BC Hydro
Power smart

CONTRACTING PLAN

Site C Clean Energy Project

Hydro-Mechanical Equipment Supply Contract

RFQ No. 7255 / RFP No. 7258 / CR No. 601606

Date: September 30, 2016

1. PURPOSE

The purpose of this Contracting Plan is to obtain approval (at a summary level) for Infrastructure Projects Supply Chain – Site C Procurement to execute the competitive selection process for the hydro-mechanical equipment supply 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 station 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 second contract outlined in the table: the hydro-mechanical equipment supply contract. This contract has a number of key interfaces with the generating station and spillways civil works contract, which is referred to in this contracting plan where relevant.

3. HYDRO-MECHANICAL EQUIPMENT SUPPLY CONTRACT REQUIREMENTS

3.1 Scope of Work

The scope of work for the hydro-mechanical equipment supply contract includes:

- Design and supply of the following equipment:
  - Three wire-rope operated spillway gates (radial gates, each 16.5 metres wide by 14 metres high);
  - Six hydraulically-operated submerged low-level outlet gates (vertical lift gates, each 6.5 metres wide by 9.5 metres high);
  - Two submerged low-level outlet guard/maintenance gates (vertical lift gates, each 6.5 metres wide by 10 metres high);
  - Six hydraulically-operated intake gates (vertical lift gates, each 9 metres wide by 11.6 metres high);
  - One intake maintenance gate (10 metres wide by 11.6 metres high);
  - Four sets of draft tube maintenance gates (each opening 10.5 metres wide by 9.9 metres high);
  - The hydraulic and wire hoists required for lifting the operating gates;
  - Lifting beams for lifting the low level outlet operating and maintenance gates, the intake operating and maintenance gates, spillway stoplogs and the draft tube gates;
  - One portable hydraulic power unit with portable hydraulic hoist for lifting the submerged low-level outlet guard/maintenance gate; and
  - Gate guide anchors and embedded parts;
- Monitoring the installation of all supplied equipment, with an option for the contractor to perform the installation of some of the supplied equipment;
- Undertaking any remaining assembly activities to make the supplied equipment fully functional; and
- Commissioning all supplied equipment.

As part of the design of the gates, model testing will be required to demonstrate achievement of specified hydraulic characteristics of the low-level outlet gates, low-level maintenance gates, and intake operating gates.

It is anticipated that BC Hydro will, through language in the request for proposals, reserve the right to award the installation of the hydro-mechanical equipment to the hydro-mechanical equipment supply contractor (HME Contractor or the Contractor) or the generating station and spillways civil works contractor (GSS Civil Works Contractor), as is deemed to be in the best interest of BC Hydro considering such factors as total cost, constructability issues and any quality and warranty impacts. It is anticipated that the decision of which contractor is to install the equipment will be made once detailed design drawings and installation instructions are available and the GSS Civil Works Contractor has submit a detailed estimate on that basis.

The installation interface for the hydro-mechanical equipment is anticipated to be as follows:

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

b) The GSS Civil Works Contractor will assume responsibility for the equipment delivered to site;

c) The GSS Civil Works Contractor will supply and install all first stage anchors and conduit/embedded ducts required for the hydro-mechanical equipment; and

d) Either the GSS Civil Works Contractor will perform the installation (structural assembly) monitored by the HME Contractor's on-site representatives, or the HME Contractor will perform the installation;

e) The HME Contractor will undertake any remaining assembly activities to make the supplied equipment fully functional (e.g. electrical and mechanical connections);

f) The HME Contractor will complete pre-commissioning activities;

g) The HME Contractor will commission the equipment; and

h) The GSS Civil Works Contractor will assume responsibility for the equipment until final completion of their contract, or an earlier defined handover date.

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.

Estimate	**Estimate (Including Inflation)**	**Contingency (Including Inflation)**	**Estimate Including Inflation and Contingency**
Base contract estimate, excluding optional work	[redacted]		
Optional work (hydro-mechanical equipment installation)			
Total			

Site C Project EAR Value (Expected Amount):	[redacted]
Approved on:	

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 three contracts associated with the generating station and spillways component of the Site C Clean Energy Project: the generating station and spillways civil works contract, the hydro-mechanical equipment supply contract, and the powerhouse bridge crane supply contract.

The fact sheet provided 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 hydro-mechanical equipment supplier participants included:

- Balance of plant remains a key interface for the HME and some participants welcomed clarity on scheduling for this.
- Generally installation of embedded parts and concreting by civil contactors is acceptable under supplier supervision, and the supplier would be comfortable either installing their own equipment or having the civil contractor install under their supervision.
- Almost all expressed the need to commission their own equipment.
- The following contractual terms were identified as highly-desirable:
  - Having options relating to security including bonding or letters of credit;
  - Providing a balanced contract including in terms of incentives and penalties; and
  - Being in a cash neutral position, so the payment milestones established at the RFP phase should align with disbursements.
- Participants indicated the proposed procurement schedule for the RFQ and RFP process was reasonable, and that overall the proposed construction schedule is reasonable. However:
  - Failure to achieve certain milestones (e.g., embedded parts, anchors) could impact the schedule.
  - All timelines are subject to the level of specifications and the approach to the design; third-party involvement in design can add time to the schedule.
  - Prompt, reasonable turnaround time on design approvals by BC Hydro is necessary to achieve schedule.
- Early coordination between the HME Contractor and the GSS Civil Works contractor was identified by several participants as key and that this would optimize second stage concrete placement.
- Liquidated damages can be applied on a daily or weekly basis. The majority of participants would want to see a cap of 10% of contract value, although several preferred a 5% maximum.
- Participants felt that a fixed-price payment structure based on milestone payments was acceptable and standard for the industry. Generally about 80% payment to site delivery was acceptable, broken down as follows:
  - Design approval 10%
  - Procurement of major materials/components 50%
  - Delivery to site 20%
  - Installation/commissioning 20%

4.2 Planned Market Communications

4.2.1 *Request for Qualifications Stage*

To support the issue of the request for qualifications for the hydro-mechanical equipment supply 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; and
    - Media.
- Update Site C Business Opportunities webpages; and
- Advise Site C project team of request for qualifications release.

4.2.2 ***Request for Proposals Stage***

Once the shortlisted teams have been selected, a procurement update will be issued to the same audiences identified above. This procurement update will include the number of respondent teams, and the names of the proponent teams. To facilitate business connections during the proposals stage of the competitive selection process, BC Hydro will provide the names and contact information for each proponent on the Site C website.

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 hydro-mechanical equipment supply contract. The two-stage process facilitates BC Hydro's strategy of conducting collaborative sessions during the request for proposal stage with pre-qualified parties only. The key driver for the collaborative sessions is to obtain input regarding the contract interfaces, and related schedule and contractual arrangements before issuing the final draft contract to proponents.

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 generating station and spillways civil works procurement, augmented as required with supply-specific provisions, based on the Site C Clean Energy Project turbine and generator procurement. The documents 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 in the following table.

Activity	Timeline
Request for qualifications issue	Oct 7, 2016
Request for qualifications submission time *(4 weeks from RFQ issue to submission time)*	Nov 4, 2016
Extended request for qualifications submission time *(1 week extension available if requested)*	Nov 11, 2016
Board Approval to issue the RFP and Board agreement to either: i) Hold a special Board meeting in December to accept the shortlisted Respondents; ii) Delegate acceptance of the shortlisted respondents to the Project Board, and the Project Board hold a special meeting in December; or iii) Delegate acceptance of the shortlisted respondents to senior management.	Nov 16, 2016
Complete evaluation *(3 weeks from extended qualifications submission time to completion of evaluation)*	Dec 2, 2016
Brief management *(1 week to brief management)*	Dec 5 – 9, 2016
Dependent upon the option selected by the Board in November Board meeting, either: i) Special Board meeting to accept the shortlisted Respondents; ii) Special meeting of the Project Board to accept the shortlisted Respondents; or iii) Senior management accept the shortlisted Respondents. *(3 week period within which special Board/Project Board meeting or senior management meeting can be scheduled, not counting 2 weeks from Dec 19-Dec 30)*	Dec 12, 2016 – Jan 12, 2017
Announce proponents and issue request for proposals with initial draft contract	Jan 16, 2016
Round of collaborative sessions to discuss contract interfaces *(5 weeks after issue of initial draft contract)*	Feb 20 - 24, 2017
Issue final draft contract *(4 weeks after collaborative sessions)*	Mar 24, 2017
Request for proposals submission time *(12 weeks from RFP issue; 3 weeks after issue of final draft contract)*	Apr 14, 2017
Extended request for proposals submission time *(1 week extension available if requested)*	Apr 21, 2017
Complete evaluation *(4 weeks from extended proposals submission time to completion of evaluation)*	May 19, 2017

Activity	Timeline
Brief management *(2 weeks to brief management)*	May 22 – Jun 2, 2017
Board acceptance of preferred proponent and Board agreement to either: i) Hold a special Board meeting in July to approve contract award; ii) Delegate approval of contract award to the Project Board, and the Project Board hold a special meeting in July; or iii) Delegate approval of contract award to senior management.	Jun 5-7, 2017
Notify preferred proponent	Jun 9, 2017
Negotiate with preferred proponent *(3 week period to finalize contract)*	Jun 12 – 30, 2017
Dependent upon the option selected by the Board in June Board meeting, either: i) Special Board meeting to approve contract award; ii) Special meeting of the Project Board to approve contract award; or iii) Senior management approve contract award. *(2 week period within which special Board/Project Board meeting or senior management meeting can be scheduled)*	Jul 3-14, 2017
Contract award	Jul 17, 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 planholder list feature will be used on BC Bid for this RFQ to allow all interested parties to see who has downloaded the documents.

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. design and supply of spillway, outlet, intake and maintenance gates, stoplogs, gantry cranes and hydraulic hoists for a hydro-electric generating station. 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 hydro-mechanical equipment supply 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
[redacted]	

Safety will be a factor in the evaluation of all of the weighted criteria; the request for qualifications will require that Respondent's submit:

- Detailed safety statistics and information with respect to:
  - worldwide fatalities; and
  - injuries on projects nominated to demonstrate a Respondent's design, fabrication, installation and commissioning capability and experience; as well as
- Information regarding processes that they have used to ensure worker safety during maintenance and operation of the equipment has been considered in the design development.

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;
- Design, fabrication, installation and 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; and
- Labour.

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. 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 proposal. 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, the contract scope, and provide context of where the gates are going.

b) Site inspections: BC Hydro will provide proponents with the opportunity to undertake site inspections 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.

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: No payments will be made to unsuccessful proponents for responding to the request for proposals.

5.3.1 ***Evaluation***

The evaluation criteria will be included in the request for proposals document. The evaluation criteria will be developed by the procurement lead based on precedent Site C and BC Hydro procurements, and will be approved by the Site C Leadership Team prior to being 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 hydro-mechanical equipment supply 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 recent generating station and spillways civil works contract, which itself was based on the main civil works contract. Additional clauses will be added from the turbine-generator contract as required to reflect supply-specific provisions. Updates to these contracts will be minimised and made 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 generating station and spillways civil works and turbine-generator contracts if the value of the improvement outweighs the value of maintaining consistency between the contracts. Improvements may be suggested by:

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

   b. internal reviewers of the hydro-mechanical equipment supply contract; and/or

   c. proponents.

6.1 Design-Build

The hydro-mechanical equipment supply contract will be a design-build contract in which BC Hydro will specify its requirements by providing performance specifications, reference drawings, and interface requirements, and the contractor will be responsible for designing and supplying the equipment in accordance with these requirements.

The design-build model is the industry norm for this type of work. The design of hydro-mechanical equipment is highly specialized and the best risk transfer is achieved by having the equipment supplier do the detailed design, with reference design and performance requirements provided by the owner.

The Site C integrated design team, comprising [redacted] are responsible for preparing the performance specifications, reference drawings and interface requirements, based on BC Hydro's user requirements. BC Hydro is responsible for reviewing the Site C integrated design team's deliverables.

BC Hydro considered lessons learned from operating hydro-mechanical equipment, particularly from safety incidents, in defining the user requirements.

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

1) Be fixed-price with payments based on milestone completion. This will encourage proponents to submit competitive prices based on the performance specifications, and incent compliance with milestone dates; and

2) Include a schedule for delivery of each component to site, with a description of the handover, relevant dates and any associated liquidated damages, so that the proponents can plan their work accordingly.

6.2 Payment

It is anticipated that the hydro-mechanical equipment supply contract will be fixed-price with milestone payments (for reasons outlined in the previous section). Consideration will be given to payment terms that will keep the contractor in a cash-flow neutral position, such payments for design approval, and procurement of major materials/components. BC Hydro will not pay greater than 80% of the contract value prior to equipment delivery to site. This will be stated in the RFQ

to ensure the proponents are aware of this when deciding whether to participate in the RFQ.

6.3 Key Commercial Terms

The following are some of the key commercial terms that BC Hydro anticipates will be included in the hydro-mechanical equipment supply 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 generating station and spillway civil works, main civil works and turbine-generator contracts. The prescribed levels and acceptable combinations included in the initial draft contract will provide proponents with two options; 1) the BC Hydro corporate standard structure and amounts or 2) a combination of a Letter of Credit / Parent Company Guarantee with defined amounts.

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 hydro-mechanical equipment design and supply work to meet milestone dates established by BC Hydro, as well as the dates set out in the Contractor's approved project schedule. Key dates may include: design approval, delivery to site, various dates for supervision of installation, commissioning and final completion date. Particular attention will be given 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 generating station and spillway civil works contractor;

d) Liquidated Damages – the hydro-mechanical equipment supply contract may include payment of liquidated damages. Although there is significant float already built into the equipment delivery milestones (e.g. delivery to site three to six months before the equipment is scheduled to be installed), several of the early design submittals will be critical for BC Hydro to complete the design of the concrete reinforcement and for the generating station and spillways civil works contractor to plan its work at the site. As such, the use of liquidated damages may be a useful tool to incent the Contractor's performance during the design stage of this contract;

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 Contract, within the limits submitted in their proposal;

f) Safety and Security – BC Hydro anticipates that the generating station and spillway civil works contractor will be designated as prime contractor for all of the Contractor's main work areas. The Contractor will therefore be required to collaborate and coordinate with the generating station and spillway civil works contractor for safety and security purposes at Site;

g) Differing Site Conditions – Similar to the generating station and spillway civil works, 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.

h) 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 as relevant;

i) Environmental Management - the Contractor will be required to develop and follow a plan, as part of the performance of the hydro-mechanical equipment supply contract, that complies with both BC Hydro's and the relevant regulatory agencies' requirements regarding environmental management;

j) 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

k) Labour - The Contractor will be required to provide all labour necessary for the complete performance of the hydro-mechanical equipment supply contract, 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 preliminary risk report has been developed which summarises the key risks and mitigation strategies. The report will be further updated by the Site C Commercial Manager in the coming month(s) to incorporate relevant lessons learned from the Mica and Ruskin projects, which are available at the following sites:

- http://ppm/projects/GZ-0004/Lists/LessonsLearned/AllItems.aspx
- http://ppm/projects/GZ-0002/Lists/LessonsLearned/AllItems.aspx

A risk register has also been prepared for the generating station and spillways component of the Site C Project 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.

A key risk identified for the hydro-mechanical equipment supply contract is the interface with the generating station and spillways civil works contractor, and coordination between the parties. BC Hydro's construction management team will provide oversight to the interfaces at the site and take an active role in managing the interfaces.

Appendix B 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 B.

The table in Appendix B 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.

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 hydro-mechanical equipment supply 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 By:	[redacted]	Oct 3, 2016 Date
Reviewed By:		Oct. 3, 2016 Date
Reviewed By:		Oct 3, 2016 Date
Accepted By:		30 Oct 2016 Date
Approved By:		14 Oct 2016 Date
Approved By:		Oct 16/16 Date

FINANCE REVIEW: Oct 14/16.

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: o gates (gate installation is included in this contract as a provisional sum item; gate installation is also included in the hydro-mechanical equipment supply contract as an optional work item); o headworks and tailrace gantry crane (headworks and tailrace gantry crane installation is included in this contract as a provisional sum item as the proponents will not have enough information to bid this item as part of the RFP); o powerhouse bridge crane (included in this contract as a provisional sum item as the proponents will not have enough information to bid this item as part of the RFP); ▪ 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 spillway gates (radial gates, each 16.5 metres wide by 14 metres high); o Six hydraulically-operated submerged low-level outlet 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 gates (vertical lift gates, each 9 metres wide by 11.6 metres high); o One intake maintenance gate (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 The hydraulic and wire hoists required for lifting the operating gates; o Lifting beams for lifting the low level outlet operating and maintenance gates, the intake operating and maintenance gates, spillway stoplogs and the draft tube gates; o One portable hydraulic power unit with portable hydraulic hoist for lifting the submerged low-level outlet guard/maintenance gate; and o Gate guide anchors and embedded parts; ▪ Monitoring the installation of all supplied equipment, with an option for the contractor to perform the installation of some of the supplied equipment; ▪ Undertaking any remaining assembly activities to make the supplied equipment fully functional; and ▪ Commissioning all supplied equipment.

Contract	Summary of Contract Scope

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;
	  o A rotor lifting beam providing lifting capacity of 610 tonnes when coupled to the main hooks of the two cranes;
	  o One headworks gantry crane with a lifting capacity of approximately 130 tonnes; and
	  o One tailrace gantry crane with a lifting capacity of approximately 80 tonnes.
	• 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.

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: Proposed Risk Allocation

	Risks Retained by BC Hydro	Risks Transferred to the Contractor
Design: Changes, errors and omissions, etc.	BC Hydro is retaining responsibility for performance specifications of the equipment and the design of surrounding works. Design and/or specification changes may be required as a result of: • Level 1 and Level 2 User Requirement Approval process; • IFP drawings for surrounding works based on 60% design; • Integrating equipment which is to be designed and supplied by others.	The Contractor will be responsible for the design of the equipment and the risk of errors and omissions associated with the equipment.
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.
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 and equipment handovers	BC Hydro will be responsible for defining the timing and condition of all handovers of sites or equipment, 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; • managing the Prime contractor for the equipment installation work, • being prime contractor from shortly before commissioning the first generator	Another contractor will be designated as the Prime contractor for a portion of the site and will be responsible for safety in this area. The Contractor will be responsible for coordinating with the Prime contractor regarding the need to access and/or work within the Prime's safety area

	Risks Retained by BC Hydro	Risks Transferred to the Contractor
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.	
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 until handover of equipment to BC Hydro or other contractors
Escalation in market prices (commodities and equipment)		The Contractor will be responsible for the risk of escalation in the prices of commodities (e.g. steel, fuel) and equipment
Labour (productivity, pricing, availability and disruption)		The Contractor will be responsible for labour productivity, availability and pricing for the duration of the contract.
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 the quality of the materials used in the manufacture and installation of the equipment
Weather		The Contractor will be responsible for weather risks (though not force majeure events).
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.
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 for key milestones.

	Risks Retained by BC Hydro	Risks Transferred to the Contractor
Installation	BC Hydro will engage a contractor who will be responsible for the structural assembly of the equipment, including the scheduling [and means and methods] of installation.	The generating station and spillways civil works contractor will take receipt of equipment from the Contractor at site, and will be responsible for storing it until installation. The Contractor will be responsible for monitoring the structural assembly portion of installation of all supplied equipment, including attending, witnessing, and inspecting the installation as well as providing sufficient information to BC Hydro and/or the installation contractor to complete the installation. The Contractor will be responsible for any remaining installation activities required following structural assembly in order to make the equipment fully functional.
Commissioning	BC Hydro will be responsible for commissioning of equipment that is connected to the grid or an active component of the power system.	The Contractor will complete pre-commissioning activities and be responsible for commissioning of equipment that is neither connected to the grid nor an active component of the power system.