

Appendix I  
TM #5 – Project Implementation

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# Project Implementation

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This technical memorandum presents the strategy for construction contracting and equipment procurement for the Englishman River Water Service (ERWS) Water Project, as well as the implementation schedule.

## 1.0 Project Requirements and Considerations

The ERWS Water Project is complex, and its scope is significant. The work—constructing an intake in the Englishman River, a raw water pump station, a water treatment plant (WTP), supply mains, and a tie-in to the existing water system—will be all new construction rather than upgrades, and it must be completed by December 31, 2016, to meet conditions imposed by the Vancouver Island Health Authority.

The implementation plan was prepared considering both factors specific to the ERWS Water Project and experience gained on similar projects elsewhere. Other factors considered included the need for:

- A competitive, fair bidding process
- Opportunities for local contractors and suppliers
- Sound workmanship and good-quality equipment

The intent is to balance these and other factors to deliver a project that provides the best long-term value to the community, rather than the lowest initial cost. Low-cost, poor-quality equipment would need to be replaced after a few years and could cost the community more in the long run.

## 2.0 Contracting Options

The ERWS Water Project will be implemented using the traditional design-bid-build process, and review of contracting options has been limited to the single-contract or multiple-contract approach for construction.

Contract options are:

### Option 1 – One contract

- a) Intake, pump station, supply mains, WTP, and distribution system improvements

### Option 2 – Two contracts

- a) Intake, pump station, supply mains, and WTP
- b) Distribution system improvements

### Option 3 – Three contracts

- a) Intake, pump station, supply mains
- b) WTP
- c) Distribution system improvements

Option 2 is proposed for the ERWS Water Project, based on the size of the project and contracts, availability of local experienced contractors, and discussions with contractors and the City of Nanaimo on its drinking water treatment project, currently under construction.

Option 1 was rejected as it may limit the involvement of local contractors for the distribution system improvement work. Option 3, breaking the work into three contract packages, is not necessary to meet the schedule or provide other advantages, and could introduce coordination problems between separate contractors.

To help ensure quality and performance on the project, it is further proposed that the general contractors be prequalified, and that only contractors with suitable prior experience be invited to bid.

## 3.0 Equipment Procurement Options

Several procurement options can be used when significant elements of a project include materials or equipment of a special or proprietary design. Three common approaches used in municipal infrastructure projects are pre-purchasing (pre-tendering), pre-selection, and “name-specifying” manufacturers.

### 3.1 Pre-Purchasing (Pre-Tendering)

In pre-purchasing, potential vendors are requested to provide technical details and pricing for specific systems, equipment, and services described in a tender document the Owner/Consultant prepares. Competing tenders are evaluated using pre-determined evaluation criteria that may include technical requirements, initial capital costs, and operation and maintenance costs. The Owner then enters into a contract with the successful vendor for supply and delivery of the scope of work or services defined in the pre-purchase documents.

Several variations can be applied to this procurement approach. In some cases the Owner, through its Consultant, administers the contract with the vendor and takes responsibility for coordinating vendor activities. In other cases, the rights and responsibilities of the Owner under the contract are assigned to a third party (novation), such as a General Contractor, brought on later in the project to perform a specific item of work requiring the vendor’s equipment or services.

Pre-purchasing is used where it is important to know the equipment details in order to complete the design, or where there are long delivery items that would hold up completion if not ordered until the general contract is bid.

### 3.2 Pre-Selection

The pre-selection process is similar to pre-tendering except the Owner does not enter into any contractual relationship with the successful vendor. In some cases, more than one successful vendor may meet the evaluation criteria and would be acceptable to the Owner. The vendor(s) for a specific system, equipment, or service are named in a tender document for the contract under which their services would be incorporated. The successful contractor would then negotiate with and enter into a contractual relationship with the pre-selected vendor(s).

### 3.3 “Name Specifying” Manufacturers

The approach of “name specifying” manufacturers traditionally involves a detailed technical review of vendors’ equipment and/or systems to identify acceptable manufacturers, who are then included in the contract documents for the construction package(s). The preferred vendor is listed in the contract documents as the “first named” manufacturer, and the remaining vendors are identified as “acceptable alternative” manufacturers.

Facility design is based on the “first named” manufacturer’s equipment or system, and the actual manufacturer is selected by the prospective contractor during the tender period. The contract documents

advise the bidders that the design was based on the “first named” manufacturer and any additional costs to accommodate any of the “acceptable alternative” manufacturers would have to be included in the bidder’s total tender price at the time of tender.

The concept of “named” equipment works best when each of the named vendors makes the same thing. Unfortunately this is rarely the case and owners can end up with the lowest quality of the named vendors. If one vendor’s equipment is wanted, as well as a competitive price, it is better to hard-spec to include this vendor’s equipment in the tender price. Then include in the tender form, after the final tender amount, a place for the change in price if an alternate supplier provides the equipment. The owner and engineer can then determine whether the savings are worthwhile and whether the alternative can be accepted.

Name specifying manufacturers can help standardize commonly used components to minimize long-term operation and maintenance costs. Items that could benefit from standardization include gates, valves, pumps, transformers, lighting fixtures, motors, instruments, motor control centres (MCCs), and programmable logic controllers (PLCs).

### **3.4 Proposed Equipment Procurement Strategy**

Considering the above options and the ERWS Water Project predesign, the procurement strategy described below is proposed.

#### **3.4.1 Pre-purchased Equipment**

The membrane equipment will be pre-purchased prior to detailed design, since the WTP design depends on knowing the type and details of the membrane equipment that will be used. The raw water pumps and chemical systems associated with the membranes will also be pre-purchased, as they are directly related to membrane operation. Other equipment can be adequately specified and delivered to meet the construction schedule.

Pre-purchasing outside a general contract also enables equipment to be selected considering lifecycle cost. Lifecycle cost details can sometimes be lost when equipment is included in a major construction contract, in which initial capital cost is the major or only factor in a recommendation for award.

#### **3.4.2 Named Manufacturers**

Named manufacturers, using the approach described above, will be used for:

- Intake screens and pre-filtration strainers
- Compressors and blowers
- Valves and pumps
- Transformers, lighting fixtures, motors, instruments, MCCs, and PLCs

The ERWS and CH2M HILL will determine the named manufacturers at the beginning of detailed design.

## **4.0 Implementation Schedule**

The proposed schedule for implementation is summarized in the attached table.

**ERWS Water Project - Implementation Schedule Summary**

Task/milestone, end date	2014												2015												2016												2017	
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F
<b>Predesign</b>	[Green bars: Public open house (May 8), Pre-design report draft (May 12), Preselect/procure membranes (May 30), Pre-design review comments (May 30), Pre-design report final (June 13)]																																					
<b>Detailed Design</b>	[Purple bars: Value engineering workshop (July 22), 30% design review (Aug 5), Workshop with ERWS (Sept 22), 90% cost estimate (Nov 3), Referendum (Nov 15), 90% design review (Dec 1), Approvals (Jan 30), Tender close (Feb 26), Award (March 17)]																																					
<b>Construction</b>													[Yellow bars: Construction (Dec 15, 2016), Start-up and commissioning (Dec 15, 2016), Training (Feb 28, 2017), Post commissioning and record drawings (Feb 28, 2017)]																									