BC Hydro
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CONTRACTING PLAN

Site C Clean Energy Project

Generating Station and Spillways Civil Works Contract

RFQ No. 6372, RFP No. 6374, CR No. 587854

Date: April 29, 2016

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1. PURPOSE

The purpose of this Contracting Plan is to obtain approval (at a summary level) for Infrastructure Projects Supply Chain to execute the competitive selection process for the generating station and spillways civil works contract, in accordance with this Contracting Plan.

2. GENERATING STATION AND SPILLWAYS DESCRIPTION

In June 2012 the Board of Directors approved a Procurement Approach for the construction of the Site C Project (the Project), which defined the scope of the major contracts and their delivery models. The approved approach included a generating station and spillways contract. The scope of the generating station and spillways contract included civil works, hydro-mechanical equipment and powerhouse completion.

In September 2015 the Site C Project Board and the Board of Directors approved an amendment to the Site C Procurement Approach that provided for:

- Hydro-mechanical equipment, including the gates and cranes to be procured by BC Hydro and installed by a generating stations and spillways civil works contractor; and
- Powertrain balance of plant equipment (e.g. transformers, switchgear, generator terminal equipment, circuit breakers, etc.) to be procured by BC Hydro and installed by a specialist completion contractor.

Based on this amended approach, it is anticipated that the generating station and spillways component of the Site C Project will be procured through eight or more contracts as summarised in the table in Appendix A.

This contracting plan covers the first contract outlined in the table: the generating station and spillways civil works contract. This contract has a number of key interfaces with other Site C contracts, and these other contracts are referred to in this contracting plan where relevant.

3. GENERATION STATION AND SPILLWAYS CIVIL WORKS CONTRACT REQUIREMENTS

3.1 Scope of Work

The scope of work of the generating station and spillways civil works contract includes:

- Placement of approximately 700,000 cubic metres of mass and reinforced concrete for spillways, intakes, penstock encasement and powerhouse substructure;
- Management of a borrow site and the processing and production of all aggregates and granular materials required for the concrete placement;
- Procurement, fabrication and erection of six penstocks each 10 metres in diameter;
- Procurement, fabrication and erection of structural steel in the powerhouse;
- Structural installation of equipment supplied by BC Hydro, including: gates, gantry cranes and powerhouse bridge cranes;
- Procurement and installation of embedded pipes, ground grid and conduit; and
- Turbine-generator embedment activities (e.g. concrete placement).

A more detailed scope outline is provided in Appendix B.

The equipment installation interface (for hydro-mechanical equipment and the powerhouse bridge crane) is anticipated to be as follows:

a) The equipment supplier will design, fabricate, and deliver equipment to the project site;

b) The generating station and spillways civil works contractor will assume responsibility for the equipment and perform the installation (structural assembly), monitored by the equipment supplier's on-site representatives;

c) The equipment supplier will resume responsibility for the equipment and undertake any remaining assembly activities to make the supplied equipment fully functional (e.g. electrical and mechanical connections);

d) The equipment supplier will complete pre-commissioning activities;

e) Depending on the equipment, either:

- The equipment supplier will commission the equipment (for equipment that is neither connected to the grid nor an active component of the power system); or
- BC Hydro will commission the equipment (for equipment that is either connected to the grid or an active component of the power system), supported and monitored by the equipment supplier's on-site representatives; and

f) The generating station and spillways civil works contractor will assume responsibility for the equipment until final completion of their contract, or an earlier defined handover date. The exception is the powerhouse bridge crane which the equipment supplier will be responsible for maintaining and which BC Hydro will probably have to assume responsibility for as several contractors will be sharing the use of it (including the generating station and spillways civil works contractor and the turbine-generator contractor).

3.2 Financial

The following estimate is based on the budget and schedule approved as part of the Final

Investment Decision in December 2014. As referenced in Section 2 of this contracting plan, the packaging of the project scope into contracts has been modified since the Final Investment Decision, so the estimate below is an indicative estimate and will have to be further refined through a detailed review of the scope and contract packaging.

The Contract Requisition (CR) for this contract will be raised in PassPort based on a notional contract value of $1; this amount will be amended upon contract award to reflect the actual contract value and contingency.

Upon acceptance, this Contracting Plan will be attached to the CR and the CR will require approval in accordance with BC Hydro's Financial Authority Approval Policy (**"FAAP"**).

Note that the ultimate contract value will depend in part on the technical and commercial risk allocation in the final contract, which is subject to refinement during the proposals phase of the competitive selection process.

Contract estimate (including inflation)	[redacted]
Contingency (including inflation)	[redacted]
Total	[redacted]

Site C Project EAR Value (Expected Amount):	[redacted]
Approved on:	**2014-12**

4. MARKET ENGAGEMENT

4.1 Market Communications Undertaken

4.1.1 *Website Fact Sheet*

A two-page fact sheet was posted on the Site C Project website in March 2016, outlining the following the generating station and spillways civil works contract, as well as two other upcoming contracts associated with the generating station and spillways component of the Site C Clean Energy Project (the hydro-mechanical equipment supply contract and the powerhouse bridge crane supply contract).

The fact sheet provides a summary of:

- The scope of the three contracts;
- The stages of the procurement process; and
- An indication of the procurement schedule.

4.1.2 *Market Sounding*

In March 2016, BC Hydro, in conjunction with Partnerships BC, held a series of market sounding sessions with 21 firms who were identified as potential market respondents to the following three contracts:

- The generating station and spillways civil works contract;
- The hydro-mechanical equipment supply contract; and
- The powerhouse bridge crane supply contract.

This market sounding followed previous market engagement exercises on the Site C Clean Energy Project conducted by BC Hydro during 2012 and 2013.

The purpose of the most recent market sounding exercise was to confirm market interest in the three contracts and discuss key elements in advance of procurement including:

- The proposed procurement and construction schedules;
- The labour strategy;
- The proposed contract packaging; and
- Certain commercial provisions including payment terms and performance security.

A market sounding package was distributed to each participant in advance of the sessions, and a report is available that identifies general themes and issues identified during the meetings, as well as specific concerns or suggestions. Particular comments, however, are not attributed to specific participants in order to maintain confidentiality and to encourage open and frank discussion with participants.

The market sounding exercise confirmed that there is significant interest in participating in the three contracts, and all market sounding participants indicated sufficient capacity to do the work described generally within the timelines laid out in the construction schedule provided with the market sounding package.

Broadly speaking, for all participants including civil contractors and hydro mechanical equipment and crane suppliers, the following themes generally emerged:

- Early and frequent communication between contractors, suppliers and BC Hydro will be a key element to the success of the work, including technically with respect to design integration, logistically and in terms of the labour relations on site.
- There is a significant role for BC Hydro to work proactively with contractors and suppliers at site to manage interfaces and establish early a tone that is positive and respectful and that enforces rules and deals with issues promptly.
- There needs to be a clear delineation of scope and communication of schedule expectations among the various contractors and suppliers.

Additional themes that emerged from the civil contractor participants included:

- The importance of being able to rely on documentation and information provided by BC Hydro such as site and environmental reports, permits, and quality of material sites;
- The amount and quality of the design/engineering work undertaken by BC Hydro will impact the contractors' ability to optimize their construction schedule and hence the competitiveness of their bids;
- The following contractual terms were identified as highly-desirable:
    - Having options relating to security including bonding and letters of credit;
    - Providing a balanced contract including in terms of incentives and penalties; and
    - Payment terms that keep the Contractor in a cash neutral position – for example providing advance payments for mobilisation and the procurement of equipment such as batch plants, and for scopes of work such as aggregate production.
- Concern regarding the competitive advantage that the main civil works contractor is seen to have, and whether other market respondents can be competitive given the perceived advantage.

4.2 Planned Market Communications

4.2.1 *Request for Qualifications Stage*

To support the issue of the request for qualifications for the generating station and spillways civil works contract the following communications and market engagement activities are planned:

- Post request for qualifications to BC Bid;
- Issue procurement update to:
    - The Site C Business Directory including market sounding contacts;
    - Local, regional and provincial business associations;
    - First Nations;
    - Local and regional governments;
    - Media; and
    - Trade publications such as the Journal of Commerce, ReNew Canada and InfraAmericas;
- Update Site C Business Opportunities webpages; and
- Advise Site C project team of request for qualifications release.

4.2.2 *Request for Proposals Stage*

To facilitate business connections during the proposals stage of the competitive selection process BC Hydro expects to:

- Provide the names and contact information for each proponent on the Site C website; and
- Hold a business to business-to-business networking session with the proponents in the Peace region to coincide with the Site inspection. This session will provide an opportunity for proponents to meet with local and regional suppliers and contractors, and Aboriginal businesses. Additional business-to-business networking sessions and job fairs will be planned in multiple communities close to the project site after contract award.

5. PROCUREMENT PROCESS

BC Hydro will utilize a two-stage procurement process, consisting of a qualification stage and a proposal stage, in order to select a preferred proponent to enter in the generating station and spillways civil works contract. Upon signing the contract the preferred proponent will become the generating station and spillways civil works contractor (the Contractor).

Both the request for qualifications and request for proposals documents will be prepared based on the relevant documents from the Site C Clean Energy Project main civil works procurement, and will include the closing date/time as the only mandatory item.

It is anticipated that a fairness monitor will be appointed to monitor the procurement from a fairness viewpoint because of:

i) the significance of the contract: the contract has a large dollar value and is a key contract on a project (Site C) with significant public interest; and

ii) the intent to allow collaborative meetings during the proposals phase of the competitive selection process.

A relationship review committee will be established that will meet as necessary to review relationships disclosed by respondents/proponents and evaluators, and determine the following in accordance with the rules in the request for qualifications/proposals:

- Whether any respondent/proponent/evaluator has a conflict of interest or an unfair process advantage, whether it is existing now or is likely to arise in the future; and
- Whether to permit the respondent/proponent/evaluator to continue its participation in the competitive selection process, and whether to impose any conditions that may be in BC Hydro's interests and the interests of the Project, having regard to BC Hydro's commercial objectives and the competitiveness, fairness and integrity of the competitive selection process.

It is anticipated that the relationship review committee will comprise:

- [redacted]

5.1 Procurement Schedule

The anticipated procurement schedule is outlined on the following page.

Activity	Timeline
Approve contract requisition	April 22, 2016
Request for qualifications issue	May 5, 2016
Request for qualifications submission time (6 weeks after request for qualifications issue)	June 16, 2016
Extended request for qualifications submission time (2 week extension available if requested)	June 23, 2016
Evaluation and, if requested by BC Hydro, respondent interviews/presentations (6 weeks for evaluation and, if required, Project Board/Board approval of shortlist)	July 2016
Announce proponents (subject to receipt of participation agreement): • Issue request for proposals with initial draft generating stations and spillways civil works contract to shortlisted respondents (including all drawings other than the detailed drawings for the powerhouse, but including powerhouse general arrangement drawings); and • Provide proponents with data room access.	August 8, 2016
Initial site inspections	September 6-9, 2016
Business-to-business networking sessions, Peace region	September 6-9, 2016
Collaborative session round 1	September 19 – 23, 2016
Issue complete initial draft generating stations and spillways civil works contract (including all Proposal drawings)	October 3, 2016
Collaborative session round 2	November 14 – 18, 2016
Issue final draft generating stations and spillways civil works contract	December 5, 2016
Request for proposals submission time (6 months after request for proposals issue; 2 months after final contract issue)	February 6, 2017
Extended request for proposals submission time (1 month extension available if requested)	March 6, 2017
Evaluation and, if requested by BC Hydro, proponent interviews/presentations (8 weeks for evaluation)	March – April 2017
Project Board/Board approval of preferred proponent and approval of recommendation to award	May 2017
Select preferred proponent	mid-late May/ early June 2017
Negotiate with preferred proponent	June 2017
Contract award	July 2017

5.2 Request for Qualifications

In accordance with BC Hydro's policies and obligations, the request for qualifications will be open to any interested party, here in British Columbia or elsewhere in Canada or internationally.

The request for qualifications will define the submission requirements and set out the evaluation criteria and the process of evaluation. The evaluation criteria will be focussed on respondents' experience and track record with projects similar to the scope of the contract, i.e. construction of a hydro-electric powerhouse, intake and spillways. It is anticipated that the request for qualifications will not require the submission of any design, work approach or pricing information.

As is common in large and complex procurements it is anticipated that the three or four respondents who are evaluated as being most qualified for the generating station and spillways civil works contract will be shortlisted to participate in the proposal stage.

5.2.1 *Evaluation*

The evaluation criteria presented in the following table, will be included in the request for qualifications document.

Evaluation Criteria	Weight
Project Management Capability and Experience	[redacted]
Construction Capability and Experience	
Key Individuals	
Financial Capacity	
Due Diligence Information	

5.2.2 *Evaluation Committee*

The evaluation committee and their evaluation responsibilities will be identified prior to the request for qualifications closing. The evaluation committee is expected to be made up of individuals with expertise in the following areas:

- Project management;
- Construction management;
- Commercial risk management; and
- Engineering.

The evaluation committee may be supported by evaluation teams comprising subject matter experts as required, including from the following areas:

- Project estimating;
- Project scheduling;
- Finance;
- Quality;
- Safety;
- Environment;
- Labour; and
- Aboriginal relations.

5.3 Request for Proposals

The request for proposals will be issued to the short-listed respondents (the proponents). The request for proposals will define the submission requirements and set out the evaluation criteria and the process of evaluation. It is anticipated that a two-stage submission process will be used with separate technical and financial proposals. Proponents will be required to include work plans in their technical proposals, outlining how they intend to meet various contractual

obligations.

It is anticipated that the request for proposals will allow proponents to propose technical alternates only (as opposed to commercial exceptions).

Attached to the request for proposals will be a draft contract, including specifications and drawings, which will form the basis of the proponent's technical and financial proposals. The proposal stage will allow proponents to provide input on the draft contract through collaborative meetings and the enquiry process.

Several well-established market-tested elements are planned to be used in the proposals phase of the procurement process:

a) Data room: A data room will be used to provide proponents with access to information about the Project that may help them better understand the conditions at site and the contract scope. BC Hydro may warrant a subset of the data; this would be stated in the contract and would be a mechanism for achieving the desired risk allocation.

b) Site inspections: BC Hydro will provide proponents with the opportunity to undertake site inspections and possibly site investigations during the proposal stage. The intent of the site inspections will be to enable proponents to better understand the site, thereby facilitating the submission of competitive proposals. BC Hydro-led site demonstrations may also be provided for this purpose.

c) Collaborative meetings: BC Hydro will provide proponents with the opportunity to request collaborative meetings during the proposal stage. These meetings will allow BC Hydro and individual proponents to have confidential discussions for the purpose of investigating particular technical or commercial matters of concern.

d) Honorarium: The payment of partial compensation [redacted] to unsuccessful proponents who submit a bona fide proposal in response to the request for proposals is under consideration and a decision will be made shortly before the request for proposals is issued.

5.3.1 ***Evaluation***

The evaluation criteria will be included in the request for proposals document.

5.3.2 ***Evaluation Committee***

The evaluation committee and their evaluation responsibilities will be identified prior to the request for proposals closing. The evaluation committee will be selected based on the expertise required to evaluate proposals in accordance with the request for proposals, and will be supported by evaluation teams comprising subject matter experts as required.

6. CONTRACT

The generating station and spillways civil works contract will be structured in a format familiar to the market, with key subject matters, such as the specifications and the drawings, collected in schedules for easy reference. The contract, including the Specifications, will be based on the recently-awarded main civil works contract. Updates will be minimised and made to the main civil works contract only as necessary to:

i) account for the different scope and risk allocation;

ii) account for project changes, e.g. to community commitments or environmental obligations; and

iii) improve upon the main civil works contract if the value of the improvement outweighs the value of maintaining consistency between the main civil works, turbine-generator and generating station and spillways civil works contract. Improvements may be suggested by:

   a. project team members involved in the implementation of the main civil works and turbine-generator contracts;

   b. internal reviewers of the generating station and spillways civil works contract; and/or

   c. proponents.

The table in Appendix C outlines the degree of changes that are likely to be required to each part of the main civil works contract, and identifies the content lead/principal reviewer for that part.

6.1 Design-Bid-Build

The generating station and spillways civil works contract will be a design-bid-build contract in which BC Hydro retains responsibility for the design of the generating station and spillways civil works.

The design-bid-build model was selected as the delivery model for the generating station and spillways civil works contract for several reasons, including:

- The requirement to design the hydraulic profile so that hydraulic model testing can be completed without delaying the construction period;
- The requirement to define the interfaces with the turbine-generator contractor so that the procurement can be competitively bid;
- The desire for BC Hydro to retain key design decisions, such as the functional layout, for an asset that it will be operating for at least 100 years; and
- The limited ability to transfer risk associated with the reservoir impounding structures.

The Site C integrated design team, comprising [redacted] are responsible for the design on behalf of BC Hydro, and are currently completing the detailed design stage. However, components of the design cannot be finalised until after the generating station and spillways equipment supply contracts have been awarded and the successful suppliers have provided design information (equipment dimensions and loads) to BC Hydro. For equipment that is to be supplied by other Site C contractors and installed by the Contractor, the Issued for Proposal Drawings will be based on reference designs for that equipment, in order to provide proponents with an indication of the complexity of the work, and a benchmark for BC Hydro to refer to when changes are required during contract execution.

Upon contract award Issued for Construction (IFC) drawings will start to be issued with holds around equipment that either does not need to be procured until later in the project or that is still

being designed. The IFC drawings will be issued over a 24 month period following contract award, and the holds will be progressively released as the relevant information becomes available. Change orders will be issued to address final dimensions. This is the same approach that has been used on the Revelstoke 5 project to address the interfaces between the various supply and construction contracts.

In order to facilitate this approach and reduce BC Hydro's risk exposure, the contract will:

1) Be predominantly based on unit prices and include a quantity variation clause. This will allow proponents to submit competitive prices based on the Issued for Proposal drawings and provide a mechanism to allow BC Hydro to control costs when the Issued for Construction drawings are issued and the holds are released; and
2) Include a schedule for the release of Issued For Construction drawings and for the release of holds on the IFC drawings, so that the proponents can plan their work around when they will receive final design information.

It is anticipated that the Contractor will be responsible for the design of any temporary works and for some detailed/shop drawing design work (e.g. design of all penstock erection temporary support and structural detailing of the powerhouse superstructure).

6.2 Payment

It is anticipated that the majority of the generating station and spillways civil works will be paid by unit price (for reasons outlined in the previous section), but there may also be some lump sum prices and other usual forms of pricing. Consideration will be given to payment terms that will keep the contractor in a cash-flow neutral position, such as providing advance payments for mobilisation and the procurement of equipment such as batch plants, and for scopes of work such as aggregate production.

6.3 Key Commercial Terms

The following are some of the key commercial terms that BC Hydro anticipates will be included in the generating station and spillways civil works contract:

a) Performance Security – it is anticipated that prescribed levels of performance security will be required. At the request for proposals stage it is anticipated that proponents will have the opportunity to determine the composition of the performance security required to meet the prescribed level using a combination of parent guarantees, bonding and letters of credit. The performance securities will be in accordance with the standard forms developed by Marsh and reviewed, edited and accepted by Corporate Treasury, and used in the main civil works and turbine-generator contract. The prescribed levels and acceptable combinations will be similar to those required in the main civil works contract, though a slightly higher amount of security will be included in the initial draft contract in order to test (through proponent review) whether a greater amount can be cost-effectively obtained;

b) Insurance – in accordance with the insurance strategy report prepared by Marsh and approved by the Site C leadership team and BC Hydro's Corporate Risk and Treasury, BC Hydro will obtain and maintain "wrap-up" liability and course of construction insurance, as part of the owner controlled insurance program that has been put in place for Site C. The Contractor will be responsible for obtaining any other insurance policies that they require and paying any deductibles due under the owner controlled insurance program;

c) Schedule – it is anticipated that the Contractor will be required to perform the generating station and spillways civil works to meet milestone dates established by BC Hydro, as well as the dates set out in the Contractor's approved construction schedule. Key dates

may include: final completion date, completion dates at various interim stages of the generating station and spillways civil works, particularly tied to issues such as shared access to work areas for other Site C contractors and handover of work areas to other Site C contractors. The dates and handover requirements will include, at a minimum, the relevant interfaces from the turbine-generator and main civil works contracts, and will also include those necessary to define the interfaces with the various equipment suppliers and the completion contractor;

d) Liquidated Damages – the generating station and spillways civil works contract will include payment of liquidated damages if key milestone dates are not met;

e) Worker Accommodation – BC Hydro will provide worker accommodation at the Site for use by the Contractor's workforce. BC Hydro will inform proponents of the quantity and quality of accommodation available, and each proponent will include in its proposal the amount and timing of the accommodation that it requires. The Contractor will then be required to provide BC Hydro with sufficient advance notice of the number of the Contractor's workers that will require accommodation at the Site during the term of the GSS Civil Contract, within the limits submitted in their proposal;

f) Safety and Security – BC Hydro anticipates that the Contractor will be designated as prime contractor for all of the Contractor's main work areas for the majority of the term of the GSS Civil Contract, but that:

   a. the Contractor will have to co-ordinate the activities of other contractors who require access to the Contractor's work areas to complete construction activities in the Contractor's work areas;

   b. BC Hydro will be required to designate other contractors as prime contractor for other areas of the Site; and

   c. BC Hydro will be designated as prime contractor shortly before commissioning the first generator and prior to the establishment of Worker Protection Practices (WPP) lockout;

g) The Contractor will therefore be required to collaborate and coordinate with other Site C contractors and BC Hydro for safety and security purposes across the entire Site;

h) Aboriginal groups – BC Hydro anticipates that the Contractor will be responsible to facilitate the provision of training and employment opportunities to local Aboriginal groups, and to make commercially reasonable efforts to make available specified dollar values of contracts to local Aboriginal Businesses associated with local Aboriginal groups;

i) Differing Site Conditions – BC Hydro anticipates that the risk of encountering unforeseen conditions in the borrow site will be shared between BC Hydro and the Contractor, through the following contract mechanisms:

   a. BC Hydro will provide select geotechnical test results that the Contractor can rely upon;

   b. Similar to the main civil works contract, the contract will include a clause that the Contractor is deemed to have examined the Site and the local conditions and be knowledgeable of the site, and the Contractor is only entitled to claim a change to the extent the actual site or actual local conditions or both related to the performance of the Work would not be apparent to a qualified and experienced contractor upon review of the contract and inspection of the site.

j) Equipment – the Contractor will be responsible for:

   a. the supply and installation of all equipment required for the Contractor to meet its obligations as described in the GSS Civil Contract; and

   b. the installation of certain specified pieces of major equipment which will be

supplied by BC Hydro (for example hydro-mechanical gates, gantry cranes, and powerhouse bridge cranes);

k) Stakeholder Communication and Consultation – BC Hydro will have lead responsibility for all aspects of stakeholder and public communication and consultation required for Site C, including with respect to property owners and Aboriginal groups. The Contractor will be required to support BC Hydro in such communication and consultation;

l) Environmental Management - the Contractor will be required to develop and follow a plan, as part of the performance of the generating station and spillways civil works, that complies with both BC Hydro's and the relevant regulatory agencies' requirements regarding environmental management;

m) Land Tenure – BC Hydro will acquire all land tenures required for the permanent Site C works, including the permanent generating station and spillways civil works, as well as temporary land tenures for use during the construction of Site C; and

n) Labour - The Contractor will be required to provide all labour necessary for the complete performance of the generating station and spillways civil works, and will be responsible for recruiting and retaining skilled and qualified labour. If the Contractor is, or becomes, a party to a collective agreement with a union then the Contractor will be required to have agreements with such union(s) that include certain specified terms intended to maintain labour stability at the Site, following the same requirements as for the main civil works contract.

7. KEY RISKS AND MITIGATION

A risk workshop has been held with key subject matter experts and a risk report is currently under development that will summarise the key risks and mitigation strategies. The report will account for lessons learned on the Mica and Ruskin projects, which are available at the following sites:

[redacted]

A risk register has also been prepared for the generating station and spillways civil works contract that identifies key areas of design, procurement and construction risks, as well as potential mitigation strategies. The contract risk register will be maintained as a tool to manage risk until contract close-out.

Appendix D outlines the proposed allocation of some of the key risks between BC Hydro and the Contractor, based on the principle that risk should be allocated to the party best able to manage that risk. The proposed risk allocation has been developed on the basis that the procurement process will permit and facilitate the identification of an optimal risk transfer, by providing an opportunity for discussion of the risk allocation with proponents. The actual risk allocation may therefore differ from that proposed in Appendix D.

The table in Appendix D summarizes the contractual risk allocation: in the event that a risk materialises BC Hydro may still bear some consequences. The risk register has been developed and will be maintained on this basis.

A procurement risk identified during market sounding is the competitive advantage that the main civil works contractor is perceived to have, and whether other proponents determine that they can be competitive given the perceived advantage. It is to BC Hydro's advantage to have a competitive process, so means to reduce the perceived advantage are under consideration.

Options identified to-date include:

- Requiring all proponents' construction schedules be based on the defined handover dates in the generating station and spillways civil works contract, rather than those in the main civil works contractor's schedule;
- Permitting penstock fabricators to be non-exclusive;
- At the site inspection, providing proponents with the opportunity to inspect test pits, and having a third-party contractor available with augering equipment so that proponents can be provided with aggregate samples; and
- Have that same third-party contractor available to process and stockpile aggregates upon Contract award, at the discretion of the Contractor.

8. EXIT STRATEGIES

Exit strategies at each stage of the procurement are outlined below.

8.1 During the Request for Qualifications Process

It is anticipated that BC Hydro will, through language in the request for qualifications, reserve the complete right to, at any time, reject all Responses and to terminate the competitive selection process established by the request for qualifications and proceed with the construction of the generating station and spillways civil works in some other manner as BC Hydro may decide in its discretion.

8.2 During the Request for Proposals Process:

It is anticipated that BC Hydro will, through language in the request for proposals, reserve the complete right at any time to reject all Proposals, and to terminate the request for proposals, and the competitive selection process and proceed with the Contract in some other manner.

8.3 During the Negotiation Phase of the Request for Proposals Process

It is anticipated that BC Hydro will, through language in the request for proposals, reserve the right to terminate the competitive selection process if at any time for any reason BC Hydro determines that it is unlikely that BC Hydro will reach a final agreement with the preferred proponent. Any final approvals required by BC Hydro will be conditions precedent to the final execution or commencement of the Contract.

8.4 During the Contract's Execution

It is anticipated that BC Hydro will include in the generating station and spillways civil works contract a similar termination for convenience clause as that used in the main civil works contract. The main civil works termination for convenience clause allows BC Hydro to terminate the contract at any time at its sole discretion.

9. SUMMARY

Based on the assessment of the project requirements, market conditions and risks pertinent to this contract package, it is recommended that the subject Contracting Plan be approved and the competitive selection process be executed in accordance with this Contracting Plan.

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10. APPROVAL

Prepared [redacted]

April 29, 2016
Date

Reviewed [redacted]

May 10, 2016
Date

Accepted [redacted]

10 May 2016
Date

Approved [redacted]

10 May 2016
Date

Approved [redacted]

MAY 11, 2016
Date

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Appendix A: Generating Station and Spillways Contracts (Provided for Context)

Contract	Summary of Contract Scope
Generating station and spillways civil works contract	• Placement of approximately 700,000 cubic metres of mass and reinforced concrete for spillways, intakes, penstock encasement and powerhouse substructure; • Management of a borrow site and the processing and production of all aggregates and granular materials required for the concrete placement; • Procurement, fabrication and erection of six penstocks each 10 metres in diameter; • Procurement, fabrication and erection of structural steel in the powerhouse; • Structural installation of equipment supplied by BC Hydro, including: gates, gantry cranes and powerhouse bridge cranes; • Procurement and installation of embedded pipes, ground grid and conduit; and • Turbine-generator embedment activities (e.g. concrete placement).
Hydro-mechanical equipment supply contract	• Design and supply of the following equipment: o Three wire-rope operated operating spillway gates (radial gates, each 16.5 metres wide by 14 metres high); o One set of spillway stoplogs; o Six hydraulically-operated submerged low-level outlet operating gates (vertical lift gates, each 6.5 metres wide by 9.5 metres high); o Two submerged low-level outlet guard/maintenance gates (vertical lift gates, each 6.5 metres wide by 10 metres high); o Six hydraulically-operated intake operating gates (vertical lift gates, each 9 metres wide by 11.6 metres high); o Two intake maintenance stoplogs (each 10 metres wide by 11.6 metres high); o Four sets of draft tube maintenance gates (each opening 10.5 metres wide by 9.9 metres high); o One headworks gantry crane with a lifting capacity of approximately 130 tonnes; o One tailrace gantry crane with a lifting capacity of approximately 80 tonnes; o The hydraulic and wire hoists required for lifting the operating gates; o Lifting beams for lifting the low level outlet maintenance gate, the intake maintenance gate, spillway stoplogs and the draft tube stoplogs; o One portable hydraulic power unit with portable hydraulic hoist for lifting the submerged low-level outlet guard/maintenance gates; and o Gate guide anchors and embedded parts; as well as • Monitoring the installation (structural assembly) of all supplied equipment; • Undertaking any remaining assembly activities to make the supplied equipment fully functional; and • Commissioning all supplied equipment.
Powerhouse bridge crane contract	• Design and supply of: o Two powerhouse bridge cranes – each anticipated to have: ▪ a 25 metre span and a lifting capacity of approximately 320 tonnes; and ▪ an auxiliary hoist operating independent of the main hoist trolley with a capacity of 30 tonnes; and o A rotor lifting beam providing lifting capacity of 610 tonnes when coupled to the main hooks of the two cranes. • Monitoring the installation (structural assembly) of all supplied equipment; • Undertaking any remaining assembly activities to make the supplied equipment fully functional; • Commissioning all supplied equipment; and • Maintenance of the powerhouse bridge cranes from the date of their installation to the completion of the Site C project's construction, anticipated to be approximately 4.5 years.

Contract	Summary of Contract Scope
Completion contract	• Installation of the powertrain balance of plant: transformers, switchgear, generator terminal equipment, etc. (to be supplied by BC Hydro); • Installation of the plant protection and control and telecommunications (to be supplied by BC Hydro); • Procurement and installation of electrical and mechanical balance of plant: electrical and mechanical works, HVAC, compressed air, fire protection, etc.; and • Construction of a permanent fishpassage facility, including the removal and reinstallation of parts from the temporary fishpassage facility, and procurement of additional components.
Three or more powertrain balance of plant supply contracts	• Design and supply of transformers.
	• Design and supply of back-up diesel generators
	• Design and supply of switchgear, generator terminal equipment, etc.
One or more protection and control supply contracts	• Supply of plant protection and control and telecommunications.

Appendix B: Generating Station and Spillways Civil Works Contract Scope

1) The management of a borrow site and the processing and production of all aggregates and granular materials required for the generating station and spillways civil works;

2) Placement of approximately 700,000 cubic metres of mass and reinforced concrete for spillways, intakes, penstock encasement and powerhouse substructure:

    a. Spillways: concrete will be placed in a gated and free overflow spillway section, designed to discharge into a common two stage stilling basin;

        i. The gated spillway will consist of a headworks structure with gates to control the discharges (water releases) from the reservoir, and a chute and stilling basins to dissipate the energy and minimize the erosion of the riverbed during large discharges. The structure will incorporate three surface gates and six low-level outlet gates.

        ii. The free overflow (auxiliary) spillway is a safety feature that will provide a non-mechanized means to spill water. The auxiliary spillway will have a 125 metre-long free crest overflow weir discharging into an overflow channel that discharges down a chute into the stilling basins.

    b. Intakes: concrete will be placed in six power intakes, designed to channel the flow of water from the approach channel into the penstocks. Each intake will be a concrete structure incorporating a steel trashrack, an intake operating gate, an intake maintenance gate and a transitional steel liner connected to the downstream penstock. The intake structure will have a deck that supports a headworks gantry crane and any vehicle traffic required for construction, commissioning, operation or maintenance work. The intake deck will be equipped with concrete hatch covers and slot for removable guardrails around the gate slots, and concrete parapets at the upstream and downstream edges.

    c. Penstock encasement: concrete will be placed to encase the penstocks, with free spanning portions at the upper flexible coupling on the penstock slope and at the lower flexible coupling in the penstock coupling chamber of the powerhouse. The upper concrete encasements of three of the penstocks are designed to support transmission towers, and the downstream end of the penstock will be backfilled to accommodate a roadway upstream of the powerhouse;

    d. Powerhouse substructure: concrete will be placed in a six-unit powerhouse approximately 200 metres long and approximately 30 metres wide, comprising:

        i. Six unit bays housing the turbines and generators,

        ii. Five floors (main floor, generator floor, spiral case access floor, draft tube cone access floor and draft tube elbow access floor);

        iii. Equipment galleries downstream of the units below the tailrace deck;

        iv. Two service bays;

        v. Coupling chamber upstream of the units; and

        vi. Operations building on the tailrace deck: control room, shops, offices and other rooms.

3) The procurement, fabrication and erection of six penstocks each approximately 10 metres in diameter and 80 metres in length;

4) The procurement, fabrication and erection of structural steel in the powerhouse, and the cladding of the superstructure with painted insulated metal siding;

5) The structural installation of equipment supplied by BC Hydro, including: gates, gantry cranes,

and powerhouse bridge cranes;

6) The procurement and installation of intake trashracks and anti-vortex devices;
7) The procurement and installation of embedded pipes, ground grid and conduit;
8) Turbine-generator embedment activities, including:
    a. Manufacturing of draft tube elbow formwork and draft tube diffuser formwork;
    b. Casting and finishing of draft tube diffuser concrete;
    c. Embedment of turbine water passage components and anchors [draft tube elbow, draft tube cone, spiral casing]; and
    d. Spiral casing hydrostatic pressure test and embedment under pressure.
9) Ancillary works including miscellaneous metals (stairs, platforms, and handrails), and the procurement and installation of three elevators;
10) Co-ordinating the health, safety and construction activities for the following contractors when they are working within the Contractor's work areas on Site:
    a. Turbine-generator contractor;
    b. Completion contractor; and
    c. Equipment supply contractors (e.g. hydro-mechanical equipment and powerhouse bridge crane); and
11) Construction and decommissioning, including:
    a. Obtaining all permits and approvals necessary for the construction of the generating station and spillways works, excluding those permits and approvals expressly to be obtained by BC Hydro;
    b. Provision of utilities and other services required to support the construction of the generating station and spillways civil works;
    c. Constructing the generating station and spillways civil works; and
    d. Decommissioning of the temporary facilities used to construct the generating station and spillways civil works.

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Appendix C: Generating Station and Spillways Civil Works Contract Summary

Contract	Anticipated Changes from Main Civil Works Contract and Content Lead / Principal Reviewer		
	Major Changes Anticipated	Minor Changes Anticipated	No Changes Anticipated
Agreement	[redacted]		
Schedule 1 [Definitions and Interpretation]			
Schedule 2 [General Conditions]			
Appendix 2-1 [Design-Build Review Process]			
Appendix 2-2 [Good Weather Baseline Table]			
Appendix 2-3 [Project Related Permits]			
Appendix 2-4 [Site Conditions and Interfaces]			
Appendix 2-5 [Proposal Extracts]			
Appendix 2-6 [Material Sources Outside Dam Site Area]			
Appendix 2-7 [Leaves to Commence]			
Appendix 2-8 [Sharepoint Technical Requirements for Contractors]			
Schedule 3 [Roles and Representatives]			
Schedule 4 [Work Program and Schedule]			
Appendix 4-1 [BC Hydro Project Schedule]			
Appendix 4-2 [Work Program and Schedule]			
Schedule 5 [Submittals Procedure]			
Appendix 5-1 [Form of Submittal Schedule]			
Schedule 6 [Specifications and Drawings]			
Appendix 6-1 [Scope of Work]			
Appendix 6-2 [Technical Specifications]			
Appendix 6-3 [Drawings]			
Appendix 6-4 [Reference Documents]			
Schedule 7 [Environmental Obligations]			
Appendix 7-1 [Contractor Environmental Incident Report Form]			
Schedule 8 [Quality]			
Appendix 8-1 [Design Quality Management Plan]			
Appendix 8-2 [Construction Quality Management Plan]			
Schedule 9 [Communications]			

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Contract	Anticipated Changes from Main Civil Works Contract and Content Lead / Principal Reviewer		
	Major Changes Anticipated	Minor Changes Anticipated	No Changes Anticipated
Schedule 10 [Safety]	[redacted]		
Appendix 10-1 [Safety Areas]			
Appendix 10-2 [Contractor Safety Incident Report Form]			
Schedule 11 [Prices and Payment]			
Appendix 11-1 [Schedule of Prices and Estimated Quantities]			
Appendix 11-2 [Measurement and Payment]			
Appendix 11-3 [Form of Payment Application – Schedule of Values]			
Appendix 11-4 [Form of Performance Bond]			
Appendix 11-5 [Form of Labour & Material Payment Bond]			
Appendix 11-6 [Form of Letter of Credit (Use for Performance, Labour & Material Payment and Advance Payment)]			
Appendix 11-7 [Form of Parent Company Guarantee]			
Appendix 11-8 [Form of Environmental Compliance]			
Appendix 11-9 [Form of Statutory Declaration]			
Appendix 11-10 [Sample Escalation Calculations]			
Schedule 12 [Changes]			
Schedule 13 [Insurance]			
Appendix 13-1 [Wrap-Up Liability Insurance Specifications]			
Appendix 13-2 [Course of Construction Insurance Specifications]			
Schedule 14 [Dispute Resolution Procedure]			
Appendix 14-1 [Site C Referee Panel]			
Appendix 14-2 [Referee Agreement];			
Schedule 15 [Records]			

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Contract	Anticipated Changes from Main Civil Works Contract and Content Lead / Principal Reviewer		
	Major Changes Anticipated	Minor Changes Anticipated	No Changes Anticipated
Appendix 15-1 [Record Classification Requirements]	[redacted]		
Schedule 16 [Aboriginal Inclusion and Reporting Requirements]			
Appendix 16-1 [Aboriginal Inclusion Performance Report]			
Schedule 17 [Privacy Protection]			

Appendix D: Proposed Risk Allocation

	Risks Retained by BC Hydro	Risks Transferred to the Contractor
Design: Changes, errors and omissions, etc.	BC Hydro is retaining design responsibility for the permanent works and the risk of changes, errors and omissions associated with the permanent works. Design changes may be required as a result of: • Level 1 and Level 2 User Requirement Approval process; • IFP drawings being based on 60% design; • Integrating equipment which is to be designed and supplied by others; • Integrating fish passage design; and • Constructability issues.	The Contractor will be responsible for the design of any temporary works and the risk of changes, errors and omissions associated with the temporary works.
Geotechnical	BC Hydro will be responsible for the majority of geotechnical risks at site. The generating station and spillways civil works is largely isolated from geotechnical risks as the majority of the work is to be built on an RCC Buttress, but geotechnical risks materialize they could delay the handover of the RCC Buttress, for which BC Hydro is responsible.	It is anticipated that the Contractor will be responsible for geotechnical risks in the approach channel for the period in which they are working in it. If this risk materializes it could impact the Contractor's ability to meet the handover conditions for which they are responsible.
Aboriginal Participation	BC Hydro will be responsible for meeting Impact Benefit Agreement and other Aboriginal commitments.	The Contractor will be required to make commercially-reasonable efforts to provide contracting, labour and training opportunities for Aboriginal Businesses/persons.
Accommodation	BC Hydro will be responsible for providing the quality of accommodation promised and the quantity of accommodation requested by the Contractor, up to limits defined by BC Hydro.	The Contractor will be responsible for forecasting their accommodation requirements within limits defined by BC Hydro, and will be responsible for the costs if they exceed their forecast requirements.

	Risks Retained by BC Hydro	Risks Transferred to the Contractor
Site Interfaces: laydown areas, haul roads / bridge / siding, crane use	BC Hydro will be responsible for clearly defining and managing the logistical and access interfaces between contractors, including establishing protocols for use of the cranes by multiple contractors.	The Contractor will be responsible for working within the defined site interfaces and constraints.
Site handovers	BC Hydro will be responsible for defining the timing and condition of all site handovers, and for completing handovers (in terms of timing and conditions) that are to be made by BC Hydro or by another Site C contractor to the Contractor.	The Contractor will be responsible for fulfilling all handovers (in terms of timing and conditions) that are to be made by the Contractor to BC Hydro or to another Site C contractor.
Safety	BC Hydro will be responsible for: • defining safety areas and designating a prime contractor for each area; • being prime contractor from shortly before commissioning the first generator	The Contractor will be designated as the Prime contractor for a portion of the site and will be responsible for safety in this area, including co-ordinating the safety activities of other contractors that need to access and/or work within that safety area
Permits	BC Hydro will retain responsibility for acquiring a significant number of permits	The Contractor will be responsible for acquiring all other permits
Fire control	The fire control risk allocation is to be determined by the Site C Project Management Office and agreed with BC Hydro's Fire Marshall.	
Construction means and methods		The Contractor will be responsible for detailed sequencing, and for the construction means and methods.
Schedule	BC Hydro will be responsible for defining milestone schedule requirements (as required in order to manage interfaces with other contractors), and will retain the risk of whether other contractors perform in accordance with the schedule.	The Contractor will retain the risk of achieving the schedule. The contract will include liquidated damages and bonuses for key milestones.
Transportation risk	BC Hydro will retain the transportation risk associated with a province-wide labour disruption.	The Contractor will be responsible for the transportation of materials to and around site

	Risks Retained by BC Hydro	Risks Transferred to the Contractor
Escalation in market prices (commodities and equipment)	BC Hydro may retain the risk of escalation of specified commodities if it is determined that the risk is material and there is limited ability for the contractor to meaningfully manage the risk	The Contractor will be responsible for the risk of escalation in the prices of commodities (cementitious material, flyash, steel, fuel) and equipment
Labour (productivity, pricing, availability and disruption)	Subject to feedback during the proposals phase, BC Hydro may retain responsibility for escalation of craft labour rates after an initial contract period.	The Contractor will be responsible for labour productivity, availability and pricing for the duration of the contract. However, subject to feedback during the proposals phase the contractor may only be responsible for labour pricing for an initial contract period.
Construction quality	BC Hydro will have the right to perform quality surveillance and quality audits.	The Contractor will be responsible for Quality Control and Quality Assurance
Material quality	BC Hydro will have the right to perform audits.	The Contractor will be responsible for aggregate processing and for the quality of the steel
Weather		The Contractor will be responsible for weather risks (though not force majeure events).
Environment	BC Hydro will have the right to perform audits.	The Contractor will be responsible for compliance with regulations and permits, including the environmental protection requirements included in the Environmental Certificate and BC Hydro's Construction Environmental Management Plan.
Insurance	BC Hydro will retain responsibility for the owner controlled insurance program, and defining some requirements for additional insurance to be acquired by the Contractor.	The Contractor will be responsible for acquiring any additional insurance required, including that defined in the contract.