

Generic Terms of Reference (TOR)
Outlining the Scope of Work (SOW) for a
Feasibility Study for
Water System Upgrades/ Improvements Project

These generic TOR stipulates the professional consultant services expected by the First Nation. This document defines the general scope of work for doing a feasibility study project, the required technical standards, the expected completion schedule and other requirements.

Please feel free to make any edits to suit community's and _____ (insert name of the) First Nation's requirements.

ISC website explains the contracting process for professional services:

[Contracting for Professional Services](#) (CN2)

It also provides generic high-level templates that can be used by _____ (insert name of the) First Nations for writing their own Request for Proposals; which include the following documents:

- A Letter of Invitation - Attachment A
- A Terms of Reference - Attachment B
- Proposal Evaluation Criteria - Attachment C
- A copy of the "long form" contract document (\$10,000+) - Attachment D OR
- A copy of the "short form" contract document (\$10,000-) - Attachment E

Table of Contents

1	INTRODUCTION	1
2	OBJECTIVES.....	1
3	DEFINITIONS	1
4	SCOPE OF WORK.....	3
5	REQUIREMENTS	9
6	PROJECT CONSTRUCTION PROCESS	9
7	PROJECT SCHEDULE.....	9
8	PROJECT COST	10
9	FIRST NATION'S PROJECT LEADER/ MANAGER	10
10	FUNDING REQUEST	11
11	CONSULTANT'S PROPOSAL.....	11
12	CONSULTING TEAM QUALIFICATION.....	11
13	TERMS OF PAYMENT AND COST CONTROL.....	12
14	OTHER TERMS AND CONDITIONS	12

1 INTRODUCTION

The intent of this document is to provide a terms of reference (TOR) for a feasibility study to determine the optimal way to achieve _____ (*insert name of the*) First Nation objective for water supply improvements and/ or upgrades in _____ (*insert name of the Reserve(s)*).

This Section is intended to provide a description of the community, its location and site-specific knowledge.

Projects should be derived from either the First Nations Comprehensive Community Plan, Community Development Plan, Physical Development Plan, latest ACRS Inspection Report or based on a need to improve, replace, or develop community water system.

2 OBJECTIVES

The objective of this feasibility study is to explore and evaluate alternate sources of raw water; and suggest improvements to the existing water collection, treatment, storage and distribution system. The Feasibility Study Report shall identify appropriate means for providing/ improving potable water of sufficient quantity and desired quality. The feasibility study report shall address community concerns, the overall project constraints and cost effectiveness. Complete a system analysis of each option including water system analysis for all the key water system operating scenarios. Options may include level of treatment, consideration of maximizing the use of the existing infrastructure and recommend improvements to the existing water system controls associated with the proposed works.

A clear and concise description of the objective(s) that need to be met should be identified in this section.

3 DEFINITIONS
Qualified Consultant means a firm of Professional Engineers which has demonstrated training and experience to undertake the project. The firm shall be registered with Engineers & Geoscientists of British Columbia (EGBC) with an EGBC Permit to Practice.

3.2 **Protocol for ISC Funded Infrastructure** provides a listing of statutes, regulations, policies, codes, directives, standards, protocols, specifications, guidelines and procedures applicable under the

Capital Facilities and Maintenance Program; and that the eligible recipients must comply with these requirements.

- 3.3 **Level of Service Standards (LOSS)** identify levels of service that may be funded from within existing budgets and from ISC program priorities of health and safety. These standards set limits on development which in turn affect the ISC Capital Planning Process.
- 3.4 **Life Cycle Cost** is mathematical procedure which describes the life cycle costs (e.g., construction, operations, maintenance, major maintenance and disposal) of an asset in terms of a rolled up current dollar amount which reflects the effects of monetary interest and price inflation. A life cycle cost analysis provides a hypothetical method of comparing competing options on the basis of which one makes better economic sense in terms of total costs.
- 3.5 **Class “D” Cost Estimate** is a preliminary estimate which, due to little or no site information indicates the approximate magnitude of cost of the proposed project based on the client’s broad requirements. The overall cost estimate may be derived from lump sum or unit costs as identified in the construction cost manual for a similar project. It may be used to obtain approval in principal and for discussion purposes.
- 3.6 **Class “C” Cost Estimate** is prepared with limited site information and is based on probable conditions affecting the project. It represents the summation of all identifiable project components costs. It is used for program planning, establishing a more specific definition of client needs and to obtain project approval.
- 3.7 **Community Development Plan** deals with:
- i) Social-economic development for the community, and;
 - ii) Planned land-use and type of future development.
- 3.8 **Physical Development Plan** deals with:
- i) Planned community physical services such as water, sewer, roads, utilities, etc., required to meet the development proposals of the Community Development Plan.
 - ii) Other planned community services and facilities such as, but not limited to, recreation facilities, education facilities and health care facilities.
 - iii) The provision of short-term capital plan, usually 5 years, to guide the community capital development.
- 3.9 **Feasibility Study**
Identifies options that can be implemented to meet project requirements;

Examines the options in terms of engineering and economic feasibility; and
Recommends a preferred option.

4 SCOPE OF WORK

The objectives of this feasibility study are:

- 4.1 Consultant shall organize and attend project meetings, as needed, with the project team members from _____ (*name of the*) First Nation, ISC, Circuit Rider, FNHA, regulatory agencies and other stake holders. They shall record minutes of project meetings, and provide copies to the project team.
 - 4.2 Consultant shall allow for at least one Community Meeting to discuss the project's objectives and scope of work with the community members;
 - 4.3 Review of existing relevant information including aerial photographs, topographic mapping, previous and current reports, plans, designs and as-built/ record drawings, and other information;
 - 4.4 Visit the project site and meet with the Project Team to become acquainted with site conditions and concerns of _____ (*insert name of the*) First Nation, including population expansion, future demands on services, potential land acquisitions, existing land encumbrances and other relevant design parameters;
 - 4.5 Background Information: including location, physical setting, community facilities, existing conditions, etc.
 - 4.6 Discuss existing system and highlight the deficiencies and issues pointed out by the community;
 - 4.7 Population projection and future housing development;
 - 4.8 Review water quality and consumption record of the existing ground water well, water treatment plant, and distribution system;
 - 4.9 Design Population and water demands;
- Any and all options that should be reviewed are to be identified here.*
- 4.10 Evaluate alternative location of ground water well on and off reserve;
 - 4.11 Evaluate nearby surface water source(s), including _____ Lake/ River; and bringing in piped water from the lake to the existing treatment plant;
 - 4.12 Characterize the raw water supply of all community water sources. The water analysis report and parameters tested needs to be complete as per the standard requirements from ISC and FNHA.

The final hydrogeological report will delineate the water source capture zones (which the Nation will use to establish a source water management plan) and determine the safe yields. Previous reporting information must be verified prior to use. A Professional Hydrogeologist will be required to make a clear conclusion as to whether or not any new source water is under the direct influence of surface water. If it is, then a clear conclusion whether the raw water is effectively filtered will be required if reduced treatment requirements are recommended. For any source, the team must balance the benefits gained by a determination of true groundwater, or demonstration of effective in-situ filtration, against the time and financial costs to do so. Appropriate field investigations should be undertaken when they are part of a cost effective implementation plan.

- 4.13 A bench scale or pilot testing program may be required to identify the optimal treatment process needed for each water source. The consulting team needs to consider simplicity of the treatment requirements in the selection of the preferred water source.
- 4.14 Evaluate modification/ upgrade to the existing water treatment plant based on raw water quality;
- 4.15 Evaluate the available water quantity at all the community water supply sources. The water source capacity needs to consider the ability to service the existing community and future community development as outlined in the latest Physical Development Plan. The infrastructure improvements will need to derive an optimum flow for the overall water system reviewing options to provide ADD, MDD, PHD, or Fire Flow Demands.
- 4.16 Provide design basis for calculating required fire flow and firewater storage.
Note: In general, the use of MMCD municipal specifications and Fire Underwriters Survey (FUS) are not necessarily appropriate for small water system design in remote communities. The unique requirements of small water system design need to be accounted for first and taken to consideration the fire firefighting capacity of the community.
- 4.17 Determine and evaluate alternative concepts for improvements to the waterworks with respect to incorporating the existing or alternate water sources into the existing water system. Review control improvements to optimize the available water storage, pump control, and treatment. Describe and define the various factors which should be considered for evaluating alternatives including (but not limited to) the initial capital cost, water quality and quantity, operation and maintenance cost and safety.
- 4.18 Evaluate applicable disinfection/ treatment options;
- 4.19 Provide water quality monitoring program of the raw water sources (if deemed necessary);

- 4.20 Complete a Phase 1 Environmental Site Assessment for the location of the recommended improvements;
- 4.21 Complete an Environmental Assessment Scoping report, for the location of the recommended improvements, that will meet ISC's technical requirements outlined here: [Proponents' Guide to Aboriginal Affairs and Northern Development Canada's Environmental Review Process \(sac-isc.gc.ca\)](#)
- 4.22 Examine advantages and disadvantages of each conceptual design option and its suitability in terms of:
- i) Indigenous Services Canada (ISC) Level of Service Standards (LOSS);
Reference: [Water and Wastewater Policy and Level of Services Standards \(Corporate Manual System\) \(sac-isc.gc.ca\)](#)
 - ii) Climatic conditions;
 - iii) Land usage;
 - iv) Land encumbrance(s):
Review all legal plans to determine if all or part of the works will be on Reserve land and clearly identify properties where the proposed (and existing) works encroach on any property held by Band members under Certificate of Possession (CP), Notice of Entitlement or historical ownership. The Consultant should ensure that all works are on Reserve land or obtain written permission from the Project Manager and ISC accepting any off reserve encroachments. Negotiate permits with all outside agencies impacted by the proposed works. A property impact and setback drawing is to be included in the Feasibility Report
 - v) Environmental Review;
Reference: Recently Environmental Review Project Description and Simple Form has been combined into a single form:
[ENVIRONMENTAL REVIEW PROCESS PROJECT DESCRIPTION \(sac-isc.gc.ca\)](#) - print only version. The updated Environmental Review Project Description would need to be completed (complete Sections 1 and 2, in the first instance) and submitted to ISC, instead of using the IEMS portal on-line. IEMS portal has not yet been updated. Also, the projects are posted on Canadian Impact Assessment Registry by ISC, based on the information provided by the consultant.

Please note: An Environmental Assessment scoping report has to be completed as part of the feasibility study in order to complete the Project Description form.
 - vi) Archaeological Review;
 - vii) Regulatory review: Regulatory jurisdictions that may be involved at this stage include:
 - Environment Canada — wastewater and solid waste disposal;
 - Fisheries and Oceans Canada — all works impacting fish bearing waters;
 - Transport Canada — navigable waters;
 - BC Ministry of Agriculture and Lands — land management;

- BC Ministry of Environment — fish and wildlife;
- BC Ministry of Transportation — public road access, works involving public roads;
- Local municipalities —extension of municipal services
- Timber Permit: a statement is required in the feasibility study to document if a timber permit is required. Note: First Nations with their own forestry land code under the First Nations Land Management Act do not need to provide a timber permit assessment.

viii) Additional Field Investigations and Research: all additional field investigations and/ or research that will be carried out during the design stage are to be itemized and the scope of work identified. If no additional work is required prior to initiating the design, this should be clearly stated. ISC design guidelines for water system, wastewater system and road projects provide detailed information regarding specific research and field investigation requirements required for design stage activities.

ix) Operation and Maintenance: outlines the operation and maintenance activities expected for the preferred option and includes an assessment of the First Nation’s capacity to safely and effectively operate and maintain the proposed works. Indicates additional resources and/ or training required to reduce any gaps in the First Nation’s capacity. All potential sources of O&M funding and/or supplementary funding from a First Nation’s internal resources are to be identified;

x) Class "D" 20-year life cycle costs for each option; and 40-year life cycle costs in case of water treatment plant;

xi) Provide life cycle costs comparing the costs of each option;

xii) Other factors that the consultant considers relevant.

4.23 Upon selection of the preferred conceptual layout option the consultant shall undertake studies to address land suitability topics such as:

i) Foundations;

ii) Drainage;

iii) Frost penetration;

iv) Groundwater conditions;

v) Climate change;

vi) Environmental hazards, including but not limited to:

- Flooding;
- Soil stability;
- Earthquake;
- Tsunami;
- Landslide or rockfall;
- Erosion protection;
- Flood control; and

- Other topics the consultant considers relevant.
- 4.24 Review the Design Criteria outlined in the Protocol for ISC-Funded Infrastructure's (PIFI) referenced Codes, Standards, Regulations to determine applicability, conflicts between applicable standards and make a determination which criteria will apply to the project.
- Reference:** [Protocol for ISC-Funded Infrastructure \(sac-isc.gc.ca\)](http://sac-isc.gc.ca)
- 4.25 The consultant should make a recommendation as to the preferred conceptual layout option based on technical and financial consideration; and must obtain approval from the _____
(name of the) First Nation's representatives.
- 4.26 The consultant should make a recommendation as to the preferred conceptual layout option based on technical and financial consideration; and must obtain approval from the _____
(name of the) First Nation's representatives.
- 4.27 The cost estimates shall include allowances for construction, engineering and contingencies. The construction cost estimates shall indicate approximate quantities and unit costs. When evaluating alternative solutions the consultant shall bear in mind the objective of minimizing capital cost, and annual operation and maintenance (O&M) costs.
- 4.28 Provide Class 'C' cost estimate for the recommended/ selected option. If multiple upgrades are recommended, a Class 'C' cost estimate should be submitted for each item.
- 4.29 Feasibility Study Report shall include, but limited to:
- i) Executive Summary;
 - ii) Project description;
 - iii) Project justification;
 - iv) Discussion of existing facilities;
 - v) Proposed level of service standard to be met;
 - vi) Conceptual designs for all options studied along with their associated Class "D" life cycle cost estimates;
 - vii) Class "C" life cycle cost estimate for the preferred conceptual design option;
 - viii) An environmental assessment outline report identifying any potential impacts and mitigation requirements for the duration of the project and its completion;
 - ix) All studies undertaken;
 - x) Where studies were not completed, identify assumptions with respect to soils, existing services/utilities expansion plans etc.;

- xi) Descriptions, discussions and drawings of the project principal components, identifying the constraints and identifying issues of the project area;
 - xii) Drawings included in the project shall include (but not limited to) site location plan, cursory plan drawings of the proposed options, site layout plans/ profile/ cross-section drawings of the recommended components, and site plans of the major facilities showing conceptual valving and control locations;
 - xiii) All drawings shall be prepared in metric units and include the _____ (*Name of*) First Nations logo;
 - xiv) A summary of all sub-consultants observations and recommendations with the actual sub-consultant reporting documentation included in the project appendix.
- 4.30 Draft feasibility study report should be submitted to both _____ (*name of the*) First Nation and ISC for review and comments.
- 4.31 Final feasibility study report should also be shared with First Nation Health Agency (FNHA); and review comments from FNHA's Engineers/ EHO should be given due consideration when finalizing the final report and during Design.
- 4.32 A final feasibility study report must be submitted to both _____ (*name of the*) First Nation and ISC. The report can be submitted as one electronic/ PDF file. However, hardcopies - _____ Nos. (*specify # of copies*), should also be submitted to _____ (*name of the*) First Nation.
- 4.33 The final report shall be duly authenticated (signed, sealed, dated by the Qualified Professional; along with confirmation of their firm's registration with Engineers and Geoscientists of British Columbia (EGBC) for Permit to Practice.
- Reference:** [Guide to the Standard for the Authentication of Documents, Version 3.1 \(egbc.ca\)](#)
- 4.34 Consultant shall provide response to ISC review comments and revise the final feasibility study report, if needed. Revised final feasibility study report must be submitted, if required, before the project can move to the Design stage.
- Note:** Feasibility Study Report shall be reviewed by the _____ (*name of the*) First Nation and ISC based on these Terms of Reference and project review checklist for the feasibility stage.
- Reference:** [Project Review Checklists \(nautsamawt.org\)](#)

5 REQUIREMENTS

- 5.1 The cost estimates shall include allowances for construction, engineering, and contingencies. The construction cost estimate shall indicate approximate quantities and unit costs. When evaluating alternative designs the consultant shall consider the objective of optimizing capital cost and annual operation and maintenance costs.
- 5.2 All correspondence shall be addressed to the _____ (*Name of*) First Nation's Project Leader/Project Manager.
- 5.3 The consultant shall review, arrange for, and carry out any field surveys, pump tests, soils investigations and testing required to ensure the technical feasibility of proposed works.
- 5.4 The consultant (and sub-consultants) shall apply their own professional stamp or seal and signature to identify their professional responsibility.
- 5.5 The consultant (and subconsultant) shall apply its corporate EGBC "Permit to Practice" stamp as required by EGBC Guidelines.

6 PROJECT CONSTRUCTION PROCESS

The proposed implementation process to physically construct the proposed project is to be identified in the Feasibility Study. Tendering Policy was recently updated and released on ISC website.

Reference: [Tendering policy on federally funded capital projects for First Nations on Reserve \(sac-isc.gc.ca\)](http://isc.gc.ca)

7 PROJECT SCHEDULE

Provide a general schedule of project milestones:

Project Activity/ Milestone	Date/ Timeline
FAR/ Feasibility Funding Request	
Start of Feasibility Study	
Draft Feasibility Study Report	
ISC Review of the draft Feasibility Study Report; review comments (if any); and consultants response to ISC review comments	
Final Feasibility Study Report	

ISC Review of the Feasibility Study Report; review comments (if any); and consultants response to ISC review comments	
DAR/ Design Funding Request	
Draft Design Report	
Final Design Report	
ISC Review of the Design Report; review comments (if any); and consultants response to ISC review comments	
PAR/ Construction Funding Request	
Tender/ award of Work	
Construction completion	

8 PROJECT COST

- 8.1 A separate detailed cost spreadsheet shall be provided. This spreadsheet shall identify all Qualified Professional (QPs), their assigned hours, hourly rates and disbursements for each Task.
- 8.2 Assumptions made in the development of the cost proposal shall be clearly stated. Disbursements including sub-consultant invoices (if any) shall not be marked-up. All disbursements related to travel will be in accordance to Treasury Board Guidelines.
- 8.3 The _____ (*name of the*) First Nation’s Project Lead retains the right to negotiate costs associated with any task or additional tasks resulting from an approved scope change.

9 FIRST NATION’S PROJECT LEADER/ MANAGER

The _____ (*name of the*) First Nation’s project lead is:

_____ (*name of the person*)

_____ (*position of the person*)

Address: _____

Tel#: _____ ; Cell# _____

E-mail: _____

10 FUNDING REQUEST

- 10.1 The funding submission should be on a Feasibility Application Request (FAR) template.
Reference: [ISC Feasibility Application Request \(FAR\) for Infrastructure Projects-BC Region \(nautsamawt.org\)](http://nautsamawt.org)

11 CONSULTANT'S PROPOSAL

- 11.1 Consultant's proposals shall be addressed to the _____ (*name of the*) First Nation's Project Lead.
- 11.2 E-mailed proposals are acceptable.
- 11.3 Consultant/ Engineer's proposal shall be concise and include:
- a) Work Plan;
 - b) Fee Schedule with breakdown of project activities and project deliverables;
 - c) Table of hours and rates;
 - d) Project schedule;
 - e) Name, qualifications and experience of Qualified Professionals and their roles/ responsibilities on this project; and
 - f) Subcontractors proposals.

12 CONSULTING TEAM QUALIFICATION

- 12.1 The consultant firm or consortium shall have personnel holding membership with the EGBC. All project team members working on the study shall be qualified and experienced in their specific area of responsibility.
- 12.2 The team leader shall hold a membership with the EGBC and demonstrate experience in managing a consulting team for similar projects. The project team will need to show experience in developing designs for the overall water supply and distribution, studies and investigations.
- 12.3 The project team will need to demonstrate expertise in municipal servicing designs; water system designs; hydro-geological evaluations; geotechnical evaluations; water treatment, environmental assessments, and preparing designs for other related issues.
- 12.4 A time schedule for project completion.

12.5 The project team from the consultant should be familiar with the latest EGBC Professional Practice Guidelines and Advisories.

Reference: [Guidelines & Advisories \(egbc.ca\)](http://egbc.ca)

13 TERMS OF PAYMENT AND COST CONTROL

13.1 Payments will be based on the Contract Agreement.

13.2 The consultant will, on a monthly (or other approved) interval, submit an invoice detailing the services performed over the billing period.

13.3 No payment will be made toward the cost of work incurred to remedy errors and/ or omissions for which the consultant is responsible.

13.4 If at any time during the progress of the work the consultant considers his contract fee will be exceeded either by some unforeseen event or change in the terms by _____ (*Name of*) First Nation, they shall immediately provide the Project Leader/ Project Manager with the complete details.

13.5 At no time shall the contract fee be exceeded prior to written approval by the Project Leader/ Project Manager.

14 OTHER TERMS AND CONDITIONS

14.1 All reports and materials prepared and provided by the consultant shall become the property of _____ (*name of the*) First Nation for sole use by _____ (*name of the*) First Nation and ISC.

14.2 The Band reserves the rights to reject any or all proposal submissions that do not meet the requirements of the Terms of Reference. **There would be no compensation to the professional team for any fees or time related to a proposal submission provided to the First Nation, accepted by the First Nation, or rejected by the First Nation.**