A detailed description of the soil investigation, including details of the method of soil boring used, a description of the general geology of the area and a drawing showing the actual location and elevation of the boreholes.
    - A description of the physical properties, cohesion and friction angles, soil constraints for at rest, active and passive conditions, unit weights for the various soil strata, found in each borehole and the elevation of the stabilized water table.
    - Summarize the results of all relevant boreholes, in a coordinated series of logs.
    - Any special conditions or irregularities.

- Water conditions and flow rates for drainage, including effect of weather.
- Safe bearing capacity and founding elevations for soils encountered.
- Recommendations for the design and construction of an intake structure, overland water pipe and reservoir in an arctic climate.
- Recommended foundation factors for seismic design.
- Advice on any special construction difficulties that may be encountered.
- Recommended frost protection depth to underside of footings.
- Possible effects of ground water during construction if the water table is close to or above the likely elevation of the bottom of excavations.
- Suitability of excavated material as backfill; and
- Any additional information of interest or significance.

- All reports should be supported with photographs whenever possible and submitted in PDF format.

- Acid Rock Drainage and Metal Leaching tests:
  The Consultant shall submit laboratory test results to Nunavut Impact review Board and Aboriginal Affairs and Northern Development Canada regarding the acid rock drainage and metal leaching potential of overburden and granular materials prior to undertaking work in the development area. The results should include locations (latitude/longitude) where acid rocks have been encountered, including discussion of results of the geochemical test programs which have been performed on the materials to determine acid generation and contaminant leaching potential.

- Geotechnical Baseline Report (GBR):
  Prepare a GBR for inclusion in the construction tender documents. The GBR shall be the sole source contractual document that defines what sub-surface physical conditions are to be assumed to be encountered in the execution of the work. The GBR also serves to convey and highlight the key project constraints and requirements to enable the tenderer to appreciate the key project issues. The GBR shall include parameters that state the physical characteristics of the ground and ground water conditions, as well as the most likely ground behavior to be encountered during the various excavation, ground treatment and preparation, piling and trenching, foundation installations, and granular filling operations. It will provide design and construction considerations such as site preparation, ground improvement, geotechnical seismic hazard, static settlement, embankment stability, foundations, seepage control, filling and compaction, long term settlement, vibration monitoring, corrosion potential, etc.

  A ground classification system should be developed to include:
  - Profile type
  - Ground behaviour
  - Grouting type and sequence
  - Expected deformations for the ground type and the means to control the deformations.
  - Expected ranges of ground mass parameters that could affect the productivity and cost of the methods of construction.
  - Geotechnical "Hold Points"

- Required monitoring.
- General description of the geology and hydrogeology of the works
- Anticipated ground water levels including items such as inflows, estimated pumping volumes and rates, anticipated ground water chemistry and temperature.
- Parameters such as maximum/differential settlement
- Natural hazards such as boulders, cavities, and other obstructions, high or low top of bedrock
- Man-made hazards or other obstructions such as buried utilities, buried debris, unexploded ordnance, engineered and/or reclaimed ground, waste tips, contaminated ground, and ground water within the impact zone etc.

3. Blasting Assessment

A blasting assessment shall be carried out to determine potential effects at the Lake Geraldine Dam and surrounding area. Consultant shall follow the International Society of Explosives Engineers (ISEE) for recommended blast vibration and overpressure prediction calculations. Report shall cover as a minimum:

- Blasting practice in Iqaluit
- Receptors and identified waterbodies
- Blast vibration and overpressure limits
- Blast vibration and overpressure prediction calculations
- Impact of blasting on Lake Geraldine Dam
- Impact of blasting on proposed reservoir sub-surface geology
- Mitigation of fish habitat and surrounding structures
- Recommended blasting procedures and monitoring program during construction

D – Environmental Site Assessment

The consultant shall complete a Phase I Environmental Site Assessment (ESA) in accordance with the Government of Nunavut Guideline for Contaminated Site Remediation (2009) and CSA Standard Z768-01 (R2016). The Phase I ESA will be performed in parallel with other investigations. The Phase I ESA shall include, but not be limited to, a records / document review, interviews, and site reconnaissance. Further assessments, if required, will be defined, and may proceed thereafter but do not form part of this scope of services.

The consultant shall complete a Phase II ESA to characterize or delineate environmental conditions related to soil and water on the property. The consultant shall conduct the assessment in accordance with the Government of Nunavut Guideline for Contaminated Site Remediation (2009) and CSA Standard Z769-00 (R2013). The Phase II ESA investigation can be combined with geotechnical investigations in order not to duplicate the number of boreholes/test pits.

The Phase II ESA will be carried out to address soil and water sampling and analysis in select locations, as deemed appropriate based on the consultant's professional judgment. At a minimum, soil samples shall be analyzed for petroleum hydrocarbons, BTEX, volatile organic compounds and metals. Following analysis and interpretation of results, the consultant shall advise if further investigation is required and

if any potential liabilities related to the environmental condition of the Site exist. Care should be taken to ensure that only undisturbed soil samples are used for tests.

All reports should be supported with photographs whenever possible and submitted in PDF format.

E - Physical/Biological/Socio-Economic Environment Impact Assessment

1. Identification of Environmental Impacts

Proponents must identify environmental impacts (Physical, Biological and Socio-economic) for the intake, conveyance, and reservoir for all project lifecycle phases (Construction, Operations, Maintenance). Below is a list of factors where the impact of the project through its lifecycle must be assessed and any impacts are identified and classified as either positive, negative, and mitigatable, negative, and non-mitigatable, or unknown. Discuss proposed measures to mitigate all identified negative impacts.

2. Physical Environment

Please note that a description of the physical environment is intended to cover all components of a project, including roads/trails, marine routes, etc. that are in existence at present time.

- Proximity to protected areas, including:
  - designated environmental areas, including parks
  - heritage sites
  - sensitive areas, including all sensitive marine habitat areas
  - recreational areas
  - sport and commercial fishing areas
  - breeding, spawning and nursery areas
  - known migration routes of terrestrial and marine species
  - marine resources
  - areas of natural beauty, cultural or historical history
  - protected wildlife areas; and
  - other protected areas.
- Eskers and other unique landscapes (e.g., sand hills, marshes, wetlands, floodplains).
- Evidence of ground, slope or rock instability, seismicity.
- Evidence of thermokarsts.
- Evidence of ice lenses.
- Surface and bedrock geology.
- Topography.
- Permafrost (e.g., stability, depth, thickness, continuity, taliks).
- Sediment and soil quality.
- Hydrology/ limnology (e.g., watershed boundaries, lakes, streams, sediment geochemistry, surface water flow, groundwater flow, flood zones).
- Tidal processes and bathymetry in the project area (if applicable).
- Water quality and quantity.

- Air quality.
- Climate conditions and predicted future climate trends.
- Noise levels.
- Other physical Valued Ecosystem Components (VEC) as determined through community consultation and/or literature review.

3. Biological Environment

- Vegetation (terrestrial as well as freshwater and marine where applicable).
- Wildlife, including habitat and migration patterns.
- Birds, including habitat and migration patterns.
- Species of concern as identified by federal or territorial agencies, including any wildlife species listed under the Species at Risk Act (SARA), its critical habitat or the residences of individuals of the species.
- Aquatic (freshwater and marine) species, including habitat and migration/spawning patterns.
- Other biological Valued Ecosystem Components (VEC) as determined through community. consultation and/or literature review.

4. Socio-Economic Environment

- Proximity to communities.
- Archaeological and culturally significant sites (e.g., pingos, soap stone quarries) in the project (Local Study Area) and adjacent area (Regional Study Area).
- Paleontological component of surface and bedrock geology.
- Land and resource use in the area, including subsistence harvesting, tourism, trapping and guiding operations.
- Local and regional traffic patterns.
- Human Health, broadly defined as a complete state of wellbeing (including physical, social, psychological, and spiritual aspects).
- Other Valued Socioeconomic Components (VSEC) as determined through community consultation and/or literature review.

5. Impact Classifications

Positive: will the activity positively benefit the affected and surrounding area?
Negative and non-mitigable: will the activity negatively impair the affected and surrounding environment, without the ability to alleviate and reduce adverse effects?
Negative and mitigable: will the activity negatively impair the affected and surrounding environment, with the ability to alleviate and reduce adverse effects?
Unknown: the effects of the proposed activity are not yet known

6. Cumulative Effects

A cumulative impact (or effect) can be defined as the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably

foreseeable future actions. Cumulative impacts can also result from individually minor but collectively significant actions taking place over a period of time. Discuss how the effects of this project interact with the effects of relevant past, present and reasonably foreseeable projects in a regional context.

7. NIRB Application Support

Stockpiles

1. Indicate on a map the location and conceptual design of all stockpiles.
2. Describe the types of material to be stockpiled.
3. Describe the anticipated volumes of each type of material to be stockpiled.
4. Describe any containment measures for stockpiled materials as well as treatment measures for runoff from the stockpile.
5. Discuss methods used to determine acid rock drainage (ARD) and metal leaching (ML) potential.
6. Provide results.

Roads/Trails

1. Describe any field investigations and the results of field investigations used in selecting the proposed route (e.g., geotechnical, snowpack).
2. Provide a conceptual plan of the road, including example road cross-sections and water crossings.
3. Discuss the type and volume of traffic using the road/trail (i.e., type of vehicles and cargo and number of trips annually).
4. Discuss public access to the road.
5. Describe maintenance procedures.
6. Describe whether any portion of the road will be located outside of the Nunavut Settlement Area and whether any other regulatory requirements must be met (e.g., CEAA).
7. Discuss road design considerations for permafrost.
8. Describe the construction materials (type and sources for materials), and the acid rock drainage (ARD) and metal leaching characteristics of the construction materials.
9. Discuss construction techniques, including timing for construction activities.
10. Indicate on a map the locations of designated refueling areas, water crossings, culverts, and quarries/borrow sources.
11. Identify the proposed traffic speed and measures employed to ensure public safety.
12. Describe dust management procedures.
13. Describe the surface preparation, including the use of snow berms or compaction, and any flooding. If flooding is to be used, provide the location of the water source on a map.
14. Describe the operating time period.
15. Identify the proposed traffic speed and measures employed to ensure public safety.
16. Discuss whether the selected route traverses any fish-bearing water bodies.

8. Deliverables

1. Physical/Biological/Socio-Economic Environment Impact Assessment with impacts identified, characterized, and mitigated as applicable. Include a commentary on any cumulative impacts.

2. Drawings, details, and a report capturing the items identified in "NIRB Application Support".

F – Fish and Fish Habitat Assessment

The consultant shall complete a Fish and Fish Habitat Assessment of the two (2) water bodies identified within the proposed new reservoir footprint. Assessments shall be carried out according to the Fisheries Act and the Species at Risk Act and conform to Department of Fisheries and Oceans (DFO) guidelines.

G – General Terms of Reference – Design

a. Coordinate system for all design drawings and deliverables is NAD 83 (CSRS) and all elevations are to be geodetic, based on the geodetic datum of 1928.
b. Where applicable, all design and construction work to be completed in accordance with the General Specifications for Municipal Services in the City of Iqaluit and building codes applicable to the City of Iqaluit and region of Nunavut.
c. Design and construction of an engineered water conveyance pipeline from the intake structure at Unnamed Lake to the new reservoir. Water from Unnamed Lake will be pumped seasonally (Spring, Summer, Fall). Water from the Reservoir to Lake Geraldine will be designed to pump year-round. Particular attention will be required to prevent system failure due to freezing.
d. Conveyance system to extend from the intake structure and be interconnected to Lake Geraldine and the new Reservoir.
e. Provide an overall hydraulic control and electric power philosophy to seasonally operate water extraction from Unnamed Lake and accommodate year-round operation of water transfer from the Reservoir to Lake Geraldine.
f. It is anticipated that large volumes of suitable granular fill will be required for the reservoir, access roads, and conveyance pipe cover material. The consultant and their geotechnical team will be required to investigate and characterize the existing subgrade geology to determine if excavated materials can be processed for fill and determine suitable borrow pit locations in the construction area vicinity. Identification of suitable granular materials totalling two (2) times required fill quantities shall be delineated.
g. Depending on permitting constraints consider advance work tender packages (2) to potentially commence granular material production and stockpiling, procure long lead items, construct access roads, etc.
h. Comply with permitting authority requirements and review timelines.
c. Reliability of Operation: Operational failure of the reservoir structure or the water transfer pumps, and piping (freezing) would pose a major problem for the City of Iqaluit. Every effort must be made during design to ensure reliable operation of the facility. It is essential to look at each design component and consider serviceability and service life, corrosion potential, freezing conditions, major systems redundancy, maintenance schedules, operating conditions, and monitoring instrumentation and alarms with provisions for manual over-ride.

d. Planning for Abnormal and Emergency Operating Conditions: Every effort will be made to ensure that all major installations will operate with great reliability. Back-up power supply and standby pumps/valves/systems shall be considered in designs including conditions that could lead to partial or complete failure of operations such as freezing of pipes & valves, power failure, water leaks, structural failure of the reservoir.
e. Construction Planning: Construction costs in Iqaluit are high and dependent on equipment & material delivery constraints, site logistics, weather, and available labor to name a few. The ability to integrate construction planning and construction methods into the design process will be paramount to delivering an economic project. The Consultant will need to consider advance procurement and advance work packages to minimize Contractor delays and maximize time on site or 'time-on-tools.' A major consideration will be processing enough fill material for reservoir construction by locating borrow sources with a capacity at least twice the fill volume requirements to eliminate potential supply issues during construction. Design will need to consider temporary access roads, staging and laydown areas to provide easy access for Contractor equipment and personnel.
f. Electrical Power: Consultant will be required to evaluate power supply options and suitable redundancy using an appropriate risk management strategy. Coordinate these efforts with Qulliq Energy Corp. (QEC) to confirm design and construction cost estimates, limitations, etc. Provide options analysis for electrical power redundancy for reservoir, pipeline, and intake structure systems.
g. Operational Controls: the water transfer operations from Unnamed Lake to the Reservoir and from the Reservoir to Lake Geraldine will require a degree of automation. Pumps may be started and stopped by a form of level control and switches and via performance requirements. The water conveyance system will be designed to operate with minimal attendance required with system status being relayed to a central telemetry monitoring and control system.
h. Maintenance and Safety: it is essential to consider how maintenance will be carried out on all systems even those that require infrequent attention. It must be possible to easily remove pumps and equipment for maintenance with consideration for lifting equipment access. Adequate spare parts should be provided and ready for use on short notice. Draining of pipes for seasonal shut-down and the potential of reservoir embankment/liner repairs or inspections need to be considered.
i. Develop Criteria for the Evaluation of Alternatives: In preparing the studies, evaluations and designs it will be necessary at several junctures to select from two or more alternative schemes. In this task, criteria will be developed for the systematic evaluation based on cost and other factors. When costs estimates have been prepared, alternatives can be compared on many different bases including total equivalent annual cost, total present worth, project unit costs, or combinations of the foregoing. Measures of effectiveness for technical performance will also be selected. Consideration will be given to such factors as maintenance requirements and system reliability. Other more subjective factors that should be introduced into the evaluation

process include feasibility for adoption to unforeseen future conditions, environmental impact, energy conservation, potential health hazards, ease of implementation, susceptibility to disruption, and ease of construction and maintenance. The criteria for evaluating alternatives will be established and listed before screening, analysis and evaluation begins. The following is a possible grouping of evaluation criteria:

- Public health
- Safety
- Comparative costs
- Environmental quality
- Resource conservation
- Constructability
- Operation and maintenance
- Level of service
- Sustainability
- Reliability /Maintainability

Time schedule of capital, operation and maintenance expenditures and other life-cycle costs would be converted to present value or equivalent annual costs for comparison. Alternatives will be ranked in accordance with the evaluation criteria and weighting.

j. Transition to Turnover: Ultimately a seamless transition to turnover is a primary criterion to define successful project delivery. The consultant will be required to establish operational impacts, define performance acceptance criteria, and develop the process of testing, start-up, commissioning, and training activities. Acceptance testing, which follows successful mechanical testing and commissioning of project components, is required to demonstrate compliance with owner-specified performance requirements. It will be conducted prior to handover and detailed in the construction contract agreement. Acceptance testing includes the following key components:
    - Defining the test duration. A two- to four-week acceptance test period is common however this must be conducted long enough to show a reasonable level of reliability in process controls.
    - Establishing seasonality/temperatures. This project will require testing under worst-case design conditions, which might mean winter conditions with the lowest water and air temperatures.
    - Identifying loading conditions. As designs are commonly based on future conditions, flows and loads may approximate the design conditions by taking units out of service to simulate higher loadings on the units in service.
    - Hydraulic capacity. This is defined as the maximum design flow.
    - Reliable operation. System operation for each unit process over the acceptance testing period will be used to demonstrate adequate reliability.
    - Extended duration warranties. These are generally considered to be warranties over 12 months since this time period provides ample time to make sure the work was completed correctly. The City may require this assurance and will

need to be clearly stated in the construction Contract when the warranty starts since, it could start at mechanical completion or with the start of operations.

- Final acceptance. To achieve final acceptance, certain activities must be performed by the Contractor. In general, the requirements of final acceptance include the completion of all specified O&M manuals, completion of all record documents and drawings, resolution of all punch-list items, preparation of an acceptance testing results report.

k. Northern/ Arctic Region Design Considerations to include:
   i. A design that addresses arctic and cold weather conditions in all aspects of construction, operation, monitoring.
   ii. A design that includes consideration of permafrost conditions, and potential thermal alteration of the facility subsurface including potential for subsurface freeze/ thaw phenomenon and resulting impacts on integrity of pipeline.
   iii. A design that considers climate change
   iv. A design that addresses the relatively remote location of the pipeline including minimization of economic resources and power requirements related to operations.
   v. A design that facilitates simple and economic operational conditions and constraints; design requirements driven by operational considerations.
   vi. A design that meets the budget of the Client.

l. Prepare all necessary detailed designs and technical specifications for the works under consideration, including architectural, landscaping, structural, civil, mechanical, electrical, control, instrumentation, etc.; for site including all components.

m. Detailed plans shall be plotted to suitable scales in accordance with international standards, illustrating different parts of the works and systems, fully dimensioned and detailed. Sections, elevations, and side views shall be prepared to illustrate the site preparatory works, earthworks, intake structure, all weather on-site road network, and any special purpose parts with the purpose of clearly portraying the scope of required works.

n. Where applicable, mechanical drawings shall be in adequate detail illustrating; equipment; geo-synthetic installations, piping; fittings; pumping, electromechanical components; connections, etc.

o. Where applicable, electrical drawings shall include electrical power and distribution system at the site.

p. Work drawings to suitable scales (e.g., 1:100 and 1:50) and large-scale details shall be prepared. The drawings will comprise plans, sections, and elevations and will provide sufficient details for the construction and installation of all works.

q. All aspects of the Design will comply with applicable local standards and regulations.

r. The Proponent shall consult the City for review of all draft reports and assessments, intermediate and final design deliverables and collect comments for incorporation in the final design, if applicable.

s. Design the civil, and structural works so that they will be able to withstand foreseeable seismic and climatic events.

a. Detailed plans shall be plotted to suitable scales in accordance with international standards, illustrating different parts of the works and systems, fully dimensioned and detailed. Sections, elevations and side views shall be prepared to illustrate the site preparatory works, earthworks, reservoir footprint and final geometric shape (grades, heights, etc.) that allow for greater stability and mitigate containment failure risks, transfer system between the reservoir and Lake Geraldine, side slope and berm construction, all weather on-site road network, embankment, anchor trenching, and any special purpose parts with the purpose of clearly portraying the scope of required works.

H – General Terms of Reference – Detail Design

Detail Design Phase

During the design phase the successful proponent will follow the design review process that has been developed and encompasses strategic review hold points. All Engineering disciplines will coordinate with the City's representatives and perform the following tasks:

- Complete Internal Disciplinary and Peer Reviews
- Review Drawing and Specification Packages with the City
- Prepare and Issue design review packages at 50%, 90%, 100% and Issued for Construction (IFC) stages.

Design Development and reporting will include the following anticipated elements which is a non-exhaustive list and for planning purpose only:

General

- General Construction Notes
- Key Map with sector ID reference
- Borehole data and GBR references
- Construction staging narrative and drawing sequence
- Integrated hydraulic systems philosophy and operations logic:
    - Designs and drawings to describe normal operational states and seasonal shut down
    - Hydraulic profile with start / stop limits
    - Electrical power and overall telemetry operation with emergency procedures

Site/Civil Design

- Survey Drawing (existing topography and control points)
- Site plan & UTM Location
- Demolition and removals
- Site preparation details / clearing
- Ground improvement design
- Site drainage plan and details

- Access road layout, alignment, and paving details
- Foundation Layout and Details
- Environmental mitigation measures
- Security fencing
- Additional Civil Design Details as Required
- Construction staging

Reservoir Design

- Ground preparation details
- Ground modification design
- Excavation limits and sections
- Ground sub-surface improvement details
- Drainage channels
- Seepage control design
- Cofferdams
- Embankment cross sections
- Construction sequencing, lift levels, compaction requirements
- Liner designs
- Slope protection details
- Spillway design
- Water transfer mechanism details
- Piping and pumping
- Electrical power and telemetry

Intake Structure Design

- Structural Drawings and construction details
- Intake pipe design
- Intake pipe installation and staging
- Cofferdam design
- P umps and mechanical piping
- Electrical power connection to municipal system
- Back-up generator details
- Pumphouse and control room layouts
- Heating and ventilation systems
- Potable water and plumbing system
- Fire detection and a pre-action fire sprinkler system
- Additional fire safety in the control room
- Workspace, first aid/eyewash station
- Lighting, power, security/alarm communication
- Electrical instrumentation and MCC panel
- Emergency power generator
- Pipe discharge design details

Conveyance Piping Design

- Plan and profiles
- Hydraulic grade lines
- Installation cross sections with pipe support and anchoring design
- Earthworks cut/fill requirements
- Valves and manholes details
- Pipe insulation designs
- Outfall designs at Reservoir and Lake Geraldine
- Reservoir water transfer piping
- Wildlife and snowmobile crossings
- Details to accommodate future hydroelectric generator

Electrical Power Design

- Site-wide electrical design
- P&ID drawings
- Conduit and wiring schedules
- Electrical one-line diagrams
- Emergency power designs
- Electrical power alarms

Central Telemetry Control & SCADA

- Provide local and remote control and/or indication for all pumps, motors, actuators, disconnect switch's
- Provide backup local control and indication
- Provide alarms for all protection relays, electrical devices, building facilities, telecommunications equipment, and associated diagnostics
- Provide local metering and remote telemetry
- Provide remote data access to meters
- Develop RTU settings

END OF APPENDIX F

END OF REQUEST FOR PROPOSAL