

A Comparison of Infrastructure Project Development Between Indigenous Services Canada and the First Nations Infrastructure Institute

Prepared for:

First Nation Infrastructure Institute



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SECTION 1 – INTRODUCTION

First Nation communities across Canada rely on a wide array of infrastructure to support their communities. Water systems provide domestic and irrigation supplies, and often store water in reservoirs in the event large volumes are required for fire suppression. Sewer systems collect, treat and dispose of wastewater in order to protect human health and the environment. Energy systems power the activities of individuals, families and the broader community. Communication infrastructure is vital to communities, and has risen in profile since the advent of the internet in the 1990s. Community buildings have always been integral to First Nations, and used for a host of purposes such as gatherings, celebrations and events, and education. Transportation networks were developed and utilized by First Nations prior to European contact, and continue to provide access both to and through communities.

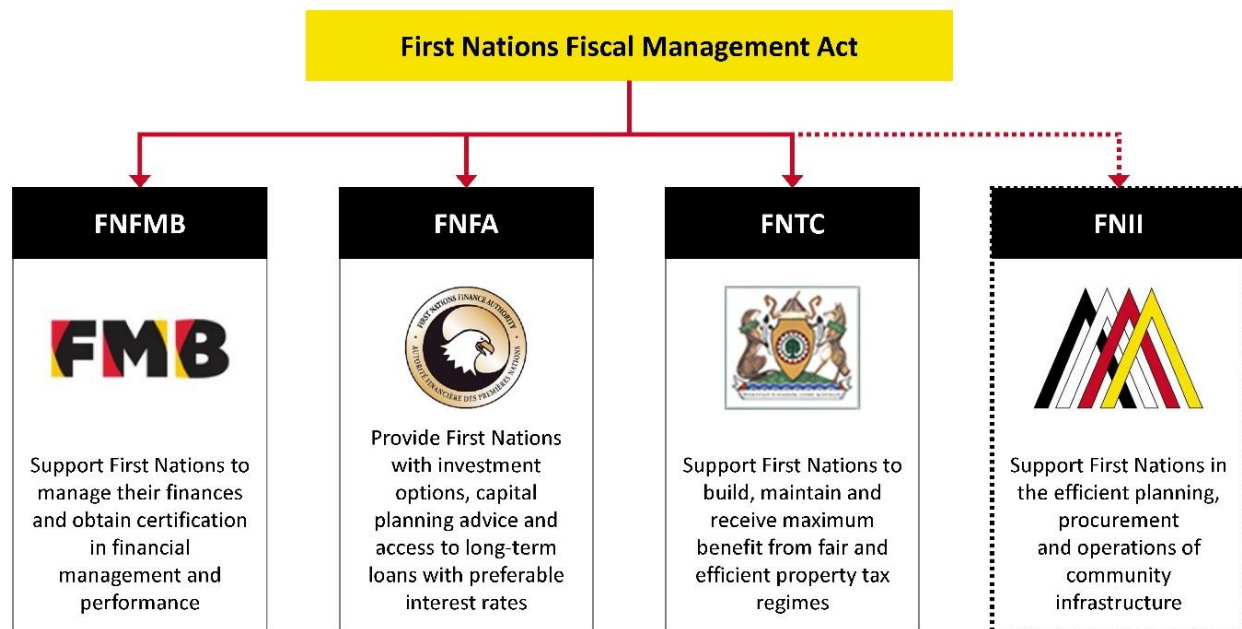
Through the provisions of the *Indian Act* and what is currently the federal government's department entitled Indigenous Services Canada (ISC), it is intended that infrastructure such as that described above be provided to First Nation communities. This intention includes funding the planning, design, construction, operation and maintenance of this infrastructure. There have been challenges with respect to the delivery of infrastructure services to First Nations via ISC, including timeliness, cost (construction and operation / maintenance), and longevity. A number of commentators have observed these challenges, including predecessor agencies to Indigenous Services Canada (such as Indian and Northern Affairs Canada, and Aboriginal Affairs and Northern Development Canada), other Government of Canada agencies, First Nations individually as well as through collective organizations, and the national media.¹

In order to address these challenges, a new First Nations-led initiative is proposed – the First Nations Infrastructure Institute (FNII). FNII would be enabled through the First Nations *Fiscal Management Act* and would be a companion to three other existing organizations – the First Nations Financial Management Board, First Nations Finance Authority, and First Nations Tax Commission. These organizations and brief summaries of their mandates are shown on the following figure.

FNII has three primary objectives with respect to the infrastructure it will work with communities to develop. These objectives include:

- Moving through the process of planning, designing and constructing infrastructure quickly and efficiently
- Delivering value for money for costs incurred in constructing infrastructure
- Ensuring infrastructure lasts longer.

¹ See, for example, *Audit of the Capital Facilities and Maintenance Program* – report prepared by the Audit and Assurance Services Branch in January 2009 for Indian and Northern Affairs Canada



The purpose of this report is to contrast the conventional model of infrastructure delivery to First Nations through ISC with that proposed through FNII. This contrast is not illustrated through the analysis of an actual specific project, but rather a hypothetical example involving a water treatment system. Although hypothetical, this example is founded on many First Nations' experiences known to our firm.

This report addresses a number of the key components of advancing an infrastructure project which will fall within the scope of FNII. The primary components addressed herein include infrastructure planning, design and construction. There are two other components of FNII which are addressed by others in companion documents:

- Procurement process – the approach used to engage organizations in the design, construction, operations and maintenance, and management of First Nations' infrastructure assets
- Financing – the means by which FNII, and the infrastructure it works with First Nations to deliver, will be funded through contributions from the Government of Canada, Nations' own-source revenues, and combinations thereof.

The remainder of this report contains the following sections:

- Section 2 – summarizes the process of advancing a water treatment plant project through ISC
- Section 3 – outlines how FNII would work with a First Nation to develop a water treatment plant project
- Section 4 – identifies how FNII could deliver the water treatment plant project more quickly, with greater value for money expended, and in a manner which would extend the life span of the asset.

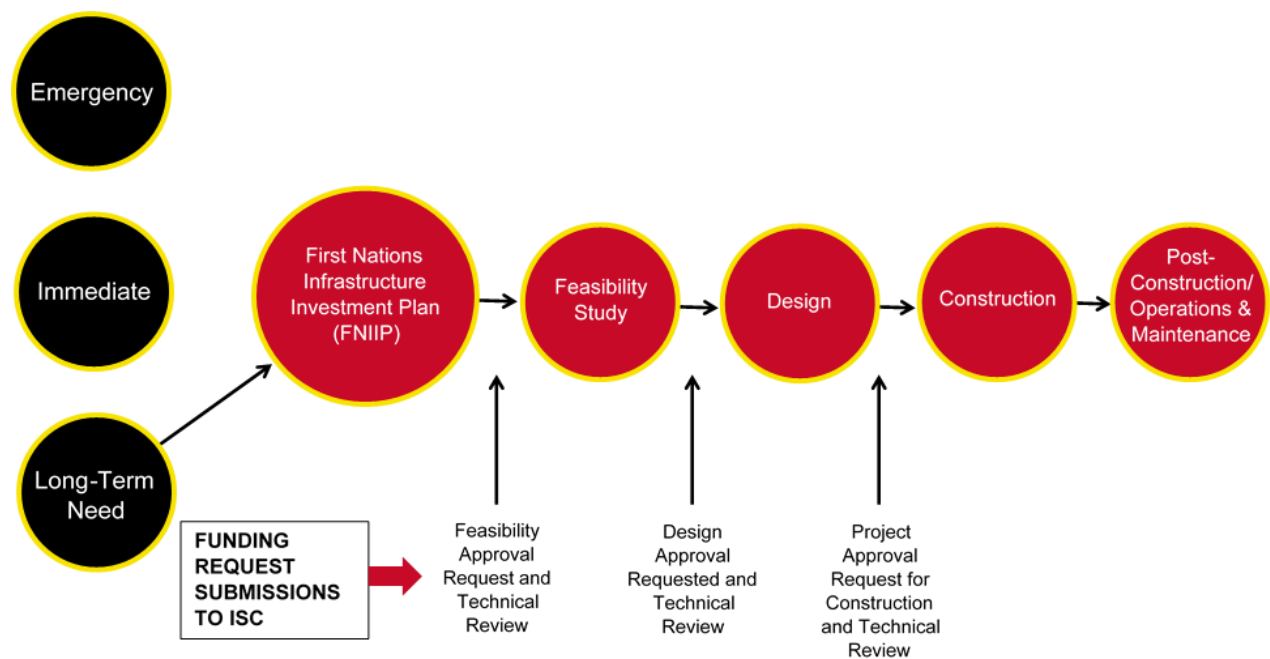
SECTION 2 – INFRASTRUCTURE DEVELOPMENT PROCESS THROUGH INDIGENOUS SERVICES CANADA

2.1 Background

Indigenous Services Canada (ISC) is the Government of Canada's agency responsible for delivering infrastructure projects in First Nations communities, as well as supporting their operation and maintenance. This role is centred on serving the needs of First Nations members, and may also include participation in economic development initiatives.

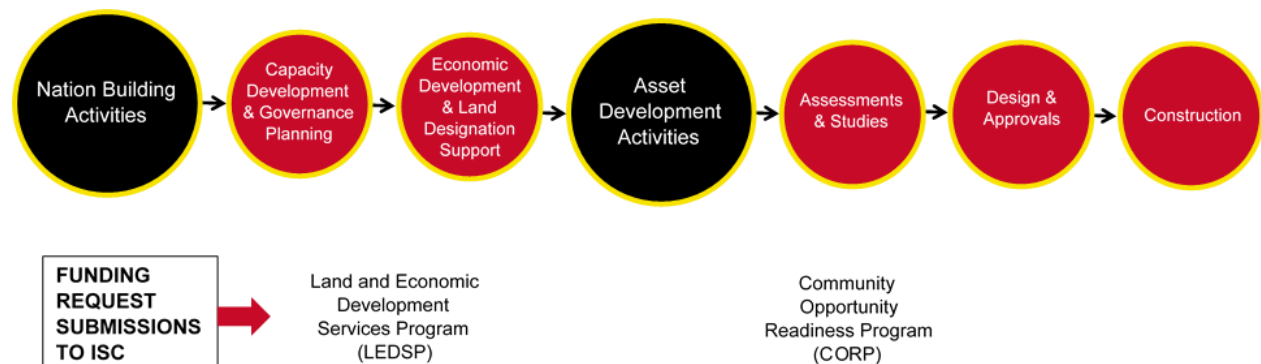
With respect to the needs of First Nation members, the following figure summarizes the process followed by ISC in addressing a Nation's long-term infrastructure needs. It should be noted that this process does not apply in emergency situations (such as those caused by natural disasters or human-caused accidents), or immediate need (such as infrastructure damage which is not an urgent health or safety risk, but does require short-term action). Additional information on ISC's approach to capital projects can be found in the agency's document entitled 'A Practical Guide To Capital Projects, 9th Edition, Version 3.0' released in 2018. As a note to readers, this Guide is approximately 750 pages in length.

Figure 2 – Infrastructure Development Process Through ISC for Member Needs



Many First Nations in Canada have also set aside portions of their land bases for economic development initiatives which require infrastructure services such as water supplies, sewer treatment and disposal, and road access. ISC has developed programs intended to support these initiatives, and they are shown below in Figure 3.

Figure 3 – Infrastructure Development Process Through ISC for Economic Development Initiatives



Discussions with ISC staff in the BC Regional Office indicate that there have been very few examples of infrastructure projects which merged the two funding streams depicted in Figures 2 and 3 to serve the needs of both members as well as economic development initiatives on Nation lands. Therefore, the following discussion focusses solely on the infrastructure development process for a water treatment plant to serve the needs of members living within a First Nation community.

2.2 Description of Process

Introduction

As noted above, the description set out below involves the process of developing a water treatment plant to serve the long-term needs of members living within a First Nation community. This is a process commonly seen in Urban Systems experience, but is not illustrative of any specific project in a particular community.

The water treatment plant is required to serve the long-term needs of the community, not in response to an emergency situation or immediate need (as illustrated above in Figure 2). An example of responding to long-term need could include changes to Guidelines for Canadian Drinking Water Quality (which First Nations in Canada abide), need for additional supplies due to community growth, challenges with the community's existing water source (such as altered hydrology of surface water source leading to inability to supply community needs), or other circumstances.

First Nations Infrastructure Investment Plan

The first step in the process is to include the water treatment plant in the Nation's First Nation Infrastructure Investment Plan (FNIIP). This document is submitted on an annual basis to the relevant region of Indigenous Services Canada, and compiled with other communities' FNIIPs to form a regional version which in turn is merged with other regional submissions to form ISC's National FNIIP.

Feasibility Study

Following inclusion of the water treatment plant in its FNIIIP, the Nation then prepares and submits a document entitled a 'Feasibility Approval Request.' The checklist used by ISC in reviewing this document is contained in Appendix A.1. Once the ISC reviewer is satisfied that the items on this checklist have been fulfilled, the feasibility study may be funded, provided sufficient funds are available to do so. This process often takes a period of time.

Once the feasibility study is approved and funded, the work is undertaken. In the case of water treatment facilities, a consulting engineer with experience in this field is typically engaged by the First Nation. The engineer determines the quality and quantity of water required by the community (using reference documents such as the Guidelines for Canadian Drinking Water Quality), outlines options for providing the required quality and quantity, defines criteria which will be used to evaluate these options, performs the evaluation, and recommends the preferred solution. The summary of this work is then sent to ISC for review by internal technical staff.

Past experience has shown that the process may not move directly forward at this point for a number of reasons. In some instances, ISC has limited the scope of potential solutions to a community's water challenges by mandating that all new systems be based on groundwater supplies, rather than surface water, even though an abundant and relatively clean surface source is available. It is understood that this mandate was based on the view that groundwater would not require treatment to become safe and appropriate for human consumption – an assumption which is not always the case. In other instances, ISC internal technical staff suggest additional options for further consideration. The First Nation and its consulting engineers may not have submitted all of the information required during the feasibility stage technical review, as outlined in the checklist in Appendix A.2. Even when all of the feasibility stage requirements have been fulfilled to the ISC reviewer's satisfaction, funds may not be available to move on to the next stage in resolving the community's water treatment needs.

It is worth noting that the situation described in the previous paragraph can persist for an extended period of time (often several years), and go through many iterations. Each iteration requires a new submission to ISC by the Nation (may be a scaled-down version from a full Feasibility Approval Request), funding of the Nation's request (may not have to wait until the next fiscal year, depending on ISC funding availability), completion of the new feasibility study, submission for technical review by ISC, and possible approval or rejection.

Design

Once ISC has accepted the results of the feasibility study, the Nation may then apply to ISC with a 'Design Approval Request.' The contents of this document are outlined in Appendix B.1. ISC reviews this request and, once satisfied with its content, moves to identify funding to proceed with infrastructure design. Funding for design is subject to availability within the ISC budgeting process. Similar to the comment above regarding feasibility studies, the Nation would typically engage a consulting engineer to complete the design of the water treatment plant. This work is completed, and submitted to ISC for review by the agency's internal technical staff. The review undertaken by staff is guided by the checklist included in Appendix B.2.

ISC technical staff may offer some suggested refinements to the design of the water treatment plant. Experience has shown that there are generally a limited number of suggestions, and those that are provided can typically be accomplished fairly quickly and efficiently.

Project Approval

There are a number of key aspects of the water treatment plant which are embedded within this phase entitled 'Project Approval Request'. These key aspects include:

- Final design drawings and accompanying specifications and design report
- Tender documents (also known as bid requests) used for a competitive process to engage a contractor to construct the water treatment plant
- Capital cost estimate and cash flow projection
- Operation and maintenance cost estimate
- Confirmation of associated land and related requirements – environmental review, land encumbrance, required permits
- Special plans related to water treatment – plant commissioning, emergency response, maintenance management, training program.

Additional details on these elements are set out in Appendix C.3.

Once all of these project approval components are reviewed and approved by ISC internal technical staff, funding for construction can be sought. Funding for construction is subject to availability within the ISC budgeting process. Past experience has shown that the timing of funding availability may present challenges. One such challenge is receipt of approved project funding in early / mid summer, a time when contractors are typically fully engaged and not prepared to offer price-competitive bid to construct infrastructure such as water treatment facilities. This results in higher costs. A second challenge is time-bound funding where infrastructure must be completed within a short period of time, such as within the remaining Government of Canada fiscal year. This situation has become particularly acute when funding is announced in early / mid summer, bids sought and received and contracts awarded in late summer/ early fall, and infrastructure constructed over fall and through the winter in order to meet a March 31 deadline. This set of circumstances results in high costs and potentially sub-optimal workmanship due to difficulties constructing works in Canadian winter conditions.

Once funding is found, bids are requested and evaluated, a contractor is retained, and construction work proceeds and is completed, the Nation and the team it has retained must submit a package of documents to ISC for the post-construction stage technical review. Details on the components of this package are included in Appendix C.4. They can generally be summarized as follows:

- Certificate of project completion and letter of acceptance by Nation
- Project expenditure accounting
- Capital Asset Inventory System (CAIS) form

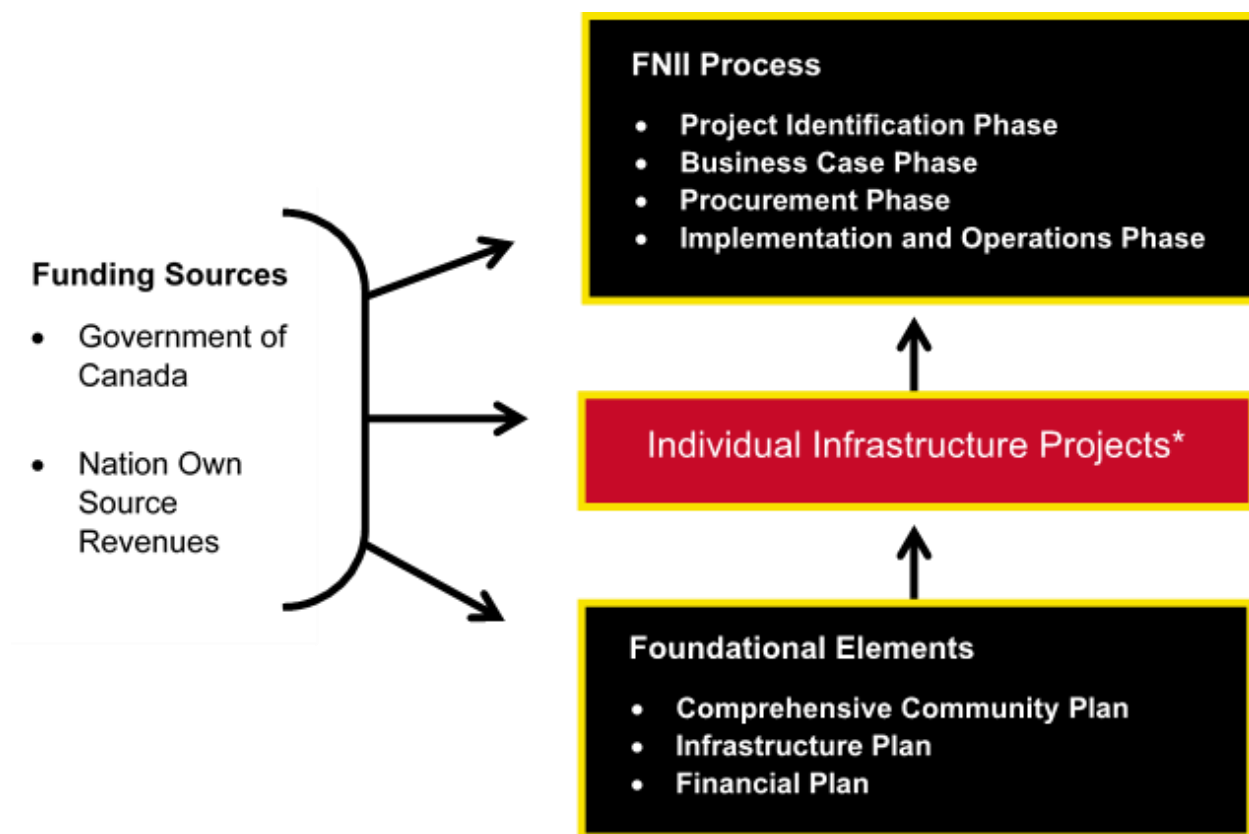
- Project completion report (including 'special plans' noted in above list)
- Warranty final inspection process
- Record drawings, legal survey plans, National Building Code Schedules and copies of permits.

SECTION 3 – INFRASTRUCTURE DEVELOPMENT PROCESS THROUGH FIRST NATIONS INFRASTRUCTURE INSTITUTE (FNII)

3.1 The First Nations Infrastructure Institute (FNII) Concept

As noted in Section 1 of this report, the FNII concept involves the development of a First Nation-led organization which will provide an alternative means of delivering infrastructure projects. This concept is illustrated in Figure 4.

Figure 4 – Infrastructure Development Process Through FNII



* Note: Feasibility studies to determine best technical solution where alternatives exist will have been completed when project enters FNII process

This report focusses on the 'Foundational Elements' illustrated in Figure 4, as well as the feasibility study involved in solidifying individual projects which make their way into the FNII process. The intent of a feasibility study is to define the infrastructure challenge facing the community and the desired / required outcome, identify optional approaches to achieving that outcome, evaluate the optional approaches, and select the preferred solution. The position of a feasibility study in the overall process of infrastructure development is illustrated in Figure 5.

There are a number of other elements of the FNII process shown in Figure 4. These generally include project identification, preparation of a business case, procurement, and implementation and operations. Additional information is provided in other documents included in the overall FNII submission compiled in the spring of 2019, and summarized in the graphic in Appendix D. Figure 4 also identifies funding sources which will be drawn upon to support FNII and its work. These funding sources are also elaborated upon by others in the spring 2019 submission. While this report does not delve into the details of the FNII process (business case, procurement, etc.) or funding, it does include in Section 4 some commentary on where these dimensions of FNII can offer some improvements in comparison to the infrastructure development process through ISC.

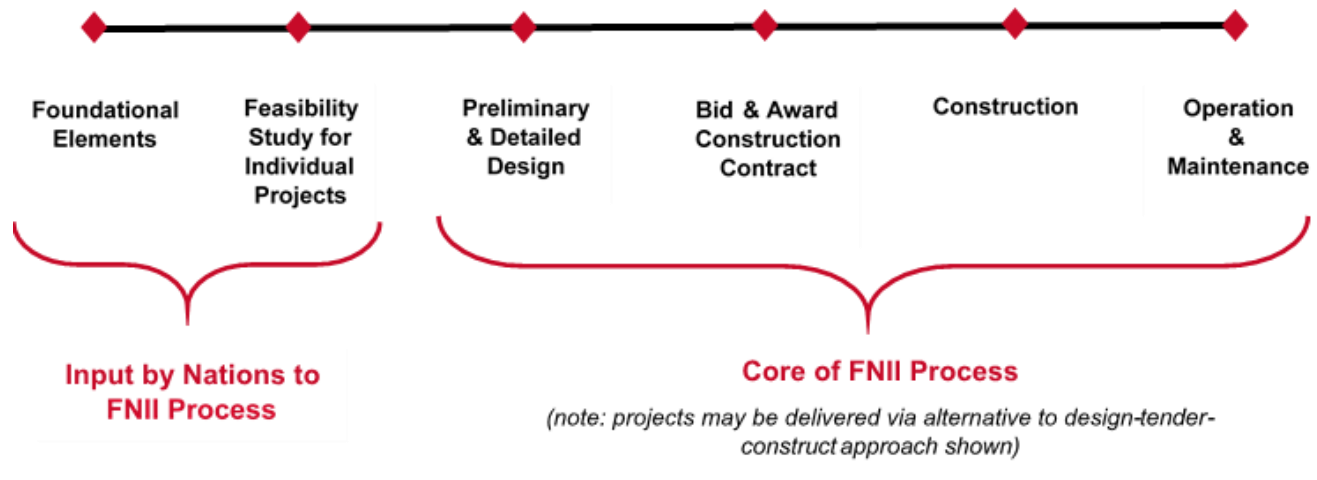
3.2 The Proposed FNII Process

A report entitled 'Alternative Approach to Infrastructure Planning and Approval' was prepared by Urban Systems in the spring of 2018 for the First Nations Tax Commission, in support of the FNII initiative. The following subsections are summaries of some of the contents of this report.

Principles

A number of key principles will guide the engagements between FNII and individual Nations. These principles are summarized below.

Figure 5 – Infrastructure Development Continuum with FNII



Principle #1 – Participation in FNII is Voluntary

Nations will be invited to join FNII, but this decision is entirely at the discretion of Chief, Council and the community. This is similar to the framework for participation in other First Nation-led initiatives including the *First Nations Fiscal Management Act* and *First Nations Land Management Act*.

Principle #2 – FNII Perspective on Working with Communities

FNII will work with Nations who choose to join the Institute to achieve well-planned and approved infrastructure projects that meet the communities' social, cultural, environmental and economic goals in the most efficient and effective way. This will support Nations' objectives to build more economically and fiscally sustainable infrastructure.

Principle #3 – FNII Will Serve as Guide, Mentor and Advocate for Communities

Members of the FNII Board and staff will guide participating Nations through the process of planning and approving infrastructure projects, and provide mentorship to the community generally and Council / staff engaged in planning specifically. FNII's advocacy function is two-pronged – advocating for the use of the FNII-developed approaches discussed in this (and related) documents, and advocating on a Nation's behalf with the Government of Canada to support proper funding for construction, and operations and maintenance, of approved infrastructure projects.

Principle #4 – The Relationships Between FNII and Participating Nations Are Vital

FNII will maintain positive, constructive and respectful relationships with those Nations who choose to participate. These relationships will be collaborative, not adversarial. FNII and the Nation will work toward common goals.

Principle #5 – There Will Be Common Expectations Between FNII and Participating Nations

Expectations regarding the infrastructure planning and approval process will be clearly and jointly defined by FNII and the participating Nation, transparent to both parties, and consistent throughout the process. This contrasts with a process where the steps and requirements along the way are poorly understood, not well communicated, and subject to change.

Principle #6 - Integration of FNII Infrastructure Planning Activities

There are a number of components of the infrastructure development process set out in the later sections of this report. It is proposed that FNII develop a wide range of supporting material for use in work with participating Nations. Examples include legislation, guides and handbooks, templates, case studies and best practices, and courses. This material will be well-integrated to ensure that all individual pieces relate well to one another.

Principle #7 – FNII as Capacity Builder

FNII will look for every opportunity to build capacity within the participating Nation. Examples of relevant skills to be advanced include community planning, engineering and architecture, environmental science, archaeology and cultural heritage research, cost estimating, project management, and community engagement.

Foundational Elements

Those Nations who choose to join FNII will be called upon to provide a number of ‘foundational elements’ which support the infrastructure development process. These elements may be in place when the Nation joins FNII, or prepared as a prerequisite to full participation in FNII. The nature of these foundational elements is summarized briefly below.

Comprehensive Community Plan (CCP)

A CCP is a broad-based plan which incorporates multiple perspectives in advancing the community from its current state to a desired future. Social, cultural, lands and resources, economic, governance and other perspectives are addressed in a CCP. There are three elements of a CCP which are particularly relevant to the FNII process – lands and resources (including how a Nation intends to develop portions of its lands for member and other uses), infrastructure required to service these lands (at an overview level; see further details below), and economic (especially how the Nation intends to recover the costs of building and operating / maintaining infrastructure; again, at an overview level). With respect to lands, it is also important that Nations indicate what portions of their holdings are available, if any, for leasing for economic development purposes (through a land designation or similar process, depending upon which legal framework the Nation utilizes).

Infrastructure Plan

A Nation’s infrastructure plan will set out the infrastructure required to address two aspects of community need – serviced land (including both on-site and major off-site trunk services), and buildings on land which is already serviced. The plan will take the broad overview level of information provided in the CCP and characterize individual infrastructure projects in three ways – project intent and definition, timing, and Class C/D cost estimate.

Financial Plan

The financial plan indicates the manner in which each project in the infrastructure plan will be funded (both capital and operating / maintenance costs). Broadly speaking, there will likely be three general approaches. The first is infrastructure required to fulfill Nation member needs, where emphasis will be placed on the Government of Canada as a funding source. The second is infrastructure required to support economic development initiatives on Nation lands, where a variety of cost recovery tools provided through the First Nations Tax Commission can yield funding (along with Government of Canada support, as well as other revenue sources the Nation may have). The third approach can be considered as a hybrid approach wherein the infrastructure project serves both Nation member and economic development needs. A merging of the infrastructure streams outlined under the first two approaches is appropriate here.

Moving Through the Foundational Elements

The steps Nations are invited to complete as they move through FNII’s foundational elements include:

- Join FNII through a Council resolution or similar formal instrument

- Engage advocate from FNII who will provide a package of legislation, handbooks, templates, case studies and best practices to guide the Nation through the process of completing the foundational elements noted above (if they are not already in place)
- Provide copies of all foundational elements (CCP or comparable, which includes land use plan; infrastructure plan; financial plan) to FNII.

Advancing Individual Infrastructure Projects

The foundational elements will identify a number of individual infrastructure projects which the Nation looks to complete over the forthcoming years. It is suggested that these projects be grouped according to priority and timeframe – annually for years 1 through 5, and also longer-term projects identified for years 6 to 10 if the Nation is able to define these.

There are several features of individual infrastructure projects which should be defined prior to inclusion in the FNII process described below. These are summarized below, and elaborated upon in the 'Alternate Approach to Infrastructure Planning and Approval' report by Urban Systems noted earlier in this document.

- Need for the project
- Key design criteria
- Alternative means of addressing community need
- Land requirements
- Site considerations (archaeological / cultural, environmental, resource values, etc.)
- Approvals required
- Capital cost estimates

In many cases, these items will be addressed in a feasibility study. This is particularly the case where there are a number of options for addressing the community need, and these options require evaluation to determine the preferred approach. As noted in the introductory text to this section of the report, a feasibility study for individual infrastructure projects is a very valuable accompaniment to the foundational elements which address a Nation's broader infrastructure needs and the manner in which they will be funded.

At this point, the individual infrastructure project is ready for inclusion into those elements of the FNII process depicted in Figure 4. For reference, these include:

- Project identification (outreach and engagement of Nations, intake of individual projects, funding requirements identified, and project defined)
- Business case (procurement options identified, assessed and preferred approach determined)
- Procurement phase (competitive process to engage preferred proponent to deliver project(s))
- Implementation and operations (design, construction, operations and maintenance, long-term asset management).

Further details on these elements of the FNII process are provided in companion documents to this report developed as part of the evolution of FNII.

One aspect of these elements which warrants further comment at this point is the scale of infrastructure projects being brought to the FNII, and the degree to which projects may be bundled together. In some instances where a project is small in scale and not suited to bundling with other projects (due to location, type of infrastructure, nature of construction and / or operating requirements or other factors), a simple and streamlined procurement analysis (comprising the business case and procurement phase elements noted above and in Figure 4) may be appropriate. In other situations where a project is large in scale and/or well-suited to bundling with other projects, a much more thorough procurement analysis would be appropriate.

All of the aspects of the FNII process, from completing the 'Foundational Elements' (including feasibility studies) to the project identification, business case, procurement and implementation / operations elements noted above will require funding. This need is identified in Figure 4, and comprises contributions from the Government of Canada and / or Nations' own-source revenues. These contributions may be monetized and / or securitized through the FNII process, including via the interface with the First Nations Finance Authority. Additional information regarding these funding dimensions of FNII are also elaborated upon in companion documents prepared as part of the advancement of FNII.

A Note About Professional Certification

Professional certification will be required at many points during the process of moving through infrastructure development. Registered professional biologist and archaeologists are required to conduct their work to high professional standards and sign reports. Engineering reports and designs must be certified by professionals qualified to practice in relevant fields (i.e. civil, geotechnical, structural, mechanical, electrical). Similar requirements are in place for architects.

There has been a general trend in Canada toward placing higher degrees of responsibility, as well as accountability and liability, on professionals such as those noted above. An accompanying trend referred to as 'value engineering' (VE) (also known as 'value analysis' or 'value management') has been in place in most Canadian provinces since the 1980s – 1990s. VE recognizes the fact that a professional engineers' or architects' peers can bring useful perspectives to the infrastructure design process. Engagement of VE teams can be especially useful at two points – initial identification and evaluation of optional solutions (such as during a feasibility study), and during detailed design (typically at the 65% - 70% point of design completion). VE can be a very useful component of the FNII process.

3.3 Description of Process for Water Treatment Plant

Introduction

This section of the report outlines the manner in which a water treatment plant required by a Nation would move through the FNII process.

FNII-Participating Nation Completes Foundational Elements

The participating Nation, with the support of FNII, is required to complete the foundational elements noted earlier in this report. Specifically, these elements will include:

- Comprehensive Community Plan – to include population growth, demographic, housing and other community building requirements over a forecast period of at least 5 – 10 years, along with the land areas where housing and other community buildings will be located. If the Nation is identifying land (through a designation or other process) for economic development purposes, the location, type and extent of these economic development activities is to be identified
- Infrastructure Plan – infrastructure services required to serve the needs arising from the comprehensive community plan (i.e. water, sanitary sewer, roads, energy and communications services). This plan should also identify the relevant level-of-service standards which will be met in designing and constructing this infrastructure
- Financial Plan – broad sources of funding to pay for infrastructure, focussed on Government of Canada for Nation member needs, and own-source revenues (including that derived from property taxation and similar sources) for economic development needs.

The water treatment project will be an outcome of these foundational elements, which will be used specifically in determining:

- Quantity of water required to be produced by the water treatment plant (potentially to serve two broad areas of need – community members, and economic development activities if relevant)
- Quality of water to be produced through the treatment process (in order to meet level-of-service standards, such as the Guidelines for Canadian Drinking Water Quality).

Feasibility Study

Water treatment projects are often complex for a variety of reasons – there are optional sources of water (groundwater, potentially multiple surface water bodies), many varied means for treating water, health and aesthetic parameters are evolving, and operation and maintenance requirements can be complex. Due to these and other reasons, feasibility studies are typically undertaken for water treatment projects, and will be in the instance illustrated here.

A very important dimension of this feasibility study is the engagement of the Nation throughout all aspects of the work – members, Chief and Council, operations and maintenance staff within the community and others will all have vital input into all aspects of the study (i.e. source, treatment options, operation and maintenance requirements, etc.). With respect to the latter point (operation and maintenance requirements), these will be an integral and central feature of the feasibility study to ensure that the water treatment process ultimately decided upon is appropriate for the Nation.

The broad scope of the feasibility study will include:

- Identify the full range of options for providing clean, potable and aesthetically-pleasing water to the Nation (sources, treatment processes, etc.)

- Determine evaluation criteria which will be used to evaluate these options
- Apply evaluation criteria
- Selected preferred water treatment solution.

As noted above in the preceding section of this report, a value engineering (VE) exercise can be very useful in providing additional perspectives to a feasibility study such as this, and ensuring that the Nation is deriving the best possible solution.

The outcome of the feasibility study will be a preferred solution characterized as follows:

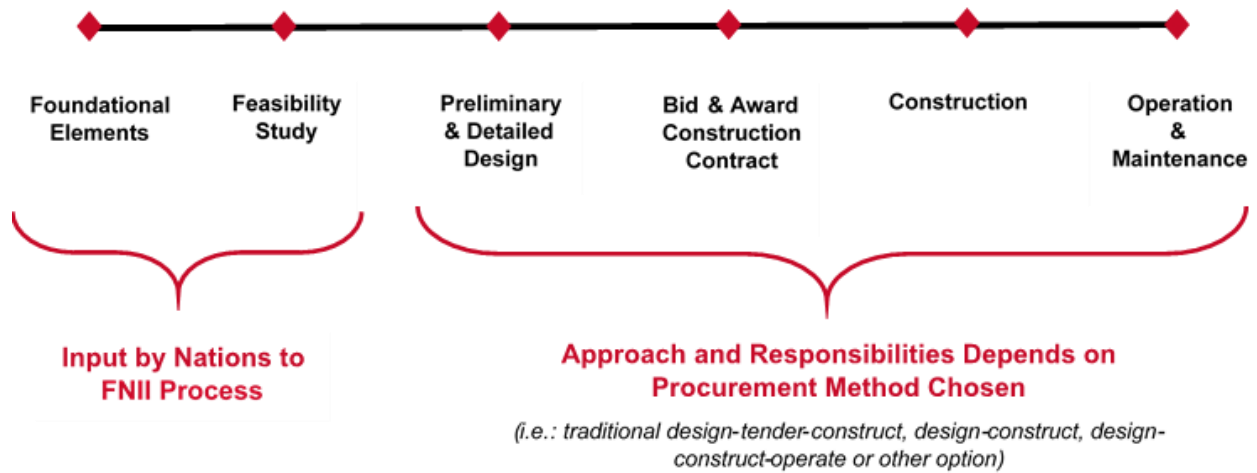
- Source of water
- Treatment process
- Class C/D capital cost estimate
- Operating cost estimate
- Land requirements
- Site considerations (i.e. biophysical, cultural /archaeological, land tenure, hazardous conditions, other relevant considerations)
- Approvals required (permits, certifications or other authorizations from other levels of government)

Project Advanced to the FNII Process

At this point the water treatment project is advanced through the other elements of the FNII process. The first step here is that the Nation responds to the outreach and engagement step in the Project Identification Phase (noted in Figure 4 and elsewhere above), and the project is taken into FNII. It may then be bundled with other projects for the subsequent phases (Business Case, Procurement, Implementation and Operations), or proceed on its own.

Regardless of whether the Nation's water treatment project is bundled with others or proceeds on its own, it will have to move through the other steps in the infrastructure development continuum. These steps are illustrated on Figure 6 (from preliminary / detailed design through operations and maintenance), and the observation made that the approach to undertaking these steps and where responsibility lies is dependent upon the procurement method chosen.

Figure 6 – Infrastructure Development Continuum with FNII – Procurement Options



SECTION 4 - INFRASTRUCTURE DEVELOPMENT PROCESS EFFICIENCIES AVAILABLE THROUGH THE FIRST NATIONS INFRASTRUCTURE INSTITUTE

Section 1 of this document sets out FNII's three primary objectives with respect to the infrastructure it will work with communities to develop. These objectives include:

- Moving through the process of planning, designing and constructing infrastructure quickly and efficiently
- Obtaining greater value for money for costs incurred for constructing infrastructure
- Ensuring infrastructure lasts longer.

It is believed that FNII can achieve these objectives, and do so through the manner described in Sections 2 and 3 of this report using a Nation's water treatment plant as an illustrative example. The key reasons FNII can achieve these objectives include:

- The planning prerequisites for efficient and proper infrastructure development – comprehensive community plan including land use arrangements (type, extent and location of uses), infrastructure servicing needs for these land uses, financing and cost recovery, and economic development initiatives where relevant to the Nation – will be in place for participating Nations
- Feasibility studies will be thoroughly conducted where there are optional means of providing an infrastructure service (such as with water treatment), and done once (i.e. not multiple iterations). Value engineering (VE) teams may be engaged during these studies
- Professional judgement coupled with accepted level-of-service standards will be relied upon to determine the best infrastructure solutions. This approach will be free from prescribed solutions
- There will be one application for individual infrastructure projects emerging out of the foundational planning and feasibility process for Nations (i.e. not multiple applications, and possibly re-applications, for the feasibility, design and project approval phases)
- Timing of funding for construction of infrastructure projects delivered through the traditional design – bid- build process (where applicable) will be co-ordinated by FNII to ensure that bid documents are released at the appropriate time to ensure competitive submissions and pricing from constructors, to optimize the length of available construction season given the geographic circumstances of the relevant Nation (to reduce mobilization costs), and to avoid winter construction activities where both cost effectiveness and potentially construction quality can be compromised
- Ability to mix Nation member and economic development infrastructure needs, such as a water treatment plant which would serve both, including merging Government of Canada and own-source revenues to fund combined infrastructure. This can result in economies of scale during construction (i.e. one larger plant rather than two separate and smaller plants) as well as operations (i.e. one operating system rather than two)
- Where own-source revenues are involved, Nations will be provided continuing support from the First Nations Tax Commission and the TULO Centre for Indigenous Economics to develop and utilize these revenue streams

- Procurement options will be available to the FNII and its participating Nations, such as Design – Build, and Design-Build-Operate, by one team in contrast to two or three separate entities. These approaches can result in better designs, constructability of infrastructure, and operating efficiencies where those who designed and constructed the facility are also engaged and responsible to operate and maintain it to a set level-of-service over a period of time
- Individual infrastructure projects emerging from one FNII participating Nation can be bundled with others to achieve complementarity and economies of scale. This in turn can translate into cost and time savings, as well as other benefits.

There are potentially other benefits from a financial perspective in regard to how funds from the Government of Canada and individual Nations may flow to and through FNII. These can include monetization and securitization of these funding streams. Additional comments in this regard are provided by other members of the FNII team.

APPENDIX A.1

Checklist for Feasibility Stage Funding Application

Checklist for Feasibility Stage Funding Application**

Project Name: _____

CPMS/ ICMS # _____

	<u>Omitted</u>	<u>Submitted</u>	<u>Not Applicable</u>
First Nation Letter of Support	_____	_____	_____
Project Description and Rationale	_____	_____	_____
CDP/ PDP Reference	_____	_____	_____
Environmental Assessment of Field Investigations Activities	_____	_____	_____
Project Implementation Plan & Schedule	_____	_____	_____
Terms of Reference (ToR)	_____	_____	_____
Proposals for Consultant/ Subconsultants Services and Fee Estimate including proposal from Environmental Subconsultant to complete Environmental Scoping Report and IEMS Environmental Review-Project Description Form	_____	_____	_____
Class 'D' Project Cost Estimate	_____	_____	_____
Cash Flow	_____	_____	_____
Check Level of Service Standard (LoSS)	_____	_____	_____

CI Technical Reviewer: _____

Date: _____

** Checklists are for the use of CI Technical Reviewer.
Information listed may not all be required or additional information may be required.

APPENDIX A.2

Checklist for Feasibility Stage Technical Review

Checklist for Feasibility Stage Technical Review**

Project Name _____

CPMS/ ICMS # _____

	<u>Omitted</u>	<u>Submitted</u>	<u>Not Applicable</u>
Feasibility Study	_____	_____	_____
• Filed in Technical Library – <i>GCdocs#</i> _____	_____	_____	_____
Project Description & Rationale	_____	_____	_____
Option Analysis	_____	_____	_____
Preferred Option Recommended	_____	_____	_____
Land Requirements Identified	_____	_____	_____
O&M Capacity Assessment	_____	_____	_____
Subconsultant Reports	_____	_____	_____
IEMS Environmental Review-Project Description Form supplemented by an Environment Assessment Scoping Report	_____	_____	_____
Phase 1 Environmental Site Assessment (ESA) Report – for Subdivision Projects Only	_____	_____	_____
Pre-design Research Identified	_____	_____	_____
Regulatory Impact/ Permits Identified	_____	_____	_____
(Environment Canada, Fisheries Canada (DFO), FNHA, Transport Canada, BC Ministry of Environment, BC FLNRO, MoTI, timber permit assessment, gravel extraction permit, solid waste disposal permit, burning permit, provincial land tenure permit) Note: Timber Permit is not required if First Nation has their own forestry land code under the First Nation Land Management Act.			
Land Encumbrance Check	_____	_____	_____
Project Schedule	_____	_____	_____
Project Construction Process	_____	_____	_____
Class ‘C’ Capital Cost Estimate	_____	_____	_____
Class ‘D’ O&M Cost Estimate	_____	_____	_____
Check Level of Service Standard (LoSS)	_____	_____	_____

CI Technical Reviewer: _____

Date: _____

** Checklists are for the use of CI Technical Reviewer.
Information listed may not all be required or additional information may be required.

APPENDIX B.1

Checklist for Design Stage Funding Application

Checklist for Design Stage Funding Application**

Project Name: _____

CPMS/ ICMS # _____

	<u>Omitted</u>	<u>Submitted</u>	<u>Not Applicable</u>
First Nation Letter of Support	_____	_____	_____
Project Description & Rationale	_____	_____	_____
Project Implementation Plan/ Schedule	_____	_____	_____
Feasibility Study	_____	_____	_____
• Filed in Technical Library – <i>GCdocs</i> # _____	_____	_____	_____
Land Encumbrance Check	_____	_____	_____
Start IEMS Simple Environmental Review or Detailed Environmental Review Form	_____	_____	_____
Fee for completing an Environmental Assessment Study Report (if required)	_____	_____	_____
Required Permits Identified	_____	_____	_____
• Timber Description	_____	_____	_____
• Other Permits	_____	_____	_____
(Gravel extraction permit, solid waste disposal permit, burning permit, provincial land tenure permit, etc.)			
Project Construction Process	_____	_____	_____
• Initial Const. Mgmt. Best Practices	_____	_____	_____
O&M Capacity Assessment	_____	_____	_____
• Cost Estimate for O&M Manual	_____	_____	_____
• Cost Estimate for O&M Plan	_____	_____	_____
Comments by other Regulatory Agencies	_____	_____	_____
• Environment Canada	_____	_____	_____
• Fisheries Canada (DFO)	_____	_____	_____
• Others _____	_____	_____	_____
(FNHA, Transport Canada, BC Ministry of Environment, BC FLNRO, MoTI, etc.)			
Terms of Reference for Consultant Services	_____	_____	_____
Proposals for Consultant/ Subconsultants Services and Fee Estimate	_____	_____	_____
Class 'C' Total Project Cost Estimate	_____	_____	_____
Cash Flow	_____	_____	_____
Funding Submission/ DAR	_____	_____	_____
Check Level of Service Standard (LoSS)	_____	_____	_____
***Confirm Consultan's SOW for WTP & WWTP:	_____	_____	_____
Complete Design Guideline Checklist	_____	_____	_____

CI Technical Reviewer: _____

Date: _____

** Checklists are for the use of CI Technical Reviewer.
Information listed may not all be required or additional information may be required.

*** WTP: Water Treatment Plant WWTP: Waste Water Treatment Plant

APPENDIX B.2

Checklist for Design Stage Technical Review

Checklist for Design Stage Technical Review**

☐ **Pre-design/ Pilot Study/ Preliminary Design Phase**

☐ **Final Design Phase**

Project Name: _____

CPMS/ ICMS # _____

	<u>Omitted</u>	<u>Submitted</u>	<u>Not Applicable</u>
Project Description & Rationale	_____	_____	_____
Preliminary/ Final Design Report (signed & sealed)	_____	_____	_____
• Preliminary Design Investigation Details	_____	_____	_____
• Preliminary/ Final Design Report (signed & sealed)	_____	_____	_____
• Preliminary/ Final Design Drawings (signed & sealed)	_____	_____	_____
• Outline/ Final Specifications (signed & sealed)	_____	_____	_____
• Tender Documents (signed & sealed)	_____	_____	_____
• Land Encumbrance Check	_____	_____	_____
• Right-of-ways Identified/ Confirmed	_____	_____	_____
• Environment Assessment Study Report	_____	_____	_____
• Complete IEMS Simple Environmental Review or Detailed Environmental Review Form	_____	_____	_____
• Required Permits Identified/ Confirmed	_____	_____	_____
• Timber Description	_____	_____	_____
• Other Permits _____	_____	_____	_____
(Gravel extraction permit, solid waste disposal permit, burning permit, provincial land tenure permit, etc.)			
• Comments by other Regulatory Agencies	_____	_____	_____
• Environment Canada	_____	_____	_____
• Fisheries Canada	_____	_____	_____
• Others _____	_____	_____	_____
(FNHA, Transport Canada, BC Ministry of Environment, BC FLNRO, MoTI, etc.)			
• For ***WTP & WWTPs:	_____	_____	_____
• Complete Design Guideline Checklist	_____	_____	_____
• Commissioning Plan	_____	_____	_____
• Draft O&M Manual	_____	_____	_____
• O&M Training Plan	_____	_____	_____
• Project Schedule	_____	_____	_____
• Class 'B/ A' Total Project Cost Estimate	_____	_____	_____
• Cash '___' O&M Cost Estimate	_____	_____	_____
• Project Construction Process	_____	_____	_____
• Const. Mgmt. Business Plan	_____	_____	_____
• Check Level of Service Standard (LoSS)	_____	_____	_____

CI Technical Reviewer: _____

Date: _____

** Checklists are for the use of CI Technical Reviewer.
Information listed may not all be required or additional information may be required.

*** WTP: Water Treatment Plant WWTP: Waste Water Treatment Plant

APPENDIX C.1

Checklist for Acquisition/Construction Stage Funding Application

Checklist for Acquisition/ Construction Stage Funding Application**

Project Name: _____

CPMS/ ICMS # _____

	<u>Omitted</u>	<u>Submitted</u>	<u>Not Applicable</u>
First Nation Letter of Support	_____	_____	_____
Project Description & Rationale	_____	_____	_____
Project Implementation Plan/ Schedule	_____	_____	_____
Final Design Information	_____	_____	_____
• Final Design Drawings (signed & sealed)	_____	_____	_____
• Final Specifications (signed & sealed)	_____	_____	_____
• Final Design Report (signed & sealed)	_____	_____	_____
Filed in Technical Library - <i>GCdocs</i> # _____	_____	_____	_____
• Tender Documents (signed & sealed)	_____	_____	_____
• Class 'A' Total Capital Cost Estimate	_____	_____	_____
• Cash Flow Projection	_____	_____	_____
• ISC to review and sign-off IEMS - Simple or Detailed Environmental Review Form	_____	_____	_____
• Land Encumbrance Check	_____	_____	_____
• Right-of-ways Identified/ Confirmed	_____	_____	_____
• Required Permits	_____	_____	_____
• Draft Timber Permit	_____	_____	_____
• Other Draft Permits _____	_____	_____	_____
(Gravel extraction permit, solid waste disposal permit, burning permit, provincial land tenure permit)			
• Comments by other Regulatory Agencies	_____	_____	_____
(Environment Canada, Fisheries Canada (DFO), FNHA, Transport Canada, BC Ministry of Environment, BC FLNRO, MoTI, etc.)			
• Class 'A' O&M Cost Estimate	_____	_____	_____
• For ***WTP & WWTPs only	_____	_____	_____
• Complete Design Guideline Checklist	_____	_____	_____
• Commissioning Plan	_____	_____	_____
• Draft O&M Manual	_____	_____	_____
• Draft Emergency Response Plan (ERP)	_____	_____	_____
• Draft Maintenance Management Plan	_____	_____	_____
• O&M Training Plan	_____	_____	_____
Proposals for Consultant/ Subconsultants	_____	_____	_____
Services and Fee Estimate	_____	_____	_____
Project Construction Process	_____	_____	_____
• Final Construction Mgmt. Business Plan	_____	_____	_____
Funding Submission/ PAR for Construction	_____	_____	_____
Check Level of Service Standard (LoSS)	_____	_____	_____

CI Technical Reviewer: _____

Date: _____

** Checklists are for the use of CI Technical Reviewer. Information listed may not all be required or additional information may be required.

*** WTP: Water Treatment Plant WWTP: Waste Water Treatment Plant

APPENDIX C.2

Checklist for Post Construction Stage Technical Review

Checklist for Post Construction Stage Technical Review**

Project Name: _____

CPMS/ ICMS # _____

	<u>Omitted</u>	<u>Submitted</u>	<u>Not Applicable</u>
First Nation Letter of Acceptance	_____	_____	_____
First Nation Certificate of Completion	_____	_____	_____
Project Expenditure Accounting	_____	_____	_____
• Final Project Costs	_____	_____	_____
• Budget Comparison	_____	_____	_____
• Funding Comparison	_____	_____	_____
CAIS Forms (signed and sealed)	_____	_____	_____
Completion Report	_____	_____	_____
• Project Implementation History	_____	_____	_____
• Project Participants	_____	_____	_____
• Project Milestones	_____	_____	_____
• Field Inspection Report	_____	_____	_____
• Inspection and all Test Results	_____	_____	_____
• Colour Photographs	_____	_____	_____
• For ***WTP & WWTPs Only:	_____	_____	_____
• Commissioning Reports	_____	_____	_____
• O&M Manual (both digital & hardcopy)	_____	_____	_____
• Emergency Response Plan	_____	_____	_____
• Copy of SCADA programming	_____	_____	_____
• Copy of program of the PLC	_____	_____	_____
• Maintenance Management Plan	_____	_____	_____
• Warranty Final Inspection Process	_____	_____	_____
• NBC Schedules 'A', 'B' and 'C'	_____	_____	_____
• Fire Commissioner's Final Inspection (by a third party Fire Protection Engineer or a Fire Inspector from local jurisdiction)	_____	_____	_____
• Fuel Tank Registration(if fuel tank installed during project)	_____	_____	_____
• Record Drawing Prints (signed & sealed) (11"x17" in completion report, and full sized prints)	_____	_____	_____
• Digital Record Drawings (Electronically Sealed Full Size pdf/A verified by Notarius platform)	_____	_____	_____
• Legal Survey Plan	_____	_____	_____
• Registered (ideally)	_____	_____	_____
• Copies of Permits: _____	_____	_____	_____
(Environment Canada, Fisheries Canada (DFO), FNHA, Transport Canada, BC Ministry of Environment, BC FLNRO, MoTI, timber permit, gravel extraction permit, solid waste disposal permit, burning permit, provincial land tenure permit)			
• Sealed Professional Certification	_____	_____	_____
Completion Report filed to Technical Library - <i>GCdocs#</i> _____	_____	_____	_____
Letter from First Nation confirming receipt of O&M Manual, Commissioning Report, Completion Report & Record Drawings	_____	_____	_____

CI Technical Reviewer: _____

Date: _____

** Checklists are for the use of CI Technical Reviewer.

Information listed may not all be required or additional information may be required.

*** WTP: Water Treatment Plant WWTP: Waste Water Treatment Plant

APPENDIX D

The FNII Process

Appendix D – FNII Process

