MUNICIPAL WATER SUPPLY INFRASTRUCTURE

CONSTRUCTION AND FUNDING AGREEMENT

THIS AGREEMENT is made as of the _____ day of July, 2014 (the "**Effective Date**").

BETWEEN:

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY, a British Columbia Crown corporation having its head office at 333 Dunsmuir St., Vancouver, BC V6B 5R3
("**BC Hydro**")

AND:

CITY OF CAMPBELL RIVER, incorporated under the "Municipal Act" of the Province of British Columbia and having its office at 301 St. Ann's Road, Campbell River, BC V9W 4C7
(the "**City**")

WHEREAS:

A. BC Hydro has constructed, and since 1947 operated, a hydroelectric generating plant on the Campbell River, including dam, powerhouse, intakes, penstocks and other structures (the "**John Hart Generating Station**");

B. Since commencement of operations, BC Hydro has permitted the City, subject to the authority of the British Columbia Comptroller of Water Rights, to divert water from the penstocks at the John Hart Generating Station for its waterworks;

C. BC Hydro is now undertaking a major construction project to replace the John Hart Generating Station with new facilities (the "**John Hart Replacement Project**"), which necessitates the redesign, relocation and replacement of the City's existing water supply infrastructure (the "**Existing Facilities**") in order to facilitate uninterrupted water supply to the City;

D. BC Hydro has agreed to work with and assist the City in meeting the City's objective of facilitating the continuation of uninterrupted water supply to the City and the parties have reached agreement on a mutually beneficial solution for the design, construction and funding of new municipal water supply infrastructure on the terms and conditions of this Agreement;

E. The Highway 28 Solution Project was agreed to between the parties as a means to mitigate construction and other risks identified in connection with the previously contemplated solution involving a new intake and pipeline routed primarily on BC Hydro property along the existing penstock corridor.

NOW THEREFORE FOR GOOD AND VALUABLE CONSIDERATION the receipt and sufficiency of which is hereby acknowledged by each party to this Agreement, the parties agree as follows:

1. Definitions

1.1. In this Agreement:

1.1.1. "**BC Hydro Works**" has the meaning assigned to it in the Terms of Reference;

1.1.2. "**City Works**" has the meaning assigned to it in the Terms of Reference;

1.1.3. "**Dam Safety Regulations**" means the dam safety regulations adopted or enacted under the *Water Act* (British Columbia) that apply to the John Hart Generating Station, including the John Hart Replacement Project;

1.1.4. "**Deadline**" has the meaning assigned to it in clause 3.2 of this Agreement;

1.1.5. "**Funding**" has the meaning assigned to it in clause 5.2 of this Agreement;

1.1.6. "**Funding Cap**" has the meaning assigned to it in clause 5.2 of this Agreement;

1.1.7. "**Highway 28 Solution Project**" means, collectively, the BC Hydro Works and the City Works;

1.1.8. "**Independent Certifier**" has the meaning assigned to it in clause 2.4 of this Agreement;

1.1.9. "**JHT Project Agreement**" means the Project Agreement to be entered into between BC Hydro and the selected contractor to undertake the design, construction, financing and services as part of the John Hart Replacement Project;

1.1.10. "**JHT Site**" means all lands and facilities of BC Hydro where the City Works are performed, including any BC Hydro lands and facilities (including the John Hart Lake reservoir) used by or on behalf of the City for access to such work areas;

1.1.11. "**Temporary Works**" has the meaning assigned to it in clause 3.2 of this Agreement;

1.1.12. "**Terms of Reference**" means the final Terms of Reference dated October 24, 2013 and attached as Schedule 1 to this Agreement; and

1.1.13. "**Water Use Agreement**" means the Water Use Agreement between the City and BC Hydro as extended and/or amended from time to time.

Additional defined terms appear in the recitals and in the Terms of Reference.

2. Design, Permitting and Construction Responsibility

2.1. ***City Responsibility:*** The City shall have full responsibility for the design, procurement, construction, connection, testing and commissioning of the City Works, the review and final approval of the design for the BC Hydro Works, and the connection and commissioning of the BC Hydro Works necessary for completion of the City Works, in accordance with this Agreement, including the Terms of Reference. The City shall also have full responsibility for the design, procurement, construction, connection, testing and commissioning of any Temporary Works required pursuant to clause 3.2 of this Agreement

and for securing any and all permits, approvals, licenses and consents necessary for or in connection with the City Works and any Temporary Works. The City will be the lead, with BC Hydro support as appropriate, for securing any and all permits necessary for the City's continued use and operation of the BC Hydro Works following the transfer of ownership of those works to the City. BC Hydro will provide reasonable cooperation to the City in connection with securing any and all permits, approvals, licenses and consents that are the responsibility of the City under this Agreement.

2.2. ***BC Hydro Responsibility:*** BC Hydro shall be responsible for preparing the design, for City approval, and for the procurement and construction of the BC Hydro Works, in accordance with this Agreement, including the Terms of Reference, including any testing necessary to verify compliance with applicable specifications upon completion of the BC Hydro Works. BC Hydro shall also be responsible for securing any and all permits, approvals, licenses and consents necessary for or in connection with the BC Hydro Works, excluding any permits relevant to the BC Hydro Works that are stated to be the responsibility of the City under this Agreement. The City will provide reasonable cooperation to BC Hydro and the BC Hydro contractor for the BC Hydro Works in connection with securing any and all permits, approvals, licenses and consents that are the responsibility of BC Hydro under this Agreement.

2.3. ***Ongoing Consultation:*** BC Hydro and the City shall consult with each other on an ongoing basis concerning any matter related to the completion of the Highway 28 Solution Project, or that otherwise arises under this Agreement, that may affect or delay the John Hart Replacement Project, or the Highway 28 Solution Project.

2.4. ***Independent Inspections:***

(a) In accordance with the terms of the JHT Project Agreement, BC Hydro will engage a professionally qualified engineer with contract administration experience (the "**Independent Certifier**") through an open public competitive procurement process who must be independent to each of BC Hydro, the BC Hydro contractors for the BC Hydro Works and the John Hart Replacement Project works, and the City and the City Contractor for the purpose of carrying out certain inspections, reviews and approvals in respect of the completion of specified aspects of the John Hart Replacement Project and the BC Hydro Works. The City may at its discretion also elect to enter into a separate contract with the Independent Certifier for these purposes in respect of the City Works and the overall Highway 28 Solution Project. BC Hydro will notify the City when the procurement of the Independent Certifier is proceeded with and keep the City reasonably informed of the progress of such procurement and of the selection decision.

(b) BC Hydro, or the BC Hydro contractor acting on behalf of BC Hydro, shall have the Independent Certifier inspect the BC Hydro Works for defects or deficiencies: (i) upon completion of the BC Hydro Works; (ii) again 12 months after completion of the BC Hydro Works; and (iii) provided the City has completed the City Works by not later than December 1, 2016, then again upon completion of the commissioning of the BC Hydro Works as a connected and integrated part of the City Works.

The City shall be provided with a reasonable opportunity to witness the foregoing inspections. In accordance with the protocol requirements of clause 2.13 of this

Agreement, any defects or deficiencies in the construction of the BC Hydro Works identified by the Independent Certifier in the relevant inspection reports shall, subject to the right of BC Hydro or the BC Hydro contractor for the BC Hydro Works acting on behalf of BC Hydro to contest the findings set out in such report through the dispute resolution provisions of this Agreement, be corrected by BC Hydro or the BC Hydro contractor for the BC Hydro Works acting on behalf of BC Hydro at no cost to the City. Any dispute regarding the inspection reports or decision of the Independent Certifier shall be resolved in accordance with clause 10.6.

Under no circumstances shall BC Hydro or the BC Hydro contractor for the BC Hydro Works acting on behalf of BC Hydro be deemed to provide the City with any warranty of any kind, whether express or implied, in respect of the BC Hydro Works or have any liability for defects or deficiencies in the BC Hydro Works other than as provided above in this clause 2.4.

2.5. ***Work Standards and Dam Safety:*** Each party will ensure that all work for which it is responsible under this Agreement is performed in accordance with all applicable legal and regulatory (including permit and license) requirements and this Agreement and otherwise in a good and proficient manner and with no less than the standard of professional skill, care and diligence customarily applied by qualified and experienced professional contractors performing substantially similar work under substantially similar conditions. Any work the City carries out on JHT Site shall comply with all applicable BC Hydro policies relevant to safety, security and the environment communicated by BC Hydro to the City, and the City shall use every reasonable care and precaution to avoid any injury or damage to persons or property on JHT Site.

Without limitation, in respect of the completion of the City Works, the City shall comply with all applicable dam safety requirements set out in applicable Dam Safety Regulations, BC Hydro's dam safety guidelines provided to the City by BC Hydro prior to the Effective Date, and any supplemental requirements adopted by BC Hydro pursuant to a written policy of general application, provided such policy requirements are communicated in writing to the City by BC Hydro. If, after entering into this Agreement, BC Hydro independently and unilaterally imposes supplemental or modified dam safety requirements, that are not the result of or caused by a direction or decision of a governmental authority or regulatory agency, that the City is required to comply with in respect of the completion of the City Works and such compliance increases the cost to the City of completing the City Works, then such costs will be added to the Funding Cap for which BC Hydro is partially responsible pursuant to clause 5.2.

BC Hydro or the BC Hydro contractor for the BC Hydro Works acting on behalf of BC Hydro will be responsible for the remediation of any contamination or hazardous substances that may be discharged, released or created in carrying out the BC Hydro Works in accordance with and to the standards required by all applicable laws and regulations. The City will be similarly responsible in respect of contamination or hazardous substances discharged, released or created in carrying out the City Works.

2.6. ***Site Conditions on Completion:*** The City shall keep that part of the JHT Site where the City Works are performed neat and clean at all times and shall after completion of the City Works and Temporary Works, if any, remove from JHT Site all of its or its contractors' waste materials, rubbish, construction equipment, tools, supplies and facilities and leave

the JHT Site neat, clean and in a safe condition not worse than as existed before commencement of the City's work thereon.

2.7. ***Construction on the JHT Site:*** To the extent that any portion of the City Works is constructed on JHT Site, the City's design and construction methodologies and work schedule for that portion of the City Works shall be developed in consultation with BC Hydro or the BC Hydro contractor for the BC Hydro Works acting on behalf of BC Hydro and shall be subject to review and acceptance of BC Hydro, not to be unreasonably delayed or denied, prior to commencement of any construction activities on JHT Site, in order to minimize any risk to BC Hydro. Any subsequent changes to that portion of the City Works constructed on JHT Site, including design, construction methodologies or work schedule, shall similarly be subject to BC Hydro review and acceptance prior to implementation, such review and acceptance not to be unreasonably delayed or denied. For clarity, no BC Hydro review or acceptance will in any way relieve the City of any responsibility or liability under or in connection with this Agreement or impose any responsibility or liability on BC Hydro.

2.8. ***Access to the City Sites:*** In accordance with the protocol requirements of clause 2.12 of this Agreement, the City shall provide BC Hydro and the BC Hydro contractor for the BC Hydro Works with reasonable access to the City Works construction site during construction for inspection and other reasonable purposes, subject to the applicable OH&S program requirements of the City's or the City's contractor for the City Works.

2.9. ***City Responsibility for Damage or Disruption:***

(a) ***Work Standards:*** The City shall ensure that neither the City Works, including any Temporary Works, nor the work carried out by the City under this Agreement in respect of the City Works or any Temporary Works, will cause damage or delay to the BC Hydro Works or the John Hart Replacement Project (whether through delays in the performance of the City's obligations under this Agreement, road closures or other disruptions to construction traffic, or otherwise), or adversely affect BC Hydro's operation and use of the John Hart Generating Station.

(b) ***Cooperation and Coordination:*** In accordance with the protocol requirements of clause 2.12 of this Agreement and subparagraphs (c) and (e) below, the City and BC Hydro, and their respective contractors for the City Works, the BC Hydro Works and the John Hart Replacement Project work, shall cooperate and coordinate with one another to minimize delays and other adverse impacts to the BC Hydro Works, the City Works, and the John Hart Replacement Project.

(c) ***Priority of Access:*** Within the time period between the Effective Date and December 31, 2015 (subject to extension only by mutual agreement or force majeure type events outside of the reasonable control of BC Hydro); and subject to (i) compliance with the protocol requirements of clause 2.12; and (ii) subject to subparagraph (d) below, in which BC Hydro, or the BC Hydro contractor for the BC Hydro Works acting on behalf of BC Hydro , shall carry out and complete the BC Hydro Works , any scheduling conflicts between the City Works and the BC Hydro Works or the John Hart Replacement Project construction works shall be resolved in favour of the BC Hydro Works or the John Hart Replacement Project for construction works along Surge Tower Road to Highway 28, as the case may be, with the effect that the BC Hydro contractor for the BC Hydro Works acting on

behalf of BC Hydro and/or the BC Hydro contractor for the John Hart Replacement Project acting on behalf of BC Hydro shall have priority of access along Surge Tower Road necessary for the performance of their work and, without limitation, shall have the right to organize and schedule its work activities, subcontractors, equipment and inspections in priority to any concurrent work activities the City may be undertaking, by itself or through its contractors, with respect to the City Works. Notwithstanding that BC Hydro and/or the BC Hydro contractor acting on behalf of BC Hydro will have priority of access along Surge Tower Road in this time period, they must still use reasonable commercial efforts to coordinate and cooperate with the City regarding the City Works access.

(d) ***Extension of City Deadline:*** If the exercise of the foregoing priority of access right by BC Hydro or a BC Hydro contractor acting on behalf of BC Hydro causes the City to delay the performance of work activities in relation to the City Works or Temporary Works, then the Deadline described in clause 3.2 shall be extended by the same number of days the City was so delayed. If BC Hydro and the City cannot agree on whether an extension of the Deadline is required for this reason or what the time extension should be, the matter shall be referred to the Independent Certifier for an expedited resolution of the disagreement. The decision of the Independent Certifier shall be final and binding on the parties.

(e) ***Proactive Communications and Coordination:*** Notwithstanding the foregoing priority of work activity terms, BC Hydro and the BC Hydro contractor for the BC Hydro Works acting on behalf of BC Hydro and/or the BC Hydro contractor for the John Hart Replacement Project acting on behalf of BC Hydro shall at all relevant times use reasonable commercial efforts to: **(i)** proactively communicate and coordinate with the City and City contractor with respect to the completion of the City Works; **(ii)** accommodate to the extent reasonably possible City or City contractor access to and use of the JHT Site (including access roads) at the same general times that the BC Hydro Works and the John Hart Replacement Works are being carried out; and **(iii)** accommodate the City in continuing to exercise its existing access rights in the normal course of managing and maintaining the Existing Facilities.

2.10. ***BC Hydro Responsibility for Damage or Disruption:*** BC Hydro shall ensure that its construction of the BC Hydro Works does not cause damage to the City Works, any Temporary Works or any other portion of the City's system of water works. It shall also ensure that the construction activities carried out as part of its John Hart Replacement Project do not damage the City Works or any Temporary Works or any other portions of the City's system of water works. Should any such damage occur, BC Hydro shall have the damage repaired to the City's reasonable satisfaction at no cost to the City. For certainty, the foregoing shall not limit BC Hydro's right to disable the City's existing water supply infrastructure under the circumstances contemplated in clause 3.3 of this Agreement.

On completion of the BC Hydro Works all right, title and interest in and to such works and assets, and all risk of loss or damage to such works or assets shall transfer to the City except for the specific obligations of BC Hydro expressly set out in this Agreement.

2.11. ***Water Quality Matters:***

(a) ***BC Hydro's Limited Responsibility:*** BC Hydro's contractual responsibility for possible adverse impacts to the quality of the City's drinking water shall be limited to ensuring that the John Hart Replacement Project construction activities do not impact the water quality in the reservoir in a way that causes the City's drinking water quality to become out of compliance with the Drinking Water Standards. Under no circumstances shall BC Hydro have any contractual responsibility or contractual liability for drinking water quality during or following the completion of the John Hart Replacement Project design or construction activities or the BC Hydro Works, unless and only to the extent BC Hydro is in breach of an express obligation under this Agreement or the Water Use Agreement referred to in clause 3.5 and only then to the extent such breach has directly caused the City losses or damages and subject to the limitations and exclusions of liability set out in clause 9.

For the purpose of this section 2.11, Drinking Water Standards means applicable Federal Guidelines for Canadian Drinking Water Quality and/or the Provincial Drinking Water Treatment Objectives (Microbilogical) for Surface Water Supplies in BC.

Nothing in this Agreement, including this Clause 2.11 (including but not limited to the exchange of water quality monitoring and testing information), is intended to release BC Hydro from, or constitute a waiver by the City of any rights or remedies it may have in law that are not based in contract (express or implied), to claim and recover any damages or losses the City may suffer or incur in respect of the deterioration or loss in quality of the City's water supply which may be caused by the negligence or other legal fault of BC Hydro or the BC Hydro contractor acting on behalf of BC Hydro in the design, construction or operation of the John Hart Replacement Project work or the BC Hydro Works. Furthermore, nothing in this Agreement is intended to modify or limit the application of the terms of the Water Use Agreement, including with respect to water quality matters.

(b) ***Water Quality Monitoring:*** BC Hydro will continue to grant access to the City to the JHT Site including the reservoir, pursuant to the Water Use Agreement, so that the City may monitor water quality standards and have unrestricted access to the City's system of water works, including during the construction period for the John Hart Replacement Project, and BC Hydro will, on request of the City, provide the City with any water quality monitoring data that may be available to BC Hydro through its own monitoring activities or those of the BC Hydro contractor for the John Hart Replacement Project acting on behalf of BC Hydro. BC Hydro will undertake water quality monitoring that will include at a minimum two years of standard or basic monitoring as determined in consultation with the City and the Vancouver Island Health Authority (VIHA) following the completion of the John Hart Replacement Project, following which the water quality monitoring program results will be reviewed and assessed by BC Hydro, the City and VIHA. The exchange of water quality monitoring and testing information by the parties is not intended to exclude or limit the extent to which BC Hydro may have liability in law for damages or losses the City may incur or suffer as a result of a deterioration or loss in the quality of the City's water supply from the John Hart reservoir that is the result of BC Hydro's legal fault.

The City may carry out such further monitoring or testing of water quality in the John Hart reservoir as it may determine necessary for its own purposes and subject only to the site access protocols and terms set out in this Agreement and the Water Use Agreement that may apply. The City will notify BC Hydro of the monitoring and testing it is carrying out and will provide BC Hydro with copies of all, or such designated portions, of these City reports or tests as BC Hydro may request from time to time.

(c) ***Exchange of Information:*** BC Hydro will also provide timely reports to the City of any communications BC Hydro receives regarding water quality issues or concerns, including any mitigation measures that BC Hydro may be required to undertake, in connection with the approvals and authorizations BC Hydro is seeking in connection with the John Hart Replacement Project. The water quality monitoring information and records and Water Comptroller communications are being made available and provided to the City for information purposes only and BC Hydro is providing no representation or warranty and accepting no liability whatsoever, in respect of or in relation to this information and these records.

2.12. ***Coordinated Work Site Protocols:*** In completing the BC Hydro Works, either BC Hydro or the BC Hydro contractor for the BC Hydro Works acting on behalf of BC Hydro shall: (a) provide the City with 60 days written notice prior to the commencement of work activities that could reasonably be foreseen to overlap or intersect in some material way with the City Works; (b) provide periodic updates to the City regarding the progress of the BC Hydro Works; and (c) proactively communicate and use reasonable commercial efforts to coordinate work activities and schedules with designated City or City contractor representatives, as reasonably required having regard to the extent to which there is an overlap or intersection of work activities. The City and BC Hydro, together with their respective contractors, shall, to the extent reasonably required adopt further work site governance protocols and practices to assist in coordinating their respective access and work activities to and at the JHT Site (including all access roads). The City and BC Hydro shall each provide to the other the names and contact particulars of their respective contractors in order to facilitate and support direct communications between them consistent with the work activities and site access protocols provided for in this Agreement.

2.13. ***Claims Procedure:*** In making a claim against BC Hydro for any defects or deficiencies in the BC Hydro Works the City acknowledges that : (a) it cannot make a claim for errors, defects or deficiencies in the design, including the design and pipe (and related materials) specifications, which the City has provided its approval of as provided for in this Agreement, including clause 2.1 and in accordance with the requirements set out in the Terms of Reference; (b) it must provide BC Hydro with written notice before the expiry of the 60 day period following receipt by the City of the Independent Certifier reports described in clause 2.4 of this Agreement; (c) the claim must be accompanied with an explanation of the basis for the claim and relevant supporting data; and (d) the City must first have made reasonable attempts to meet with the BC Hydro Site Manager to resolve the claim before proceeding with a formal legal proceeding.

3. Coordinated Schedules and Continuity of Water Supply

3.1. ***BC Hydro Responsibility:*** BC Hydro shall use reasonable commercial efforts to ensure that the BC Hydro Works are completed in a timely manner in accordance with the Terms

of Reference so as not to prejudice the City's ability to complete the City Works within the time contemplated in clause 3.2. Completion of the BC Hydro Works shall occur by December 31, 2015 (subject to extension only by mutual agreement or force majeure type events outside the reasonable control of BC Hydro or its contractor for the BC Hydro Works). BC Hydro will provide prompt notice to the City of any anticipated delays so as to provide the City with reasonable opportunity to assess its ability to comply with clause 3.2 and implement any Temporary Works, as contemplated in clause 3.2, if needed. BC Hydro shall bear no liability whatsoever for any delays, except as provided under clause 3.4(a).

3.2. ***City Responsibilities and Deadline:*** The City shall use reasonable commercial efforts to complete the City Works in accordance with the Terms of Reference, or install suitable temporary water supply infrastructure (**"Temporary Works"**), by no later than December 31, 2017, subject to any extensions made pursuant to clause 2.9(d), or such other date as may be agreed in writing between the parties (the **"Deadline"**), so as not to prejudice the John Hart Replacement Project schedule, and shall bear all risk associated with the performance of its work, including without limitation the risk of any failure to complete the City Works or install Temporary Works by the Deadline for whatever reason, except as provided under clause 3.4(a).

3.3. ***Shut Down of Existing Water Supply:*** It is acknowledged by the City that after the Deadline (subject to any extensions made pursuant to clause 2.9(d)), BC Hydro may disable and remove the City's existing water supply infrastructure (between the existing penstocks and the downstream valve chamber(s)) located on BC Hydro premises as necessary for the John Hart Replacement Project, resulting in disruption in municipal water supply unless the City Works are completed or suitable Temporary Works are put in place by the City. Except as set out in clause 3.4 below, BC Hydro assumes no liability for any such disruption. Any City Works on BC Hydro property not completed by the Deadline may be completed by the City, subject to the terms and conditions of this Agreement, after completion of the John Hart Replacement Project once written authorization to do so is issued by BC Hydro, such authorization not to be unreasonably withheld or delayed. In addition to its commitment set out in clause 2.10, BC Hydro agrees to not interrupt the water supply to the City by way of John Hart Replacement Project activities solely for the sake of convenience or efficiencies.

3.4. ***Liability for Delays:***

(a) ***BC Hydro:*** BC Hydro shall be liable to the City for damages or losses the City demonstrates it has suffered or incurred for delays BC Hydro may cause to the City's completion of the City Works resulting from **(i)** BC Hydro's failure to use reasonable commercial efforts to complete the BC Hydro Works in a timely manner pursuant to clause 3.1; **(ii)** BC Hydro unreasonably withholding or delaying an approval required by the City for the City Works; and **(iii)** BC Hydro failing to provide the City with reasonable notice of BC Hydro's anticipated delays in the completion of the BC Hydro Works that are reasonably expected to disrupt the completion of the City Works before the Deadline.

(b) ***City:*** The City shall be liable to BC Hydro for damages or losses BC Hydro demonstrates it has suffered or incurred for delays the City may cause to BC Hydro's completion of the BC Hydro Works resulting from: **(i)** the City's failure to use reasonable commercial efforts to complete the City Works and/or the Temporary Works by the Deadline pursuant to clause 3.2; **(ii)** the City

unreasonably withholding or delaying providing an approval that may be required by BC Hydro or BC Hydro contractor in respect of the BC Hydro Works; and **(iii)** the City failing to provide BC Hydro with reasonable notice of the City's anticipated failure to complete the City Works or Temporary Works by the Deadline.

3.5. ***Extension of Water Use Agreement:*** BC Hydro agrees to extend the Water Use Agreement of January 11, 2006, as amended and extended from time to time, upon reasonable terms so as to permit the City to continue diverting water at the John Hart Generating Station for its municipal waterworks.

4. Ownership and License

4.1. The City and BC Hydro agree that the City Works and any Temporary Works shall be owned by the City exclusively. The City and BC Hydro further agree that the water system portion of the BC Hydro Works shall be owned by the City exclusively, once those works are completed by BC Hydro and accepted by the City.

4.2. The City shall acquire no interest beneficial or otherwise in or to JHT Site by virtue alone of any portion of the City Works, Temporary Works or BC Hydro Works being located on those lands or facilities.

4.3. BC Hydro hereby grants to the City the non-exclusive right and license to enter onto and use its JHT Site for the limited purpose of, and to the extent reasonably required for, performing the work contemplated under this Agreement, provided that the City shall coordinate its access to, and work activities on, JHT Site with the BC Hydro Site Manager so as to accommodate concurrent use of such lands and facilities by BC Hydro and others. BC Hydro shall notify the City in writing of the name and contact particulars, and any changes or updates, for the BC Hydro Site Manager.

4.4. BC Hydro further agrees that it shall grant to the City all necessary easements, licences or statutory rights of way on customary or normal course terms for agreements of this kind as the City may reasonably require for the operation, repair or replacement of any portion of the Highway 28 Solution Project that crosses over, under or is within the JHT Site, following the completion of construction.

5. Funding

5.1. BC Hydro shall be solely responsible for all costs associated with its design, procurement, and construction of the BC Hydro Works. For clarity, any work BC Hydro is required to carry out under this Agreement shall be at BC Hydro's own cost and shall not be included in the maximum Funding amount specified in clause 5.2.

5.2. Subject to the terms and conditions of this Agreement, and any changes in the scope of work that may be mutually agreed to in writing, BC Hydro shall fund 75% of the City's actual and reasonably incurred and substantiated costs of design, construction, connection, testing and commissioning of the Temporary Works, if any, and the City Works (the "**Funding**") in accordance with this Agreement, up to the aggregate maximum of $12.5 million ("the "**Funding Cap**"). Subject to clause 2.5, clause 2.9(d) and clause 3.4(a), BC Hydro shall not pay or otherwise be liable to the City for any costs relevant to the City Works in excess of this Funding Cap irrespective of any cost overruns, howsoever arising

(whether by virtue of unexpected site conditions, delays, or otherwise), including any cost overruns in excess of the City's $16.6M total project budget for the City Works. .

5.3. Under no circumstances shall BC Hydro have any liability under this Agreement to fund:

(a) any costs relating to future operation, maintenance, repair or replacement of the City Works; or

(b) except as permitted in the subparagraph below, for any internal City costs, including the time of its employees and any related overhead, whether incurred in relation to the planning or completion of the City Works or otherwise.

Notwithstanding the foregoing subparagraphs (a) and (b), the City may include in the costs for which it receives Funding from BC Hydro the substantiated internal costs of the City's engineering and construction planning personnel for time directly spent on the development and implementation of the Highway 28 Solution Project up to an aggregate maximum of $500,000. For clarity, the City is not entitled to claim Funding for internal management and administrative supervisory time or for administrative support time.

5.4. The City shall be entitled to invoice BC Hydro monthly in respect of the costs incurred by it relevant to the City Works, up to the Funding Cap, subject to the following limitations:

5.4.1. During the period ending December 31, 2013, the City shall be entitled to invoice 100% of the costs incurred by the City for design and construction of the City Works, up to the aggregate of $500,000.00;

5.4.2. During the period from January 1, 2014 through December 31, 2014, the City shall be entitled to invoice 100% of any not previously invoiced costs incurred by the City for design and construction of the City Works, up to the aggregate of $10,000,000.00 plus any of the $500,000 referred to in clause 5.4.1 not yet invoiced by the City;

5.4.3. During the period from January 1, 2015 to the completion of the City Works, the City shall be entitled to invoice 75% of the balance of any not previously invoiced costs incurred by the City for design, construction, connection, testing and commissioning of the City Works, minus 25% of all costs invoiced under clause 5.4.1 and clause 5.4.2 above, up to the total overall aggregate of $12,500,000.00.

5.5. Invoices provided by the City under clause 5.4 shall be accompanied by supporting documentation reasonably acceptable to BC Hydro evidencing that the costs to which the invoice relates have actually been incurred, shall be addressed to the BC Hydro head office address noted on page 1 and contain the following information:

All invoices must include the following information:

1. Addressee (BC Hydro Accounts Payable)
2. BC Hydro Order Number: PO # (Purchase Order #) or CO # (Contract Order #)
3. GST Registration Number
4. Invoice Number
5. Total Invoice Value with GST, and PST (where applicable) clearly identified

6. State any applicable holdback amount before invoice total
7. If applicable, include the corresponding PO Release line item, quantity and unit price
8. Contact name and e-mail address
9. Signed contractor, subcontractor and consultant timesheets including a full breakdown of all hours charged and/or quantities charged and unit rates applied
10. Copies of receipts for all contractor, subcontractor and consultant expenses
11. Copies of any applicable subcontractor or consultant payments
12. Copies of receipts for all supplied materials and related supporting documentation

The City will, during the performance of the City Works and for a period of seven years after termination of the Agreement, keep and maintain proper and accurate accounts and records, including all agreements with contractor and subcontractors and consultants, invoices, statements, receipts, vouchers, calculations, reports, data, drawings, plans and other documents, in hard or electronic form, in respect of the City Works.

5.6. BC Hydro shall make payment of all undisputed invoice amounts within 30 days from the date of the relevant invoice.

6. Right of Audit

6.1 The City shall keep proper books, accounts and records of all expenditures incurred in connection with the City Works, including any Temporary Works, relevant to BC Hydro's funding obligation under this Agreement, including the records described in clause 5.5, and shall, on request of BC Hydro make available to BC Hydro such books, accounts and records, and shall permit BC Hydro to examine and audit and take copies and extracts from such books, accounts and records, as reasonably required by BC Hydro to verify the City's entitlement to monies paid or claimed to be payable under this Agreement. BC Hydro shall be entitled to prompt return of any funds paid in excess of the City's entitlement as determined by this Agreement.

7. Publicity

7.1. The City agrees to acknowledge the role of BC Hydro in all publicity material and other forms of release or communication in relation to the City Works. All such communications mentioning BC Hydro must first be submitted to and approved by BC Hydro before release.

8. Confidentiality

8.1. To the extent permitted under the *Freedom of Information and Protection of Privacy Act*, BC Hydro and the City shall keep confidential any and all information, data, research, documents, photographs, plans, reports, materials, or otherwise, not already in the public domain, received from the other party as a result of this Agreement or developed during performance of this Agreement and marked or otherwise expressly identified as confidential and shall not use that information for any purpose unrelated to performance of its obligations under this Agreement unless authorized in writing by the disclosing party.

9. Liability and Indemnity

9.1. Other than as expressly provided in this Agreement, including the City's right to make claims for deficiencies in the completion of BC Hydro Works, the City hereby releases and forever discharges BC Hydro and its employees, servants or agents from any and all liability, damages, claims, demands, expenses and costs arising out of or related to this Agreement, including without limitation the completion or non-completion of the BC Hydro Works and any delays therein.

9.2. Except for liabilities and expenses expressly assumed by BC Hydro under this Agreement and subject to any express exclusions, the City will indemnify and save harmless BC Hydro, its directors, officers, agents, and employees and BC Hydro contractor for the BC Hydro Works and JHT Project Work from any and all third party claims and related claims costs arising out of or related to BC Hydro's provision of the Funding, any breach of this Agreement by the City, or negligence or other legal fault of the City, including City consultants or contractors in the design, construction, connection, testing, commissioning, operations or maintenance of the City Waterworks and any Temporary Works, including without limitation any interruption of water supply to the City or with respect to the quality of the water being supplied to the City.

9.3. BC Hydro will not be responsible for any tax liability imposed on the City as a result of any Funding pursuant to this Agreement.

9.4. Subject to any exclusions of liability contained in this Agreement, BC Hydro will indemnify and save harmless the City, its directors, officers, agents, and employees from any and all third party claims and related claims costs arising out of or related to any breach of this Agreement by BC Hydro or negligence or other legal fault by BC Hydro, including BC Hydro consultants or contractors, in the design (subject to clause 2.13) or construction of the BC Hydro Works. Under no circumstances shall BC Hydro have any liability in respect of any claims by City residents or customers relating to any water supply disruption or the quality of the water being supplied, except as expressly provided for in clauses 2.11 and 3.4.

9.5. The City will not be responsible for any tax liability imposed on BC Hydro as a result of BC Hydro's performance of its obligations pursuant to this Agreement.

9.6. Notwithstanding anything to the contrary contained in this Agreement, neither party shall be liable to the other for any loss of revenue, loss of profit, loss of use or loss of opportunity, or for any indirect or consequential damages or losses suffered by that other party, even if advised of the possibility of such damages or losses.

10. General

10.1. Nothing contained in this Agreement shall create the relationship of principal and agent, employer and employee, partnership or joint venture between the parties.

10.2. Time is of the essence of this Agreement.

10.3. All references herein to currency are to the lawful money of Canada.

10.4. This Agreement shall be governed by and interpreted in accordance with the laws of the Province of British Columbia.

10.5. This Agreement may not be amended except by a writing signed by both parties.

10.6. In the event of any disagreement or dispute between the parties relating to the interpretation of this Agreement or concerning any matter arising under it, each of the parties will designate a senior representative who will attempt to settle the matter or disagreement or dispute. If the senior representatives so designated are unable to resolve the matter within 30 days, the parties agree that the matter shall be referred to a single arbitrator for determination pursuant to the provisions of the British Columbia *Arbitration Act* [RSBC 1996] c. 55. To the extent any disputes between the City and BC Hydro also involve claims by or against BC Hydro's contractor for the John Hart Project or the BC Hydro Works, or the City contractor for the City Works, then each of the City and BC Hydro will consolidate the disputes and claims together in one proceeding in accordance with the dispute resolution protocols and procedures provided for in Schedule 19 to the John Hart Project Agreement, which is incorporated by reference into this Agreement for this purpose.

10.7. A notice that either party may be required or may desire to give the other party will be in writing and will be given to and received by the addressee on the day when it is delivered, by hand, by courier, by fax, by electronic mail, or by prepaid mail, at the following addresses:

BC Hydro:

BC Hydro
Attention: Chris O'Riley, Executive Vice President, Generation
333 Dunsmuir Street, 12th Floor
Vancouver, B.C. V6B 5R3
Email: chris.oriley@bchydro.com

The City:

The City of Campbell River
Attention: Andy Laidlaw, City Manager
301 St. Ann's Road
Campbell River, B.C. V9W 4C7
Email: andy.laidlaw@campbellriver.ca

Either party may from time to time change its address for notice by giving notice to the other party.

10.8. This Agreement embodies the entire agreement between the parties with regard to the subject matters dealt with herein and no understanding or agreements, oral or otherwise, exist between BC Hydro and the City except as contained in or otherwise referred to in this Agreement.

10.9. This Agreement will extend to, be binding upon and enure to the benefit of BC Hydro and the City and their respective successors and assignees provided that the City will not be

entitled to assign any of its interest in this Agreement without the prior consent of BC Hydro.

10.10. This Agreement may be executed in counterparts, which when taken together will constitute one and the same document. This Agreement may be executed by the exchange of signed counterparts by facsimile transmission or electronically in PDF or similar secure format.

10.11. This Agreement will expire and terminate upon the commencement of operations for both the John Hart Replacement Generating Facility and the City Works, except for clause 2.11(b) (Water Quality Monitoring) and clause 9 (Indemnities) in respect of claims that may accrue or arise during the term of the Agreement, and each clause shall survive any termination or expiry of the Agreement.

IN WITNESS WHEREOF the Parties have executed this Agreement, effective as of the date first above written.

CITY OF CAMPBELL RIVER		**BRITISH COLUMBIA HYDRO AND POWER AUTHORITY**	
Authorized Signatory:		Authorized Signatory:	
Print Name:	Ryan Minnie	Print Name:	
Title:	Acting Mayor	Title:	
Date:	June 28, 2014	Date:	
Authorized Signatory:		Authorized Signatory:	
Print Name:	Peter F. Wipper	Print Name:	
Title:	City Clerk	Title:	
Date:	July 2, 2014	Date:	

SCHEDULE 1

TERMS OF REFERENCE

1.0 PROJECT BACKGROUND

.1 In 1947 BC Hydro began operation of the John Hart hydroelectric generating plant on the Campbell River and since commencement of operations, BC Hydro has permitted the City of Campbell River (City), subject to the authority of the British Columbia Comptroller of Water Rights, the uninterrupted supply of water for municipal use. BC Hydro is now undertaking the completion of the John Hart Replacement Project which will require the redesign, relocation and replacement of the City's existing water supply infrastructure in order to maintain uninterrupted water supply to the City.

.2 In order to ensure an uninterrupted municipal water supply, the City and BC Hydro have agreed to share responsibility for completion of all work necessary for the redesign, relocation and replacement of the City's existing water supply infrastructure on terms to be reflected in a formal agreement between the parties (the "Agreement"). Following consideration by the parties of different options, generally based on the City's Technical Memorandum dated March 16, 2012 and May 8, 2013, both parties agreed to proceed by way of the *Highway 28 Solution Project* as described within these Terms of Reference, and based on the mutually agreed reservoir intake and trench design concept set out in Appendix 1. BC Hydro agreed to fund 75% of the City's cost of the *City Works* to the maximum of $12.5M.

.3 The *Highway 28 Solution Project* will consist of two distinct work packages:

.1 *BC Hydro Works* - will consist of a watermain, approximately 950m in length that is to be located along the access road (Surge Towers Road) beginning at Highway 28, west of the existing gas transmission main, and terminating at the western limit of the City's lease property for the Elk Falls Water Quality Centre (EFWQC), generally along the route designated by the dashed green line on the Preliminary Alignment Drawing prepared by Koers & Associates Engineering Ltd. included in Appendix 2. *BC Hydro Works* will also include the widening and re-alignment of the access road from Highway 28 to the EFWQC. Delivery of all labour and materials necessary for the design and construction of the *BC Hydro Works* will be the responsibility of BC Hydro and all costs associated with this work package will be the responsibility of BC Hydro and will not be part of the agreed to funding described in item 1.2

.2 *City Works* - will include the remaining watermain along Highway 28, generally along the route designated by the dashed blue line on the Preliminary Alignment Drawing prepared by Koers & Associates Engineering Ltd. included in Appendix 2, the watermain to the new intake, tie-ins at the EFWQC, and the construction of the new intake and pump chamber on John Hart Lake. Delivery of all labour and materials necessary for the design and construction of the *City Works* will be the responsibility of the City and total cost will be funded in the amounts described in item 1.2, subject to the terms and conditions of the Agreement.

.4 The currently contemplated *Highway 28 Solution Project* schedule anticipates the *City Works* to be completed as follows, with the *BC Hydro Works* completion date estimated for December 31, 2015:

.1 Design of watermain from Hwy 28/Access Road to intake structure complete end of 2013.

.2 Design of intake structure complete end of 2014.

.3 Construction of watermain from Hwy 28/Access Road to intake structure complete end of 2014.

.4 Construction of intake structure complete end of 2015.

.5 Testing and commissioning of new water supply infrastructure complete end of 2016.

.6 Switch over to new watermain and infrastructure complete end of 2017.

.5 The purpose of these Terms of Reference is to set out the City's Engineering Standards and Specifications and other requirements in respect of the *BC Hydro Works* for the purposes of the Agreement.

2.0 DESIGN REQUIREMENTS

.1 The watermain and fittings to be delivered under the *BC Hydro Works* shall be designed in accordance with good engineering practice and the specific standards and specifications expressly set out in these Terms of Reference or identified and attached as part of Appendix 3.

.2 The sizing of the watermain to be delivered under the BC Hydro Works will be determined by pipe material type selected in conjunction with the requirement to achieve a design flow of 136 MLD with a minimum HGL equivalent of 134.5m at the EFWQC.

.3 The section(s) of the watermain to be delivered under the *BC Hydro Works* that crosses the gas transmission line shall conform with Fortis BC design requirements regarding separation, crossing angles, pipe joint locations, etc.

.4 Air valve sizing and locations to be delivered under the *BC Hydro Works* will be the responsibility of the BC Hydro designer. Current air valve sizing software should be used to ensure proper spacing and sizing of valves. Allowances should be made for air release, air/vacuum or combination air valves as required.

.5 Flushout design and locations to be delivered under the *BC Hydro Works* will be the responsibility of the BC Hydro designer. Flushouts should be provided at all low points to allow for proper flushing of the watermain for maintenance purposes.

.6 Coordination between BC Hydro and City will be required to ensure that the connection and tie-in details are adequately allowed for in the respective designs.

.7 The minimum depth of cover shall be 1.2 m with a maximum depth of cover of 2.0 m with exception near John Hart Lake due to minimum pipe elevation requirements. Any modification to this requirement will only be permitted with the prior approval of the City.

.8 The City will be required to review and approve the final design of the watermain to be delivered under the *BC Hydro Works* prior to BC Hydro's Contractor commencing any work related to the installation of this section of watermain.

3.0 CONSTRUCTION REQUIREMENTS

.1 BC Hydro's General Contractor for the *BC Hydro Works* shall be the Prime Contractor, as defined by Section 118 of the *Workers Compensation Act* (BC), for the *BC Hydro Works.* The City's

General Contractor for the *City Works* shall be the Prime Contractor, as defined by Section 118 of the *Workers Compensation Act* (BC), for the *City Works*.

.2 BC Hydro will require its General Contractor for the *BC Hydro Works* to provide the City with reasonable access to the *BC Hydro Works* construction site during construction for inspection and other reasonable purposes subject to the requirements of BC Hydro's and/or its General Contractor's OH&S program and subject to the priority of access principles and protocols reflected in the Agreement.

.3 As part of the completion of the *BC Hydro Works*, BC Hydro and/or BC Hydro's General Contractor will engage an independent third party to verify compliance with the specifications applicable to the *BC Hydro Works*.

.4 BC Hydro will require its General Contractor for the *BC Hydro Works* to provide and maintain uninterrupted access to the EFWQC for City staff and City contractors throughout the duration of completion of the *BC Hydro Works*.

.5 For completion of the *BC Hydro Works* all materials, installation, and workmanship shall be in accordance with the specific standards and specifications set out in these Terms of Reference or identified and attached as part of Appendix 3 and all applicable manufacturers' guidelines.

4.0 PROGRESS REPORTING

.1 BC Hydro will require its General Contractor for the *BC Hydro* Works to establish with the City such governance protocols (including schedule for progress reports) as may be reasonably acceptable to the City to keep the City informed during the course of construction.

.2 Monthly progress review meetings to be coordinated by the BC Hydro General Contractor and shall include representatives from the General Contractor, BC Hydro and the City and any other project participants as may be deemed necessary.

5.0 PROJECT DOCUMENTATION

.1 The BC Hydro General Contractor is to provide the City with copies of all relevant test data, reports, operation and maintenance information and copies of all relevant permits and approvals related to the *BC Hydro Works*.

.2 The BC Hydro General Contractor is to maintain project progress reports related to the *BC Hydro Works*, including photographic records, and provide this information to the City on a monthly basis.

.3 The BC Hydro General Contractor is to provide originals of 'as-built' record drawings sealed by a Professional Engineer registered to practice in the province of B.C., complete with electronic versions of same, in appropriate format, to the City upon completion of the *BC Hydro Works*.

APPENDIX 1

TECHNICAL MEMORANDUM NO. 1 1024-104-03 Rev. No. 1 – Dated March 16, 2012

TECHNICAL MEMORANDUM NO.1 1259-03 Rev. No.1 – Dated May 8, 2013

KOERS & ASSOCIATES ENGINEERING LTD.
Consulting Engineers

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TECHNICAL MEMORANDUM NO. 1024-104-03 Rev 1

City of Campbell River
John Hart Lake – Water Connection to BC Hydro Power Generating Facility Review

Issued: March 16th, 2012

1. Objective

The objective of the this technical memorandum is to provide preliminary (Class D) cost estimates for the potential upgrades required to the City of Campbell River water supply system to accommodate the BC Hydro seismic upgrades that are proposed for the existing John Hart Power Generation Facility.

2. Background Information

BC Hydro is currently in the planning stages for the seismic upgrade of its generating facility, which includes the three existing penstocks from John Hart Lake. It is our understanding that BC Hydro is considering replacing the aging penstocks with a new tunnel system. At first BC Hydro advised the City that during the construction of the upgrades and future maintenance works there is a potential for the water level in John Hart Lake to be drawn down to 129 m. This condition has now been revised so that the lake will only be drawn down to 129 m in an emergency situation such as a seismic event, and if earth dam upgrades are found to be required. BC Hydro has also expressed interest in developing an option for the City of Campbell River water supply to be independent of the BC Hydro power generation infrastructure. In order to facilitate a water supply independent of BC Hydro, upgrades would be required for the City of Campbell River water system. These upgrades would include a new intake in John Hart Lake and the construction of a pipeline from John Hart Lake to the City of Campbell River's system at the UV facility or chlorination station.

1. <u>New intake in John Hart Lake.</u>

   An intake in John Hart Lake would consist of dual 2.4 m diameter intake screens which will be connected to a 1.2 m diameter intake pipe. Water sampling shows that the water at an elevation of 123 m is preferable for domestic water use and therefore the centre of the intake structure will be positioned at an elevation of 123 m. A pipeline will be connected to the intake structure and be laid on the bottom of the lake until an invert elevation of 134.5 m is reached. At the 134.5 m invert elevation, the pipe will be excavated into the bank of the lake until a proposed valve chamber location is reached.

2. <u>Construction of a pipe line from John Hart Lake to the City water system</u>

   Three alignment options were reviewed for the pipe line from John Hart Lake to the City of Campbell River water system of which, one option has been eliminated and two options remain. Option 2 involved a very deep excavation (up to 12-15 m deep) alongside the existing powerline and access road immediately to the east of the penstocks. The remaining options (option 1 & option 3) have similar profiles with a maximum invert elevation of 134.5 m.

.../2

- Option 1:
  The pipeline for option 1 will generally follow the alignment of the existing wood stave penstocks and will require the new pipe to be constructed on the surface of the existing ground for the portion alongside the wood stave pipes. The section from the lake through the existing berm would be excavated and buried, the depth of cover for this section would be fairly deep, approximately 12 m. The section alongside the existing wood stave lines would be set on concrete support blocks. Once the BC Hydro tunnel system is completed and the existing penstocks are removed, the newly installed water supply line will be buried. A preliminary site investigation by BC Hydro has indicated that there is a significant amount of contaminated soil near the woodstave pipe lines. This contaminated soil would have to be remediated prior to the backfilling of the new water supply line. The section of new pipe installed alongside the steel penstocks would be buried up to the UV Facility connection point. This option is the shorter route; however it is complicated by the close working proximity of the existing penstocks and requires some rock removal. Once the water supply pipeline is operational, it will require more care by BC Hydro's contractor during removal of the penstocks and soil remediation.

- Option 3:
  The pipeline for option 3 will be partially routed on the north side of the Gold River Highway. Similar to option 1, the section from the lake through the existing berm would be excavated and buried this alignment option would also have a depth of cover of approximately 12 m. This route achieves a lower ground elevation partly along the Highway from the Lake, where the pipe can be trenched with the normal 1.2 m cover. This route connects to the City system at its chlorination facility, which is planned for upgrading under a separate project. Enlargement of the proposed building and relocation of the UV reactors would also be needed to suit this route. This option is approximately 750 m longer than option 1 and the pipeline will exit BC Hydro property, which would require a right-of-way acquisition with Elk Falls Park. However, it does not have the complication of working next to the existing penstocks which reduces the risk during construction. Also this option would enable the pipeline to be outside of BC Hydro property and be independent of BC Hydro, which is an attractive situation for both the City and BC Hydro. A significant amount of geotechnical investigation was completed for the John Hart Generating Station Replacement Project and the majority of the pipeline for option 3 is outside of the area covered by the previous geotechnical investigation. Therefore, this route would require further geotechnical investigation. At this time the ground conditions for the pipeline have been interpolated or assumed.

There were two different alternatives reviewed for the location in which the pipeline would enter into John Hart Lake, and the manner in which emergency pumping would take place.

- Alternative A is shown on Figures 1 & 3, where there will be a valve chamber located in the native compact sand near the shore of the lake. The pipe line from the valve chamber will be installed by traditional excavation practices, using a long reach bucket to excavate below the lake level. A temporary fill road will be constructed into the lake to excavate the trench line to a depth of 134.5 m. After the pipe is installed, a series of concrete check dams will be poured as water stops along the trench line to ensure the water from the lake does not migrate down the trench line. Once the check dams are in place the valve chamber can be installed. In the event of an emergency situation where the lake is drawn down to 129 m, pumps located on a barge would be connected to the underwater pipe. The barges and the pumps would be stored on land by the City until an emergency situation occurs. At that time the pumps and barges would be trucked to the lake, assembled, towed into place and connected to the pipeline.

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- Alternative B is shown on Figures 2 & 4. It is expected that on the south side of the lake the rock is much closer to the surface. Therefore a larger chamber could be constructed in the bedrock to form a junction between the intake pipe into the lake and the downstream piping. The chamber would be constructed by first blasting the rock out for the chamber and several metres of the inlet and outlet trench. Once the chamber is constructed and sealed with a connection through the chamber wall installed, the trench can be extended into the lake and the inlet pipe can be installed and connected to the pump chamber. Piping in the chamber would be designed with connections for pumps for an emergency situation. When the lake is drawn down, pumps will be lowered into the pump chamber and connected to the piping. This option will only be feasible if it is confirmed by future geotechnical investigations that rock is found at a level above the normal elevation of the lake (139 m). While this option requires more rock excavation, if rock is found between the proposed pump chamber and the shore it will provide certainty for the contractor regarding trench wall stability.

3. Cost Estimates

The cost estimates (Class D) for the proposed improvements are detailed in the following tables. Tables 1 through 4 show the costs for each alignment & option. Table 5 shows the summarized costs including contingencies, engineering, administration, and inflation amounts appropriate for a Class D cost estimate as set out in the City of Campbell River's Council Policy.

Table 1 : Option 1A Cost Estimate (Class D)

Item	Description	Preliminary Estimated Cost
1	Intake Screen & Piping	$900,000
2	Piping & Excavation	$4,475,000
3	Valve Chamber	$1,090,000
4	Emergency Pumping	$770,000
5	Connect to City of Campbell River System	$150,000
	Sub Total	**$7,385,000**

Table 2 : Option 1B Cost Estimate (Class D)

Item	Description	Preliminary Estimated Cost
1	Intake Screen & Piping	$792,000
2	Piping & Excavation	$5,748,000
3	Valve Chamber	$1,965,000
4	Emergency Pumping System	$320,000
5	Connect to City of Campbell River System	$150,000
	Sub Total	**$8,975,000**

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Table 3 : Option 3A Cost Estimate (Class D)		
Item	**Description**	**Preliminary Estimated Cost**
1	Intake Screen & Piping	$900,000
2	Piping & Excavation	$6,835,000
3	Pump Chamber	$1,090,000
4	Emergency Pumping System	$770,000
5	Connect to City of Campbell River System	$150,000
	Sub Total	**$9,745,000**

Table 4 : Option 3B Cost Estimate (Class D)		
Item	**Description**	**Preliminary Estimated Cost**
1	Intake Screen & Piping	$792,000
2	Piping & Excavation	$7,630,000
3	Pump Chamber	$1,965,000
4	Emergency Pumping System	$320,000
5	Connect to City of Campbell River System	$150,000
	Sub Total	**$10,857,000**

Table 3 : Summary of Cost Estimates (Class D)			
	Estimated Construction Cost	**Contingency (30%), Engineering. (30%) & Inflation (25%)**	**Project Total**
Option 1A	$7,385,000	$6,277,250	**$13,662,250**
Option 1B	$8,975,000	$7,628,750	**$16,603,750**
Option 3A	$9,745,000	$8,283,250	**$18,028,250**
Option 3B	$10,857,000	$9,228,450	**$20,085,450**

The option of directional drilling into the lake was reviewed with directional drilling contractors. Although directional drilling is possible and it would significantly reduce the amount of excavation required for the project, it is significantly more expensive than traditional construction methods. Quotes received from the directional drilling contractors indicate that $5,000,000 to $7,000,000 would be added to the estimated construction costs not including contingency, engineering or inflation. Due to the high costs of directional drilling, this potential construction method has been abandoned.

Options 3A and 3B are the most costly at this level of estimating, but preferred due to the reduced risk during construction and that the City's water system will be independent of BC Hydro. Additional future geotechnical information for these options in particular is required. Unless there is an early decision to eliminate the option 1 route for the philosophical reasons mentioned, it is recommended that all options be carried forward to preliminary design and Class C cost estimate stage. This provides two options for connection in to the lake and two routes from the lake to the City water system connection.

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This preliminary comparative cost estimate and summary was prepared by Koers & Associates Engineering Ltd. for the account of the City of Campbell River. The material in it reflects the best judgment of Koers & Associates in light of the information available to it at the time of preparation. Any use, which a Third Party makes of this cost estimate, or any reliance on decisions to be made upon it, is the responsibility of such parties. Koers & Associates Engineering Ltd. accepts no responsibility for damages, if suffered by any Third Party as a result of the decision made or actions based on this cost estimate.

Prepared by:

P. Stewart, P. Eng
Project Engineer

C. Downey, P.Eng.
Project Manager

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TECHNICAL MEMORANDUM NO. 1259-03 Rev No. 1

City of Campbell River
John Hart Intake Supply Main

Issued: May 8, 2013
Previous Issue: April 26, 2013

1. Objective

The objective of this technical memorandum is to provide more detailed conceptual information for the proposed watermain intake structure, valve/pump chamber and pipe trench from the proposed chamber to the Gold River Highway (Hwy 28).

2. Background

As previously outlined in the Koers & Associates Engineering Technical Memorandum 1024-03 Rev 1, dated March 16, 2012, BC Hydro and the City of Campbell River have expressed a joint interest to separate the City of Campbell River water supply from the BC Hydro power generation facility. Based on the findings listed in the technical memorandum and further discussions, the City and BC Hydro have elected to proceed with a modified alignment based on option 3B, as shown in the attached figure 1259-Fig.1 Rev 1. This alignment involves the construction of a new intake, valve/pump chamber, and supply main from the lake to the Elk Falls Water Quality Centre via Highway 28 and the proposed new access road.

3. Proposed Intake Structure

The proposed intake structure in John Hart Lake would consist of dual 2.4 m diameter intake screens, which will be connected to a 1.2 m diameter intake pipe. We understand that water sampling data obtained by the City indicates that the water at an elevation of 123 m is preferable for domestic water use. Therefore, the centre of the intake structure will be positioned at an elevation of 123 m; however, this depth could change should the new BC Hydro installation have an impact on the water quality in the lake. The centre of the dual intake screens shall be a minimum of 2.4m from the lake bottom. A pipeline will be connected to the intake structure and be laid on the bottom of the lake until an invert elevation of 134.5 m is reached. At the 134.5 m invert elevation, the pipe will be excavated into the bank of the lake until the proposed valve chamber location is reached.

BC Hydro's preferred operating range for John Hart Lake Reservoir is between 139.6 m and 139 m. The full operating range of the BC Hydro's water license is between 133.43 m and 140.06 m.

4. Proposed Valve/Pump Chamber

The alignment shown on 1259-Fig 1 Rev 1 is based on the assumption that the rock is close to the surface or above the 145 m elevation. The proposed concrete Valve/Pump chamber would be constructed in the bedrock along with concrete trench dams, which would also form a water barrier for the lake. Preliminary conceptual details are shown in the Pump Chamber Plan on 1259-Fig 1 Rev 1. The chamber would be constructed by blasting and breaking the rock out for the chamber and several metres of the inlet and outlet trench.

.../2

Upon completion of the chamber, the rock trench would be extended into the lake and the inlet pipe installed and connected to the flange left at the valve/pump chamber. Piping in the chamber would be designed with connections for pumps, when the lake is drawn down below 136m. Pumps would be lowered into the pump chamber and connected to the piping. The location of the valve/pump chamber and pipe alignment will be determined after future geotechnical investigations, which will confirm the elevation of rock.

The piping in the proposed valve/pump chamber shall be configured to allow a minimum of two line isolation valves to shut down flow in the pipeline and the two concrete trench dams and concrete walls of the valve/pump chamber shall be design to prevent the flow of water in the trench from the Lake.

5. Proposed Pipe Alignment

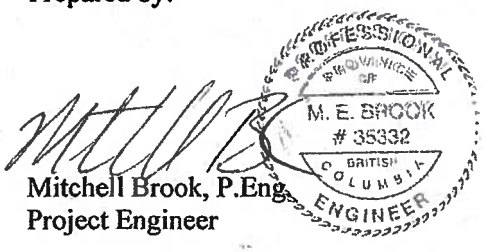
The proposed pipeline alignment would travel through the assumed rock after the proposed valve/pump chamber to a point where it would parallel the BC Hydro/Elk Falls Park property line until it reaches the access road to the Gold River Highway (Hwy 28). Enclosed 1259-Fig 2 shows an assumed section in the bedrock. Enclosed 1259-Fig 3 shows a typical section after the bedrock where the pipe would be excavated and buried. This alignment option would have an estimated depth of cover of approximately 14.5 m, which is anticipated to reduce to 1.2 m cover once the alignment reaches Hwy 28. Concrete trench dams will be required in the pipe trench to minimum elevation of 142 m or higher, depending on the Inflow Design Flood for John Hart Lake to prevent water migration in the trench.

It should be noted that a significant amount of geotechnical investigation was completed for the John Hart Generating Station Replacement Project, however the majority of the proposed pipeline alignment is outside of the area covered by previous geotechnical investigation which required the ground and rock elevations to be interpolated or assumed. This alignment will require further geotechnical investigation.

Yours truly,

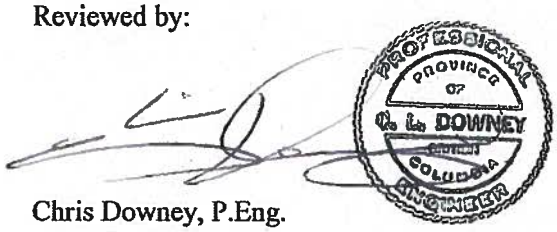
KOERS & ASSOCIATES ENGINEERING LTD.

Prepared by:

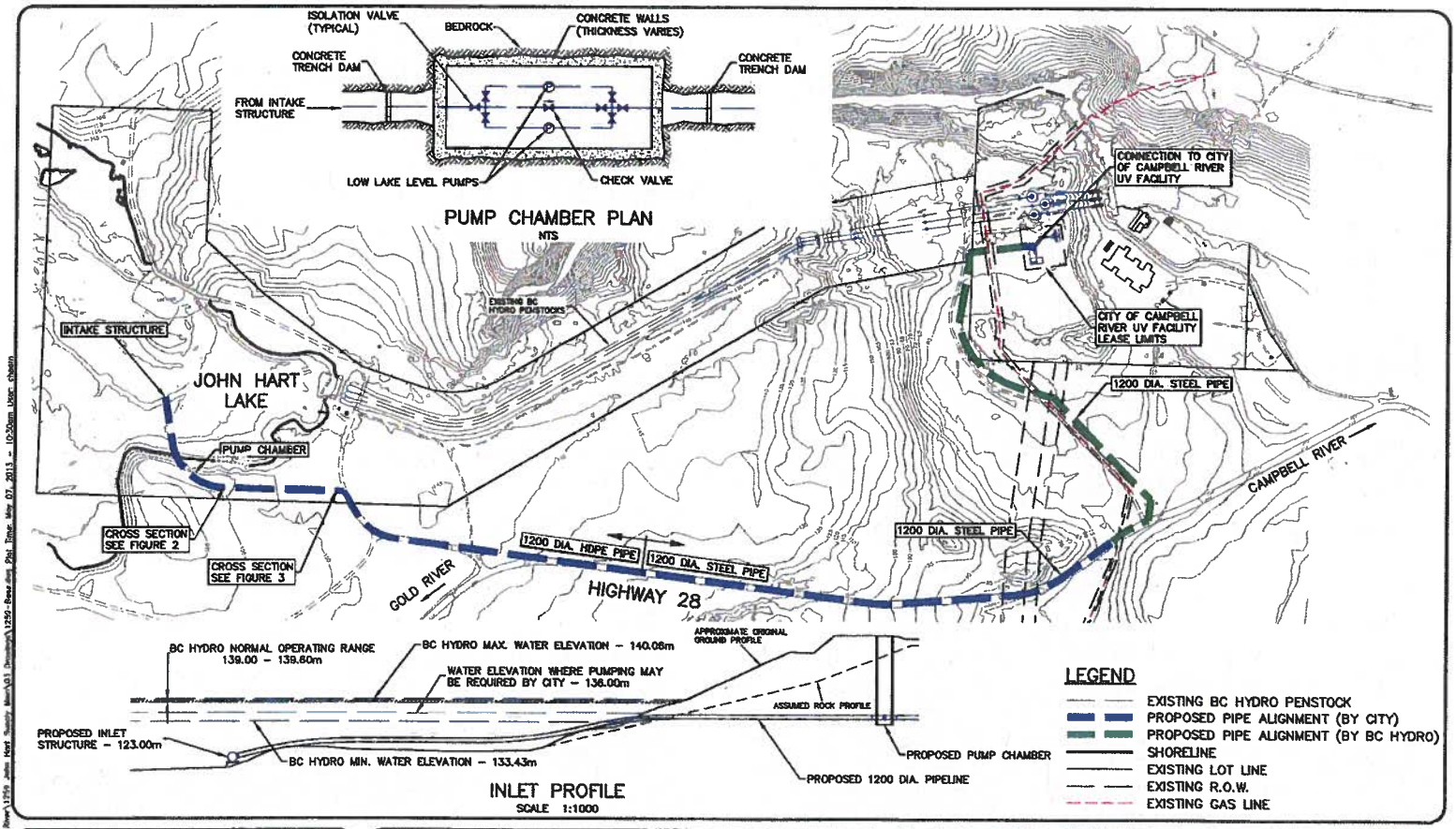


Mitchell Brook, P.Eng.
Project Engineer

Reviewed by:

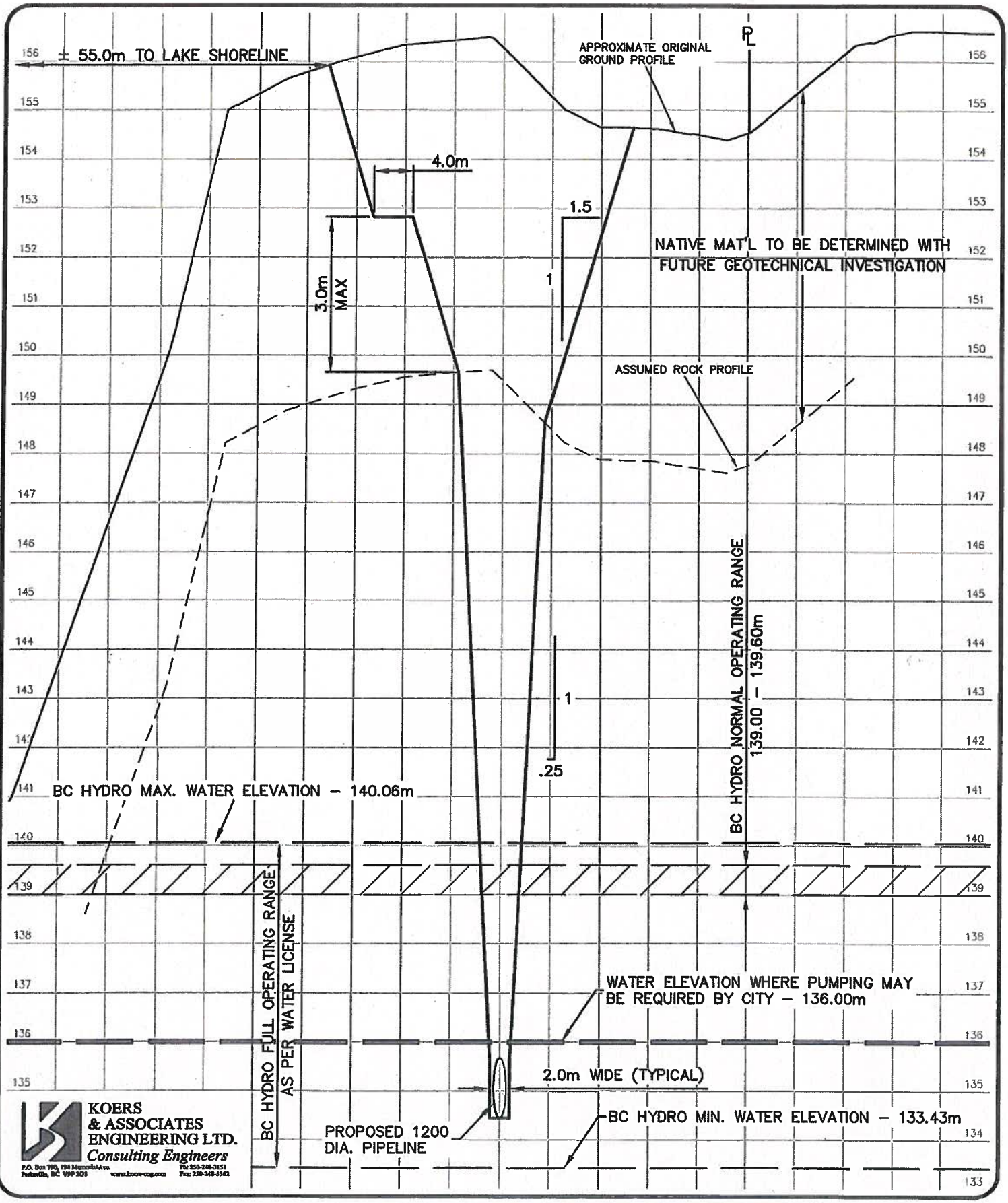


Chris Downey, P.Eng.
Project Manager



KOERS & ASSOCIATES ENGINEERING LTD.
Consulting Engineers

CLIENT	CITY OF CAMPBELL RIVER
PROJECT	JOHN HART WATER SUPPLY MAIN
TITLE	PROPOSED ALIGNMENT AND PUMP CHAMBER PLAN
APPROVED	
DATE	JANUARY 2013
PROJECT No.	1259
SCALE	1:7500 U.N.O.
DWG No.	1259–Fig. 1 REV.2



KOERS & ASSOCIATES ENGINEERING LTD.
Consulting Engineers
P.O. Box 790, 194 Memorial Ave. Parksville, BC V9P 2G9 www.koers-eng.com Ph: 250-248-3151 Fax: 250-248-5362

CLIENT	CITY OF CAMPBELL RIVER
PROJECT	JOHN HART WATER SUPPLY MAIN

TITLE	PROPOSED CROSS SECTION IN AREAS OF BEDROCK
APPROVED	
DATE	APRIL 2013
JOB No.	1259
SCALE	1:500
DWG No.	1259–Fig. 2 R1

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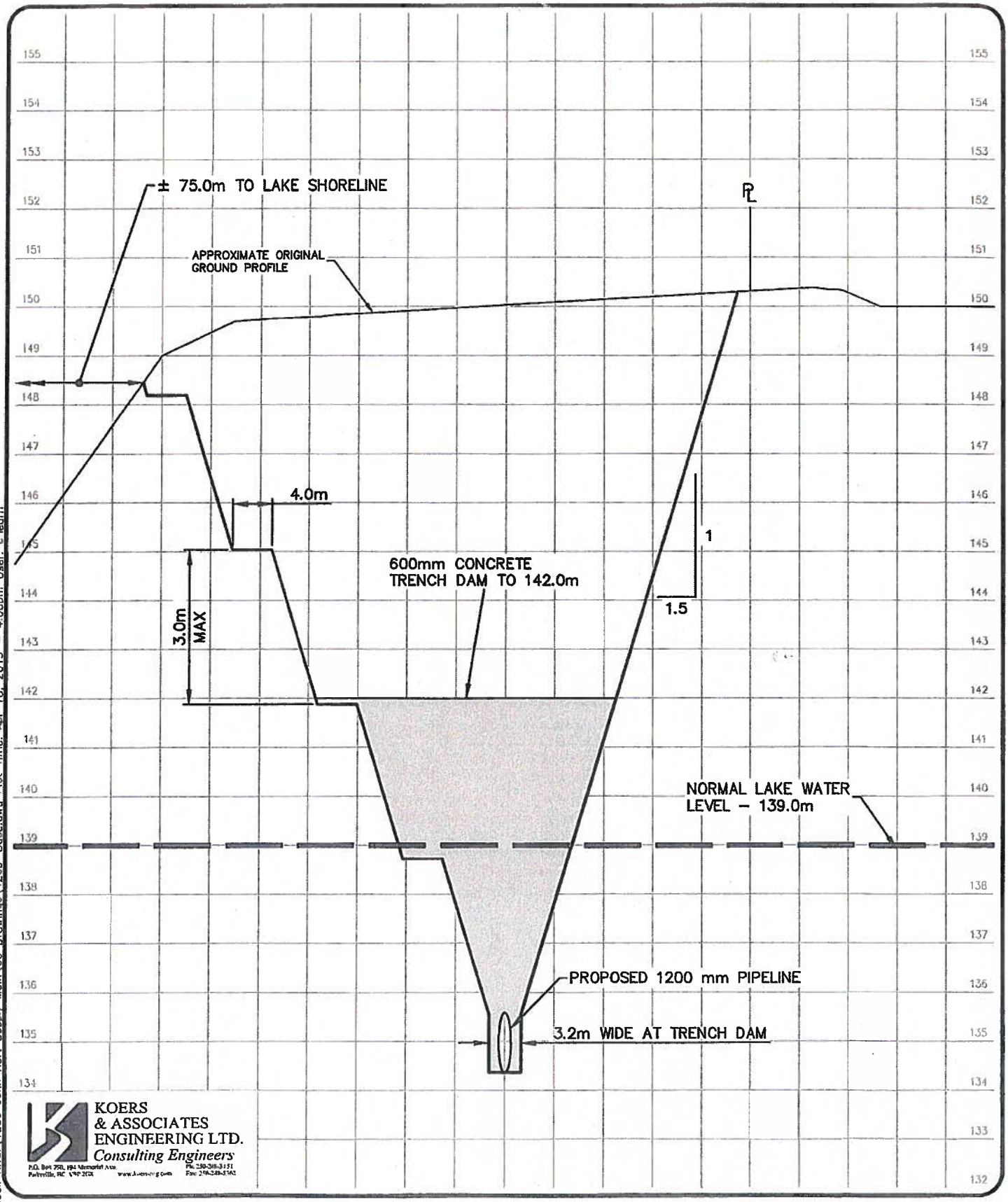

KOERS & ASSOCIATES ENGINEERING LTD.
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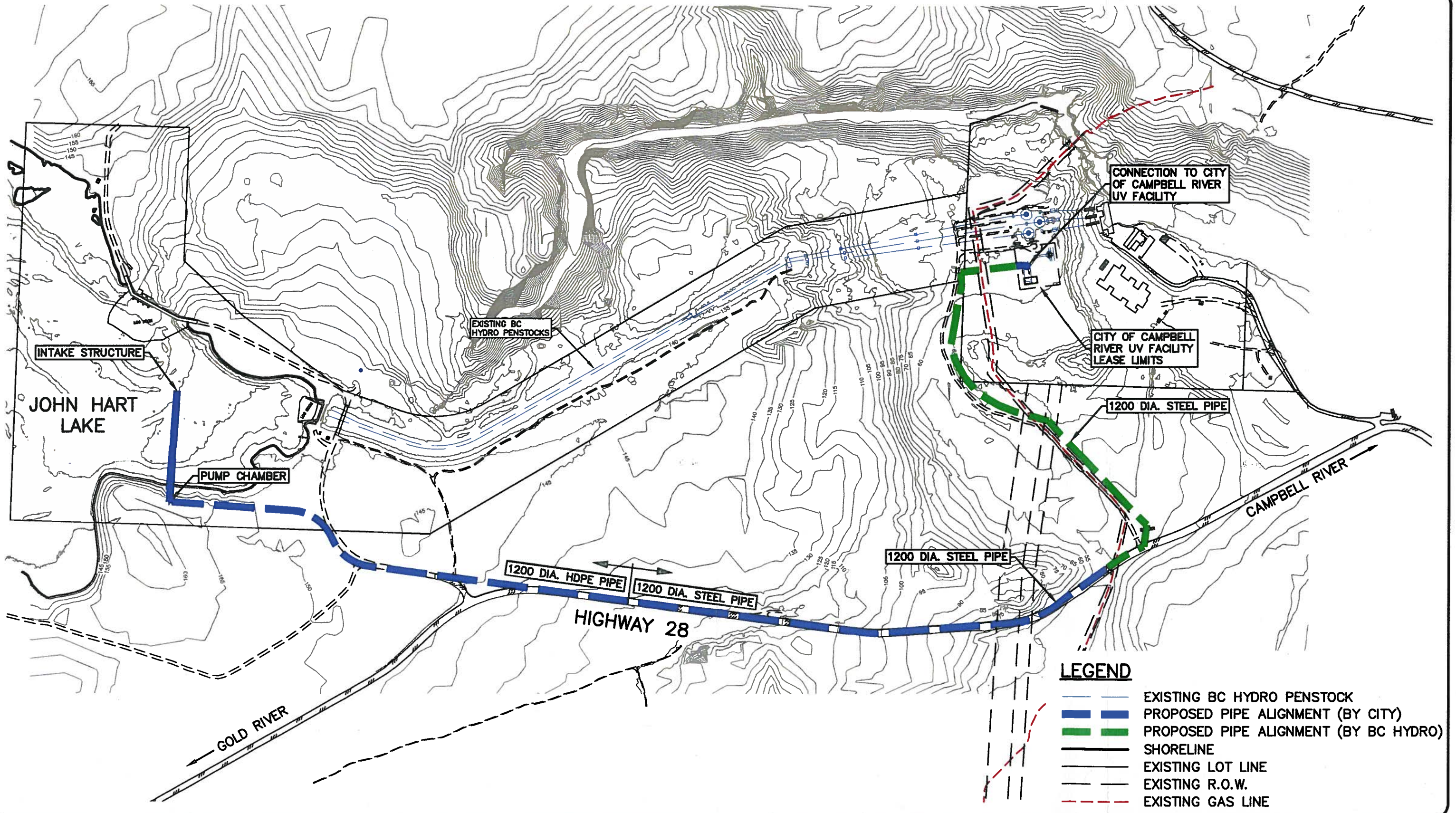
CLIENT	CITY OF CAMPBELL RIVER
PROJECT	JOHN HART WATER SUPPLY MAIN

TITLE	PROPOSED CROSS SECTION WITH TRENCH DAM ALONG PROPERTY LINE
APPROVED	
DATE	APRIL 2013
JOB No.	1259
SCALE	1:500
DWG No.	1259–Fig. 3

File: H:\1002 Campbell River\1259 John Hart Supply Main\03 Drawings\1259-Base.dwg Plot Time: Apr 18, 2013 - 4:06pm User: cmcarn

APPENDIX 2

PRELIMINARY ALIGNMENT DRAWING No. 1259 – Fig.1 Dated January, 2013



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CLIENT	CITY OF CAMPBELL RIVER
PROJECT	JOHN HART PENSTOCK REVIEW

TITLE	PRELIMINARY ALIGNMENT
APPROVED	
DATE	JANUARY 2013
PROJECT No.	1259
SCALE	1:7500
DWG No.	1259 – FIG. 1

APPENDIX 3

APPLICABLE STANDARDS AND SPECIFICATIONS

City of Campbell River 2010 Design Standards – Appendix A of the City's Subdivision and Development Servicing Bylaw #3419, 2010;

Applicable AWWA standards;

Applicable FortisGas Standards;

Supplemental specifications:

Section 02070 Hydraulic Seeding

Section 02315 Trenching and Backfill

Section 02511 Water Supply Piping

Section 05090 Field Welding