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## FOR COUNCIL – JULY 24, 2007

# A28

CITY OF **VANCOUVER**

**ADMINISTRATIVE REPORT**

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| Report Date: | July 13, 2007 |
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| VanRIMS No.: | 03-1200-30 |
| Meeting Date: | July 24, 2007 |

TO: Vancouver City Council

FROM: General Manager of Engineering Services

SUBJECT: Neighbourhood Energy Utility - Community Energy Centre

**RECOMMENDATION**

*THAT Council authorize a contract with Sandwell Engineering Inc. to provide design and construction management services related to the Southeast False Creek Community Energy Centre at the location under Cambie Bridge as described in the report, up to a maximum total of $1,398,216 plus GST; this cost to be financed from the $14.0 million interim financing approved by Council pursuant to the March 2, 2006 NEU report (the "NEU Interim Budget");*

*AND THAT the contract be on terms satisfactory to and approved by the City Manager and Director of Legal Services and that the City Manager and Director of Legal Services be authorized to sign such contract on behalf of the City;*

*AND THAT no legal rights or obligations will be created or arise by Council's approval unless and until a contract is signed and delivered.*

**COUNCIL POLICY**

On March 2, 2006, Council approved in principle the creation of the Neighbourhood Energy Utility ("NEU") to provide space heating and domestic hot water services to Southeast False Creek ("SEFC") buildings, with interim development financing of a maximum of $14.0 million provided by the Capital Financing Fund.

On December 14, 2006, Council received a report titled "Neighbourhood Energy Utility – Evaluation of Heat Source Options." Council authorized staff to submit an air quality permit application to the GVRD in support of biomass energy for Phase 1 of the SEFC project. Further, Council authorized the NEU Steering Team to review the results of the public consultation process after 30 days in relation to the impact on project schedule and either:

i) continue with the permit application process and development of biomass heat, OR

ii) cancel the permit application and proceed with design activities for the use of sewer heat.

Subsequent to this, an air emissions permit application was filed with the GVRD and related public consultation activities were undertaken by staff. Because the emissions permit process could not be completed within the schedule requirements of the NEU project, the NEU Steering Team withdrew the biomass air quality permit application in accordance with Council's direction.

**SUMMARY**

The SEFC Community Energy Centre (the "CEC") will supply space heating and domestic hot water services to SEFC using sewage heat recovery as the primary source of energy. This report recommends that the City enter into a contract with the team lead by Sandwell Engineering Inc. to provide detailed design and construction management services, with the CEC to be located under the Cambie Bridge.

**PURPOSE**

The recommendation contained in this report is necessary to advance the development of the Neighbourhood Energy Utility in time to meet the scheduling needs of SEFC buildings that will rely on the NEU for space heating and domestic hot water. This report seeks Council approval for the award of a consulting contract for detailed design and construction management for the CEC to Sandwell Engineering Inc.

**BACKGROUND**

The March 2006 NEU Report described the detailed feasibility analysis for a community energy system for the False Creek Neighbourhood, pursuant to which Council approved the creation of the NEU. The NEU will provide space heating and domestic hot water services to all buildings within the SEFC Official Development Plan area. Development of the NEU was considered to be an economical and technically viable contribution toward the greenhouse gas ("GHG") reduction objectives identified in the SEFC Official Development Plan. Creation of the NEU would also contribute toward the achievement of the City's community GHG targets, and provide a financial return on the City's investment.

On December 14, 2006, Council received information comparing sewer heat recovery and biomass heat source options for the NEU CEC. Council supported the application to the GVRD for an air emissions permit for the use of biomass, along with funding for related public

consultation activities and approval of a consulting agreement for preliminary design activities for the CEC.

On April 13, 2007, Council received a report for INFORMATION titled "Neighbourhood Energy Utility Heat Source Technology." This report informed Council that, due to lengthy public process requirements and scheduling risk associated with biomass energy, and progress made to mitigate the technical risks associated with sewer heat recovery, the NEU Steering Team decided to cancel the biomass air emission permit application and continue with CEC design activities using sewer heat recovery as the primary heat source.

Beginning in the summer of 2006, investigative activities have taken place to identify the best site to locate the CEC. This process analysed the technical feasibility, cost factors and planning implications of a number of potential sites in the SEFC area.

Preliminary mechanical and electrical engineering activities were recently completed for the CEC design using sewer heat recovery as the primary energy source, which is expected to result in significant GHG emission reductions by making use of a locally available waste heat source.

## DISCUSSION

The CEC will supply, via buried pipelines and energy transfer stations, thermal energy for space heating and domestic hot water to all the buildings located within SEFC. The CEC will incorporate the following key functions:

- a sewage pump station to serve increased sewage loads related to new development in SEFC;
- sewage heat recovery as the primary source of heat to SEFC;
- a natural gas boiler plant for supplemental heat and backup;
- hot water distribution pumping to deliver thermal energy to the NEU distribution pipe network; and
- a utility operations centre.

The use of waste heat recovery combined with a municipal sewage pump station will be the first such application of its kind in North America. This renewable, locally available source of energy will be combined with efficient natural gas boilers that will serve as a backup and also deliver supplemental heat on the coldest days of the year. Using renewable energy supports the City's goal of reducing GHG emissions and developing alternative energy systems that reduce long-term community dependence on fossil fuels and electricity. Using gas for supplemental heat and backup ensures high reliability and competitive costs.

### 1. Consultant Selection for CEC Design and Construction Management Services

Given the current status of the NEU project, with sewer heat recovery selected as the primary heat source, preliminary process engineering complete and the need to keep pace with the SEFC development, detailed design work for the CEC should proceed immediately. Successful delivery of a project of this nature requires a consultant team with a wide variety of expertise, including but not limited to:

- Technical/Engineering Expertise: mechanical, structural, electrical, energy modelling, civil, building envelope, geotechnical, environmental, acoustic and odour control engineering;
- Urban Design Expertise: building and landscape architects and may include a public art specialist;
- Construction Management Support Expertise; and
- Commissioning Support Expertise.

The scope of work includes all aspects of detailed systems and building design plus construction and commissioning support services. As part of this, the consultant team will be expected to produce concept architectural renderings for public and stakeholder engagement activities to be held in the fall of 2007. Items already completed and not included in this consultancy include preliminary process engineering, a site survey and emissions modelling.

A Request for Proposals ("RFP") for the CEC design and construction management services was prepared by the Engineering Department in consultation with Purchasing Services, Legal Services, the SEFC Project Office and the Planning Department.

The RFP was issued on May 28, 2007, and it was advertised on the City's website and the BC Bid website. On June 4, 2007, an information session was held by City staff to provide an opportunity for potential proponents to ask questions and seek clarification on items within the RFP.

The RFP deadline was June 29, 2007, and four proposals were received. The proposals were from the following firms:

- Dayton and Knight Ltd;
- Hotson Bakker Boniface Haden Architects Ltd;
- Sandwell Engineering Inc.; and
- Stantec Inc.

An evaluation committee (the "Committee") was established to review the proposals and decide on a proponent. The Committee was made up of 7 staff representing Engineering, Purchasing Services, SEFC Project Office and Central Area Planning. The evaluation process included reviewing the proposals, meeting to discuss the proposals and interviewing short listed proponents.

The results of the Committee's proposal review process were reported back to the NEU Steering Team. Based on the review of the proposals and interviews, the team led by Sandwell Engineering Inc. emerged as the strongest proponent who offered the best value for the City, and the NEU Steering Team recommends that the Sandwell Engineering Inc. team be awarded this consultancy contract.

Sandwell Engineering Inc. has assembled a team of locally based professionals with knowledge and experience in all areas required for this NEU project. Sandwell Engineering Inc. provides a solid team with a wide diversity of in-house technical expertise. In addition to their in-house resources, Sandwell Engineering Inc will engage the following sub-consultants:

- Walter Francl Architecture Inc. (Project Architect);
- Omni Engineering Inc. (Municipal Sewage Pump Station Design);

- Versacon Consultants Inc. (Heat Recovery Specialist);
- Recollective (Sustainability Specialist);
- Pechet and Robb Studio Ltd. (Public Art Programming);
- Eckford and Associates Landscape Architecture Ltd. (Landscape Architect);
- Brown Strachan Associated (Acoustics Specialist);
- RDH Group (Building Envelope Specialist); and
- EBA Engineering Consultants Ltd. (Geotechnical and Environmental Engineering).

Sandwell Engineering Inc.'s core business includes design and construction management services for energy and infrastructure projects. Their team has strong references from a variety of challenging multi-disciplinary projects.

## 2. CEC Location

City staff with consultant support investigated a number of potential locations to site the SEFC CEC. Due to the need to integrate with existing sewage infrastructure, sites investigated were limited to the areas west of Columbia Street and north of 2nd Avenue.

Two short listed locations, the Sawtooth Building and the site under Cambie Bridge (the "Cambie site"), both located within SEFC Area 1A (see Figure A in Appendix 1), were taken through a detailed investigation and evaluation process.

Table 1 in Appendix 1 presents a summary of the evaluation process. Based on this evaluation and discussion from the NEU Steering Team and Major Projects Steering Committee, the Cambie site was selected as the most appropriate site for the CEC. Appendix 1 includes a site plan of the proposed development site.

## 3. Next Steps

Should Council choose to endorse Recommendation A, CEC development activities are anticipated to proceed as follows:

- Architectural Concept Design ,ready for public and stakeholder consultation: October 2007;
- Development Permit Board review: December 2007;
- Construction Design completed and invitation to tender documents for construction contract issued: February 2008;
- Council award of construction contract: April 2008;
- Construction of CEC: April 2008 – April 2009; and
- CEC Commissioning: May 2009.

Prior to Development Permit Board review, staff will hold at least two open house sessions to provide the public with an opportunity to review concept plans for the CEC, and provide feedback that will be included in the development review process.

Prior to issuance of invitation to tender documents for the construction contract, the Development Permit Board will review the proposed CEC designs, along with feedback from staff and the Development Permit Board Advisory Committee. The Development Permit Board meeting will be open to the public. Neighbours and others interested in the CEC development

may make presentations or provide written submissions to the Development Permit Board. In this case, because the CEC facility serves a utility purpose, a development permit will not be required. However, it is recognized that the Development Permit Board provides a well established process for development review and public input, and that the CEC will need to be developed in a manner consistent with the Development Permit Board's recommendations.

**FINANCIAL IMPLICATIONS**

The consultancy for the SEFC CEC design and construction management services is anticipated to cost $1,398,216 plus GST, subject to any required changes in the scope for these services. Funding is to be provided from the NEU Interim Budget.

Development of the CEC at the Cambie site provides the least cost option of all viable locations investigated, and should not result in any additional cost premiums above budget expectations.

**CONCLUSION**

Following the RFP and evaluation of proposals for the SEFC CEC design and construction management services, it is recommended that the City enter into a contract with Sandwell Engineering Inc. for these services.

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## APPENDIX 1. CEC LOCATION EVALUATION

Figure A shows the location of two short listed site options for the CEC. The Cambie site is located underneath the Cambie Street Bridge on the north side of 1st Avenue. The historic Sawtooth Building is located north of 1st Avenue on the east side of the Cambie Street Bridge. Table 1 presents a summary of the evaluation process.

**FIGURE A: SEFC CEC SHORT-LISTED LOCATION OPTIONS**

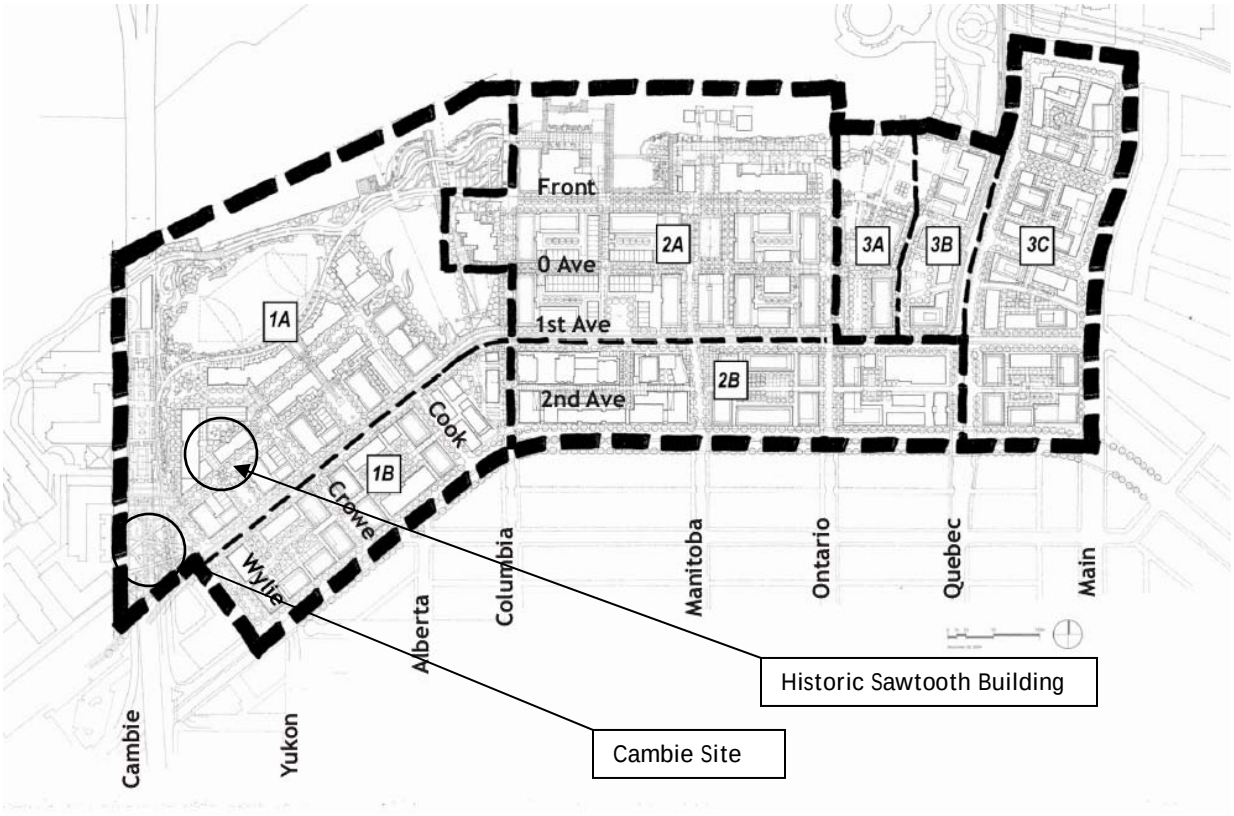


**TABLE 1. NEU CEC LOCATION EVALUATION FRAMEWORK**

| Criteria | The following four criteria assess the impact of various CEC site location options. |
|---|---|
| A. FINANCIAL ANALYSIS | The Cambie site has an estimated capital cost $760,000 lower than the Sawtooth building, and lower capital risk. |
| B. SCHEDULE | Both sites are equivalent from a scheduling perspective. |
| C. ACCESSIBILITY | Good accessibility is established for the Cambie site. However, the Sawtooth building carries some uncertainty because the detailed planning process for SEFC Area 1A has not yet proceeded. |
| D. PLANNING ASSESSMENT | Both sites have merits from a planning perspective. Either site will require a high level of design quality due to proximity to existing and planned residential development. |