

April 19, 2018
Our File No.: 27996-000.1

VIA: E-MAIL gboudrias@hawkesbury.ca

Mr. Guillaume Boudrias
Project Manager, Civil Engineering
Town of Hawkesbury
600 Higginson Street
Hawkesbury, ON K6A 1H1

Dear Mr. Boudrias:

**Re: Town of Hawkesbury
Water Treatment Plant Chemical Storage Upgrade Proposal**

Thank you for meeting with us and providing J.L. Richards & Associates Limited (JLR) with the opportunity to submit this proposal to assist the Town of Hawkesbury (The Town) in upgrading the chemical storage and associated chemical feed systems at the Water Treatment Plant. This proposal is intended to outline our understanding of the project objectives, and our proposed approach to address them.

BACKGROUND

The Hawkesbury Water Treatment Plant was originally constructed well over 50 years ago and has undergone numerous upgrades since then including a major upgrade designed by JLR in the late 1990s. The plant is a conventional water treatment plant using a combination of coagulation, settling, sand filtration and chlorine disinfection. The plant uses various chemicals throughout the treatment process and provides bulk storage for each. They include:

- **Alum and Activated Silica:** These chemicals are used independently for coagulation. The storage and feed system for the alum was installed in 2002 in a dedicated room and is reported to operate satisfactorily. The activated silica system uses sodium silicate and sodium aluminate in its preparation process. The silicate system was installed in the 1970s with the aluminate system upgraded in 2002. The sodium aluminate feed system is very basic lacking many components typically included by current standards, including flow switches, relief valves, and a calibration column.
- **Lime:** Lime is used for pH control to assist the coagulation process. The plant has a large silo integrated into the facility that was installed in the early 1970s. Operations have suggested that the system is very problematic with frequent failures and heavy maintenance requirements. It was also noted that lime systems require considerable housekeeping and low solubility characteristics results in accumulation in clearwells.

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- **Caustic Soda:** As a result of an unreliable lime feed system, the Town has implemented a back-up pH adjustment system using caustic soda. The system is operational and temporarily installed (feed pump and 1000 L tote) within the sodium aluminate room. The tote is not provided with any secondary containment. The feed system is lacking many components typically included by current standards and uses only one feed pump with no redundancy. The plant is not equipped to handle totes well.
- **Hydrofluorosilicic Acid:** This is used in the fluoridation process and is stored and processed in a dedicated room adjacent to the coagulation room. The fluoridation system is reported to operate satisfactorily with no issues noted.
- **Polyphosphate:** This chemical has recently been successfully trialed as a corrosion inhibitor. A temporary 1000 L tote and feed system is currently located in the corridor leading in to the lime room. A permanent installation is desired. The system does not have secondary containment and again lacks monitoring and automation.

Further to the above the Ministry of Environment and Climate Change (MOECC) has identified concerns that various chemicals are being stored without secondary containment. In light of this and the reliability issues noted above, the Town is planning to upgrade the chemical storage and feed systems and is seeking engineering assistance to do so.

OBJECTIVE

The objective of this assignment is to provide engineering services, from pre-design through to detailed design, as well as, contract administration for upgrades to the following areas/systems:

- New sodium aluminate feed system.
- Removal of the lime silo and its associated feed system, in addition to reinstatement, rehabilitation or a new roof.
- New caustic soda storage and feed system to be located in a dedicated room complete with secondary containment and the building services (lighting, heating, ventilation, and plumbing) to support the new installation.
- New polyphosphate storage and feed system to be located in a dedicated room complete with secondary containment and the building services (lighting, heating, ventilation, and plumbing) to support the new installation.

It is assumed that there will be a need for a building expansion to support the above-noted requirements. We will coordinate this expansion with the WTP strategic plan currently underway to determine, based on the information currently available and proposed chemical requirements to support new treatment equipment, if additional expansion space is required based on findings of that initiative.

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WORK PLAN

We propose the following design development approach to this assignment:

Design Development

- Prepare a design brief in the form of a technical memorandum to identify chemical feed rates, establish required tank volumes, and highlight our conceptual design intent for the items noted in the project objectives. The design brief will be supplemented with 30% general arrangement drawings and will include a Class D level opinion of probable cost.
- Following the submission of the design brief, we propose to hold a meeting (teleconference) with the Town to address questions or comments before finalizing the submission.
- Detailed design will commence after receiving agreement from the Town to the conceptual design.
- JLR will develop tender drawings and specifications. A final review set is proposed to be submitted to the Town at the 90% completion stage. This drawing submission will also be used to solicit a building permit. The tender drawings will be issued following 90% review feedback received from the Town.

Permits and Approvals

Once the design direction is established, JLR will undertake, as required, consultation with appropriate review agencies and submit applications for related permits and approvals (e.g., Building Permit, Electrical Safety Authority, MOECC permit and license).

Contract Administration

JLR's contract administration services are outlined as follows:

- Attend a job showing during the tender period to present the project to the Contractors and respond to any inquires. JLR will prepare addenda as required.
- Review shop drawings and will review and respond to reasonable RFIs where the answers cannot be reasonably inferred from the construction drawings.
- Attend in person/via teleconference a total of 12 bi-weekly construction meetings (we have assumed a 6 month construction window).
- Attend two general conformance / inspection meetings during the construction period. One visit would represent a review at 50% construction and near the completion of the project.
- Attend one commissioning meeting. The commissioning process will be led by the Contractor.
- Provide a systematic review of the installed mechanical systems validating the SCADA interface and system interlocks. One visit is assumed.

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- Review of progress payment drawings.

PROVIDED BY THE TOWN

The following items will be required to complete the assignment.

- Specialized investigations such as geotechnical, survey and designated substances report are not carried in the budget. It has been assumed the fees for this work will be carried directly by the Town. JLR will assist the Town and help direct the preferred specialized consultant for these tasks.
- It is assumed the Town will review and provide feedback of the technical memorandum and interim design submissions.
- Provide 'front end' documents (if available) to append to the specifications to facilitate the tendering process.

SCHEDULE

JLR proposes the following tentative schedule. More accurate timelines will be proposed as the design progresses.

Service Description	Proposed Time Line
Kick-off Meeting	May 1, 2018
Design Phase	
Draft Pre-Design Report and Conceptual Drawings	June 15, 2018
Client Review	June 29, 2018
90% Completion/Approval and Permit Submissions	August 31, 2018
Tender Documents	September 21, 2018
Contract Administration Phase	October 2018 - March 2019

Based on our current work load, we would be able to undertake this assignment within the proposed timelines presented above and after receiving your written authorization to proceed.

FEES

A budget of \$155,000 (excluding HST) is proposed. A 5% administration fee is included in the above amount for disbursements. A design/contract administration breakdown of the fee is broken out in detail in the attached table. It is noted that the rates presented in the attachment will be applied to any approved scope changes.

Mr. Guillaume Boudrias, Project Manager, Civil Engineering, Town of Hawkesbury

We trust that this proposal meets your current requirements. If you have any questions or require any additional information, please contact the undersigned directly.

Yours very truly,

J.L. RICHARDS & ASSOCIATES LIMITED

Prepared by:



Ted Portmann, P.Eng.
Associate
Senior Mechanical Engineer

Reviewed by:



Sarah Gore, P.Eng.
Executive Director
Senior Environmental Engineer

TP:SG:jd
Attach.

cc: Mr. Richard Guertin, Town of Hawkesbury (rguertin@hawkesbury.ca)

STATEMENT OF CONFIDENTIALITY

This Proposal contains information that is confidential and proprietary to J.L. Richards & Associates Limited. Reproduction or use in whole or part for purposes other than its evaluation is not permitted without the express written consent of J.L Richards & Associates Limited. In that release of this information could significantly prejudice the competitive position of J.L. Richards & Associates Limited and/or its sub-consultants, it is specifically claimed that this Proposal is confidential for the purposes of any applicable Freedom of Information legislation.

BUDGET
Hawkesbury WTP Chemical Storage Upgrades

TASK SUMMARY	Project Management	Process	Mechanical	Mechanical	Mechanical	Electrical	Electrical	Electrical	Structural	Structural	Structural	Architectural	Architectural	Architectural	Civil	Subtotal
	TP/SG	JM	Engineer	Support	JW	LO	MM	JT	JO	Support	BW	MK	JG	SR	JM	
	Management	Link to Main Project	Eng	Tech	Peer Review	Eng	Tech	Peer Review	Eng	Tech	Peer Review	Lead Arch	Tech	Peer Review	Lead Civil	
	\$185	\$130	\$130	\$125	\$185	\$185	\$150	\$185	\$150	\$150	\$185	\$185	\$110	\$185	\$130	
Pre-design																
General Administration KO Meeting	8					8			8			8				
Concept Design/drawings	8	8	20	30	2	15	10	2	20	10	2	10	20	2	10	
Design Memo			16			10			8			4			4	
Review With Client	8															
SUBTOTAL	\$4,440	\$1,040	\$4,680	\$3,750	\$370	\$6,105	\$1,500	\$370	\$5,400	\$1,500	\$370	\$4,070	\$2,200	\$370	\$1,820	\$37,985
Detailed Design																
Detailed Design	4		10			10			10			10			10	
Drawings			2	30	2	2	30	2	2	30	2	2	30	2	10	
Specs	2	24	16			8			16			16			10	
Weekly design meetings	4	4	4			4			4			4				
OPC			8			8			8			8			8	
SUBTOTAL	\$1,850	\$3,640	\$5,200	\$3,750	\$370	\$5,920	\$4,500	\$370	\$6,000	\$4,500	\$370	\$7,400	\$3,300	\$370	\$4,940	\$52,480
Approvals and Permits																
Approval and Permits	8	24		8			8						16			
SUBTOTAL	\$1,480	\$3,120	\$0	\$1,000	\$0	\$0	\$1,200	\$0	\$0	\$0	\$0	\$0	\$1,760	\$0	\$0	\$8,560
Contract Administration																
Job Showing	8															
Tender Assistance	4	16														
Review and Award of Contract	4	16														
Shop Drawing Review		16	30				20			10		10			8	
Construction Meetings	36															
Commissioning Assistance (1 Meeting)			6				6									
System Validation (1 Meeting)			8			8										
General Conformance/Inspection (2 Site Visits)			16			16			16			16			16	
Turn Over Documents		8														
O&M	8	16														
SUBTOTAL	\$11,100	\$9,360	\$7,800	\$0	\$0	\$4,440	\$3,900	\$0	\$2,400	\$1,500	\$0	\$4,810	\$0	\$0	\$3,120	\$48,430
JLR Total Hours	1,582.0	3,252.0	136.0	1,068.0	4.0	89.0	1,274.0	4.0	92.0	50.0	4.0	88.0	1,826.0	4.0	76.0	
SUBTOTAL OF PHASES	\$147,455															
5% Disbursement	\$7,372.75															
TOTAL	\$154,827.75															
TOTAL (Rounded)	\$155,000.00															