



3972EOI

DESIGN, BUILD, FINANCE, AND OPERATE A DISTRICT ENERGY UTILITY AT RIVER GREEN IN RICHMOND, BC

1. Introduction

- 1.1. The City of Richmond (the “City”) requires a District Energy Utility (“DEU”) Partner with the desire, expertise and capability to work with the City in designing, building, financing and operating an DEU to provide long-term, cost-competitive thermal energy to River Green residents and businesses, while enhancing environmental performance.
- 1.2. River Green is part of Richmond City Centre and the City also expects that the DEU will serve as a node for serving other nearby new or existing developments within the City Centre, where viable. The City also expects this partnership will provide a model for similar partnerships in other areas of the City where district energy may be viable and desirable. The City is currently exploring specific opportunities in the West Cambie area, River’s Edge Development, and Steveston Village. The latter neighbourhood was recently identified as a possible candidate load for waste heat recovery from the Lulu Island Wastewater Treatment plant. The City reserves the right to negotiate other opportunities directly with the successful proponent in this RFEOI.

2. Background

- 2.1. In August 2008, the City and Aspac Developments Ltd. (“Aspac”) signed a Memorandum of Understanding (MOU) to explore the possible implementation of a DEU to serve Aspac’s River Green development, which is adjacent to the Olympic Skating Oval (“Oval”). The proposed DEU would provide thermal energy services, specifically heating and possibly cooling. The DEU could potentially recover waste heat from the Oval in legacy mode, and may implement other alternative energy sources as required to supplement available waste heat from the Oval.
- 2.2. A screening analysis for the River Green development was completed in March 2009 (available on request) that assessed available waste heat from the Oval and identified and screened alternative system concepts and supplemental energy sources to satisfy expected demand. The screening analysis found net financial and environmental benefits associated with an DEU and suggested several viable configurations and energy sources in addition to the Oval. Since the screening analysis, Aspac has proceeded with

design of Parcel 2 assuming onsite energy equipment but with the option to modify the system and connect to an DEU at a future date. The City and Aspac remain committed to exploring the feasibility of an DEU at the site.

- 2.3. River Green is a high-density, mixed-use waterfront community on the north arm of the Fraser River in Richmond. The site is 28.1 acres (11.2 ha) and bound by Fraser River to the north, Gilbert Road to the east, River Road to the south, and No. 2 Road to the west. The development is expected to consist of approximately 350,000 m² of floor area, 95% of which is high rise residential and the remainder a mix of local commercial.

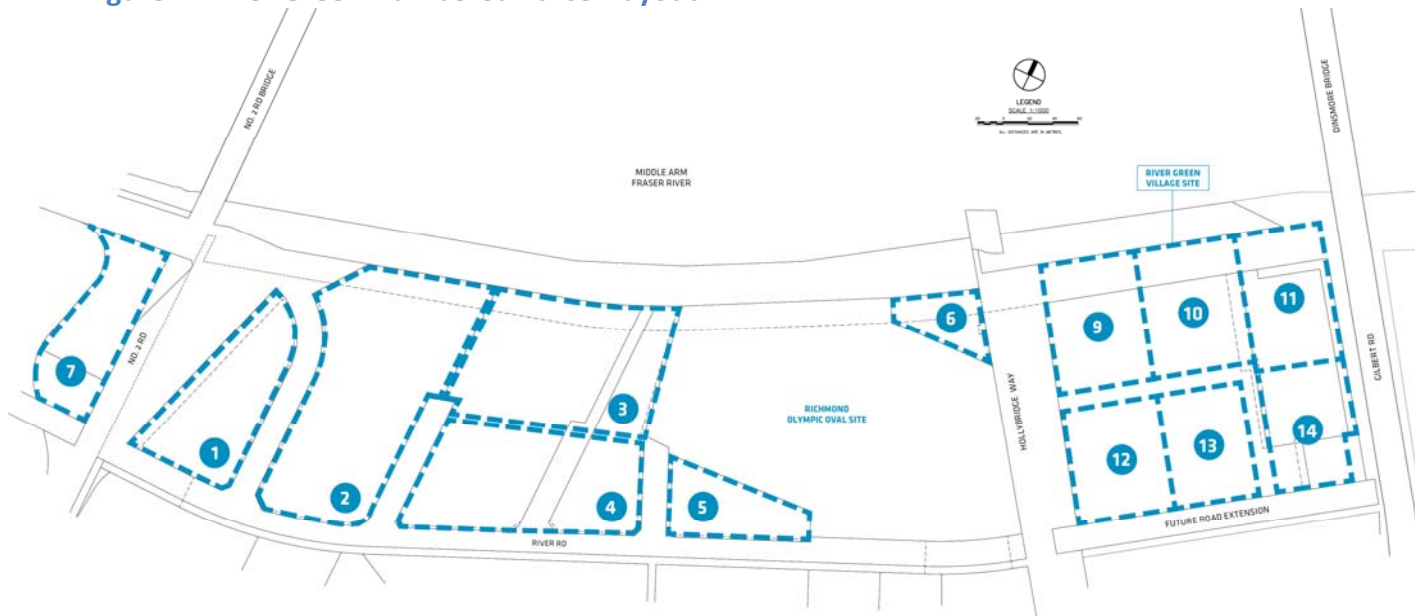
Figure 1: River Green – Aerial



- 2.4. The City and Aspac wish to include an DEU within the development to supply space heating, domestic water and possibly cooling to all the buildings. A preferred concept has not been identified. A screening analysis was completed and identified viable configurations for an DEU.
- 2.5. The first phase of the project is underway (Parcel 2) with an expected completion date of 2013. This Parcel will include boiler rooms and cooling towers (serving distributed heat pumps). Subject to strata approval, the boiler rooms and/or cooling towers could be owned and/or operated by the DEU and integrated into a broader system as the remainder of the parcels are development. The remainder of development is estimated to be completed in phases by 2025. There may be opportunities to further optimize the remainder of the development to maximize the benefits of an DEU service to the developer and residents.

- 2.6. River Green is situated within the Vancouver International Airport (“YVR”) flyover zone. Due to noise concerns, the City has development requirements that some sort of cooling service or active ventilation must be provided so occupants are not required to open their windows and bear the noise from aircraft. The requirements do not specify how that cooling service is to be provided.

Figure 2: River Green Numbered Parcel Layout



- 2.7. The DEU could recover any waste heat from the Oval in legacy mode, and may implement other alternative energy sources as required. The key objectives for an DEU are to:
- reduce first costs to the developer;
 - lower lifecycle costs to residents and businesses;
 - provide an equivalent or greater level of reliability;
 - increase environmental performance, in particular lower GHG emissions;
 - provide a flexible platform for adopting alternative energy technologies over time and for expanding service to other areas of the City.
- 2.8. Compass Resource Management Ltd. (“Compass”) and FVB Energy Inc. (“FVB”) were engaged to undertake a screening study. A screening study was completed in February

2008 and assessed a range of in-building HVAC configurations and alternative energy concepts for the site assuming full build out loads (i.e., did not consider effects of staging). Some key findings from the screening study include the following:

- 2.8.1. At build out the site is expected to have a combined (diversified) peak demand for space heat and domestic hot water (DHW) of approximately 13.4 MW, and 13 MW cooling (assuming active cooling). The site is expected to have an annual heating demand of 32,000 MW.h and annual cooling demand of 9,400 MW.h. The cooling demand assumes mechanical cooling is provided to all residential and commercial floorspaces within the development.
- 2.8.2. The amount of available waste heat from the Oval in Legacy mode is estimated at 4,500 MW.h per year or 1 MW of year-round capacity, which represents about 65% of the annual heat demand of Parcel 2 and 15% of the annual heat demand for the entire site at build out. This may vary or be eliminated depending on final legacy mode implementation.
- 2.8.3. Additional sources of heat would be required to meet a target of 60 – 70% of annual energy from alternative energy sources at build out. Several alternative energy sources were screened including:
 - Geo-exchange (open and closed loop)
 - Sewer heat recovery
 - River (heat recovery only, heat rejection to river would likely not be permitted)
 - Biomass
 - Natural gas cogeneration
- 2.8.4. River heat and biomass are both attractive options to supplement waste heat from the Olympic Oval. Sewer heat and geo-exchange were less cost-effective sources of heat relative to other options for this site, and, at least in the case of sewer heat, there is insufficient resource to meet the target supply.
- 2.8.5. Several potential locations for a central energy centre exist on City controlled lands adjacent to No. 2 Rd bridge and in the vicinity of Gilbert Rd.
- 2.8.6. Two potential system concepts were short-listed:
 - Option 1 would involve a community heat supply loop operating at ~28 – 35 degrees C. The loop would be supplied by waste heat from the oval, supplemental alternative energy sources and natural gas boilers for peaking and back-up. This configuration would still require on-site heat pumps within each suite for space heating and central

natural gas boilers for provision of DHW (with pre-heat from the community heat supply loop). Heat rejection for cooling would be via either onsite or centralized cooling towers.

- Option 2 would involve a community heat supply loop operating at a higher temperature (~65 degrees C with temperature reset up to 95 degrees C during peak heating conditions). This approach could potentially allow for the elimination of all boilers and heat pumps within buildings, but would require an alternative approach to cooling, whether through a four-pipe fan coil system (with on-site chiller / cooling tower) or individual DX units with central heat rejection or in-suite heat rejection (not preferred by ASPAC). There may be other possible configurations.

2.8.7. Both concepts offer overall cost savings and environmental improvements, but each differs in terms of the exact type and magnitude of costs, benefits and risks. Aspac has proceeded with the design of its first parcel (Parcel 2) based on distributed heat pumps, two-pipe space heating and cooling loop, cooling towers, central boilers to maintain the loop temperature, space and domestic hot water boilers. There may be opportunities to serve both Parcel 2 and optimize the design of future parcels (and equipment ownership) to maximize the benefits of an DEU.

3. Evaluation Criteria

3.1. The evaluation criteria for the review of submissions are as follows:

- The Respondent's ability to meet the objectives of the City as set out in this EOI;
- The Respondent's draft Proponent MOU;
- The Respondent's business and technical reputation and capabilities of its personnel;
- The Respondent's strategy to provide a competitively-priced utility service to end-users;
- The range and suitability of potential partnership arrangements offered by the Respondent;
- Evidence of the familiarity and experience with the local planning and energy context, district energy design and implementation, utility management and operation, financing, and public private partnership.
- The Respondent's financial capability to undertake the project

- 3.2. The City wants to ensure the best possible outcome for this project and invites Respondents to include in their submissions commentaries on opportunities and/or challenges related to the Project. Respondents should also identify any specific constraints the City should be aware of concerning its own submission or the project in general.

4. Submission Details

- 4.1. Proponents are requested to submit three (3) copies of their Expression of Interest marked “EOI 3972 – Design, Build, Finance and Operate a District Utility at River Green in Richmond, BC” to the Purchasing Division, Information Counter, Main Floor, Richmond City Hall located at 6911 No. 3 Road, Richmond, BC V6Y 2C1. Submissions will be received on or before:

12:00 Noon, local time, on August 27, 2010

- 4.2. Information Session
- 4.3. Questions relating to this EOI may be directed to Sumita Dosanjh by email to purchasing@richmond.ca. Inquiries and responses relating to the EOI will be posted on BC Bid and the City’s website. It is the sole responsibility of each Proponent to check these sites on a regular basis for amendments, addenda, or questions related to this EOI.
- 4.4. Any submission will not necessarily be accepted. Proponents are advised they have no claim for compensation in the preparation of their submissions and that by submitting an EOI, each Proponent shall be deemed to have agreed that it has no claim. All submissions received by the City shall be subject to the Freedom of Information & Protection of Privacy Act (BC).

5. Submission Instructions

- 5.1. All proponents are required to provide the following information with their submissions, and in the order that follows:

- | | | |
|--------|-------------------|---|
| 5.1.1. | TITLE PAGE | The title page shall include the EOI title and number, submission date, Proponent name, address, telephone number, email contact, and the name and title of the contact person. |
| 5.1.2. | TABLE OF CONTENTS | Page numbers should be indicated. |

- 5.1.3. EXECUTIVE SUMMARY A short summary of the key features of the Response demonstrating the Proponents understanding of the requirement.
- 5.1.4. PROPONENT PROFILE Provide a description of your firm's background and profile including the number of years in business. Identify and provide resumes for the key personnel in the proposed team and outline what their roles will be in this project. If the proposal is a consortium, information must be provided on all participants and the proposal must name the firm that is deemed to be the Proponent representing the consortium in the event the consortium is selected.
- 5.1.5. PAST EXPERIENCE Provide a description of past relevant projects and/or previous experience in designing, building, financing and operating DEU systems, with particular reference to experience with projects of similar type and size. Also, include a summary of operating experience focused on but not limited to energy system operation and maintenance, fuel procurement, business assessment of alternative energy sources, related ancillary businesses such as metering and billing, rate design, and the independent regulation of utilities. Provide an indication of familiarity with the City and the local planning and energy context. If applicable, provide the name of contact person, address and telephone numbers for the referenced companies or organisations.
- 5.1.6. FINANCIAL CAPACITY Respondents must demonstrate their financial capacity to design, build, finance, and operate the utility over an extended period of time. To demonstrate

this requirement, Respondents must provide:

- A description of the financial and business resources available to support the DEU.
- Audited financial statements for a minimum of the last two years and a maximum of the last five years.
- Most recent credit rating report, if applicable.

5.1.7. DRAFT MOU

Provide a draft form of the MOU the Respondent would expect the parties to sign in order to proceed with the Due Diligence Phase. Outline key expectations for the City and Aspac and commitments of the Proponent. Include some preliminary description of the likely requirements for due diligence and the key business terms of any Infrastructure Agreement and Business Agreement required for implementation of the DEU and business partnership.

5.1.8. PRELIMINARY BUSINESS AFFRANGEMENTS AND OPERATIONS MODEL

Provide a preliminary business model for the partnership and utility service, including expected financing approach and costs, partnership structure and governance, scope of services and operating model for partnership, risk allocation, pricing principles, environmental objectives, and principles / incentives to guide and encourage system expansion by the DEU Proponent on behalf of the City. Indicate expectations with respect to City participation in design, day-to-day

operation, and ongoing development and expansion. Indicate resources and skills within and outside the Respondent that would be made available to the DEU for the efficient and effective operation of the DEU.

5.1.9. RESPONSE

Proponents should address the following as a minimum:

- 1) Provide a description of how each of the objectives can be met through the Respondent's proposal, as well as possible trade-off scenarios for consideration by the City .
- 2) Provide some preliminary views on design considerations for the DEU, including those technologies, system configurations, and allocation of assets/ responsibilities (between the Developer and the DEU) that may be most appropriate for this submission.
- 3) Provide a brief overview of possible modifications or additional strategies the Proponent may pursue to improve project outcomes or add additional value for the City, Developer , and end users. These should include strategies the Proponent may use to advance the timing of alternative energy sources while maintaining a competitive service for end users.
- 4) Confirm ability to meet proposed timelines, suggested variance in timelines, and strategies to mitigate schedule risks.
- 5) Respondents shall provide at least 3 current clients as references. Please provide details on the projects and the references' role in the project.

6) A brief testimonial as to why the Proponent should be short-listed for this project.

6. Review of Submissions

6.1. Evaluation by the City

6.1.1. The City will review the submissions to determine whether, in the City's opinion, the Proponent has demonstrated that it has the required experience and qualifications to fulfill the obligations of the services identified in this EOI.

6.1.2. Subsequent to the receipt and review of the Responses, the City reserves the right, in its sole discretion, to issue a Request for Proposal (RFP) for all or part of the requirements described herein or to enter into negotiations with any Respondent or with any number of Respondents for the purpose of entering into an agreement, or to cancel this process in its' entirety.

6.2. Inquiries

6.2.1. The City, in its sole discretion and without having any duty or obligation to do so, may conduct any inquiries or investigations, including but not limited to contacting references, to verify the statements, documents, and information submitted and may seek clarification from the Proponent's bankers and clients regarding any financial and experience issues.

7. Non-Conforming Submissions

7.1. Submissions which fail to conform to the Format Requirements or which fail to conform to any other requirement of these Documents may be rejected by the City. Notwithstanding the foregoing or any other provision of these Documents, the City may at its sole discretion elect to retain for consideration submissions which deviate either materially from the format requirements set out in hereto or which otherwise fail to conform to any other requirement of this EOI except the requirement of delivery of the Proposal prior to Closing Time.

8. Notifications and RFP Process

- 8.1. Following the Closing Time, the City will only notify those Proponents who are selected as being pre-qualified and may be invited to submit their proposal under an RFP process if required.
- 8.2. Any change in the structure or formation of a short-listed Proponent is prohibited.
- 8.3. The City may unilaterally take the following actions, and shall not be liable for any such actions:
 - 8.3.1. amend the scope and description of the products and services to be procured under any RFP process as described in this EOI, and the qualifications that may be required to meet those requirements. In such event, proposals may be invited from those Proponents who meet the resulting amended requirements;
 - 8.3.2. reject or accept any or all EOI submissions;
 - 8.3.3. cancel the EOI process at any time and reject all Proposals; or
 - 8.3.4. cancel the EOI process and recommence in respect of the same RFP with the same or an amended set of documents, information and requirements.
- 8.4. The Proponent acknowledges and agrees that any EOI is in no way whatsoever, an offer to enter into an agreement and any submission by any Proponent in response to this RFEOI does not in any way whatsoever create a binding agreement. The Proponent acknowledges that the City has no contractual obligations whatsoever arising out of the EOI process.
- 8.5. The Proponent acknowledges and agrees that the pre qualification of a Consultant pursuant to this EOI is only a preliminary step in the City's procurement process. Each successful Proponent will be evaluated further under any subsequent RFP (if required) evaluation process.

9. EOI Process Steps and Timelines

9.1. Process Steps

9.1.1. Phase 1 – Request for Expressions of Interest and Negotiation of MOU

Responses to the RFEOI may be used to identify parties for further negotiations. A memorandum of understanding (the "Proponent MOU") may be negotiated between the City and the successful Proponent to guide the next phases of

partnership and DEU development, including the selection of a preferred design concept and confirmation of the business case, negotiation of an Infrastructure Agreement with Aspac, and the negotiation of a formal Business Agreement between the City and the Proponent. It is expected the MOU will establish roles, responsibilities, timelines, and outcomes for the due diligence phase, including confidentiality provisions, costs and cost sharing.

9.1.2. Phase 2 – Due Diligence

In the due diligence phase, the City and Developer will share with the Proponent all information on the development and DEU screening analysis to date. It is expected the successful Proponent will confirm to their satisfaction preliminary assumptions and conduct the next level of analysis required to move this initiative forward. In particular, the proponent will need to work with Aspac to resolve the technology configuration (i.e., supply temperatures and integration with cooling) for the remaining parcels, taking into account both the Developer's concerns and interests for River Green, as well as the City's desire to ensure expandability to neighbouring loads over time.

The detailed analysis would likely include:

- Confirmation of expected phasing of loads and equipment.
- Confirmation of final technology configuration (i.e., supply temperatures and integration with on-site cooling and energy equipment).
- Evaluation of any additional start-up and administrative costs associated with the centralized options (DEU).
- A full pro forma model to evaluate quantitative financial and environmental outcomes (in particular GHG emissions) for energy alternatives over a 30-year equipment life-cycle. Outputs should include internal rates of return, GHG emissions (relative to business as usual) and any other quantifiable or qualitative impacts.
- Upfront capital requirements (developer vs. DEU) and returns on capital (using avoided costs as the basis for estimating returns). Depending upon the configuration of the DEU, this may require some consideration of what on-site infrastructure will be owned by the DEU and what will be owned by the customer (e.g., on-site heat pumps, boilers, and/or cooling towers, if relevant).

- Sensitivity / scenario analyses on key uncertainties, as relevant, including load assumptions, phasing assumptions, system costs, system efficiencies, fuel price forecasts, avoided customer costs, and grants.
- Potential risk management strategies, where relevant.
- Implementation plans (where relevant), including work plans, timeframes and responsibilities for development, ownership and operation options for the DE system, where relevant.
- Estimated end user fees as compared to business as usual costs and/or current market costs.

It is expected the Business Analysis will be used to support the selection of a final system concept, negotiation of an Infrastructure Agreement with Aspac, and negotiation of a Business Agreement with the City. The completion of the Due Diligence phase may include an updated MOU with Aspac to guide the completion of a full Infrastructure Agreement.

9.1.3. Phase 3 –Negotiation of Infrastructure Agreement and Business Agreement

Upon successful completion of the business analysis to the satisfaction of the City and the Proponent, the Proponent could act as the City's agent to negotiate an Infrastructure Agreement to support the actual implementation of the DEU. The Infrastructure Agreement would outline the parties' commitment to the DEU and their respective roles and responsibilities including but not limited to the scope of DEU services, commitments to connect and to serve, provisions for temporary service in the event permanent infrastructure is not available, building design considerations, review and coordination of infrastructure development, access to land for DEU facilities, payments to the Developer for access to land and resources, regulatory activities (as relevant), development timelines, DEU pricing principles, environmental commitments, provisions and penalties in the event of default, and the term of the Infrastructure Agreement.

In addition to the Infrastructure Agreement, the Proponent and the City will work together to finalize a Business Agreement covering the details of the partnership. The final Business Agreement will be contingent upon successful negotiation of an Infrastructure Agreement with Aspac.

9.1.4. Phase 4 - Implementation

Design, build, finance and operate the DEU, including acquiring all necessary regulatory and permit approvals.

- 9.2. A preliminary construction timeline for the River Green project will be provided by ASPAC in confidence. This preliminary schedule and phasing may change at any time depending on market conditions and developer priorities. The City recognizes some flexibility may be required in the DEU timelines and will work closely with the proponent to coordinate site development schedules with DEU regulatory and construction schedules.

10. Information Disclaimer

- 10.1. The City and its directors, officers, employees, agents consultants and advisors are not liable or responsible for any verbal or written information, or any advice, or any errors or omissions, which may be contained in this EOI or otherwise provided to the Consultant pursuant to these EOI.
- 10.2. The Proponent shall conduct its own independent investigations and interpretations and shall not rely on the City with respect to information, advice, or documentation provided by the City. The information contained in this EOI is provisional and will be superseded by the RFP and other agreement documents.
- 10.3. The City makes no representation, warranty, or undertaking of with respect to this EOI and the City and its directors, officers, employees, agents, consultants and advisors, shall not be liable or responsible for the accuracy or completeness of the information in this EOI or any other written or oral information made available to any interested person or its advisors, and any liability however arising, is expressly disclaimed by the City.

11. Scope of Work

- 11.1. The City is seeking a public private partnership in which a private partner designs, builds, finances and operates the DEU, with the City retaining ownership and regulatory authority. The City is open to alternative business arrangements, ownership and financing options provided they meet the City and Developer objectives for cost-competitive and reliable service, risk management, revenues, environmental performance and future flexibility. The City is seeking a structure that achieves an optimal allocation of risks (to the parties best able to manage them) while leveraging the unique skills and resources of the City and the DEU Partner. Ideally the structure should also eliminate requirements from oversight by the BC Utilities Commission,

which the City believe will provide the greatest flexibility for achieving community and customer objectives.

- 11.1.1. The City and Aspac have not selected a final system concept, but are proceeding on the assumption there are at least two viable and desirable concepts. The DEU Partner will act on behalf of the City in developing a final system concept and negotiating a formal Infrastructure/ Service Agreement with Aspac, prior to full design and construction. The Business Agreement between the DEU Partner and the City will be conditional upon the execution of Infrastructure/Service Agreement with Aspac, which meets the objectives set out in this document.
 - 11.1.2. Once implemented, the City expects the Business Agreement will also enable and encourage the DEU Partner to seek expansion opportunities for the DEU to nearby developments.
 - 11.1.3. The City is open to the specific financing model and expects respondents to this RFEOI will identify possible financing models as part of their submission. Whatever model is proposed, the City to expects it will retain ownership and regulatory authority over the DEU.
 - 11.1.4. While the initial focus is on River Green, the City intends the partner will identify and pursue expansion opportunities for the DEU to other nearby existing and proposed developments in the City Centre, where viable. The City also expects this partnership around the River Green and surrounding development could serve as a model for a similar partnership to deliver thermal services in other areas of the City, although the specific configuration, technologies, and business arrangements may vary from submission to submission. The City is actively exploring similar opportunities at other large development sites and existing communities. The City may also consider incentive and/or regulatory programs for establishing DEU service areas.
- 11.2. The DEU should result in long-term reductions of greenhouse gas emissions and other environmental improvements relative to business as usual, where possible. The preferred alternative energy source is not yet determined but will be determined through the detailed business analysis and negotiation with Aspac. It is expected there will be some reliance on natural gas for peak / back up purposes but that a majority of the customers annual energy use will eventually come from alternative energy sources.
 - 11.3. The reliability and cost of thermal services provided by the DEU must be competitive with conventional sources, taking into account both eliminated capital costs and lifecycle operating costs, including current and future fuel costs as well as ongoing maintenance costs. Cost competitiveness must also take into account likely future GHG

costs for conventional heating sources as a result of emerging GHG regulations. In addition, it is recognized the DEU will also provide intangible benefits in terms of reduced maintenance costs for customers, high quality of service, and reduced exposure to volatile fuel prices, among others. It is expected that some form of levelized rate will be implemented over the life of the project in recognition of the phased nature of the development and the need to provide a competitive service for early customers.

- 11.4. The DEU will purchase or pay rent, as relevant, for any private land required for the provision of service within River Green. The City and the DEU Partner will negotiate use of public rights of way or other City controlled properties, where required.



Business & Financial Services Department
Telephone: 604-276-4097
Fax: 604-276-4162

July 14, 2010
File: 02-0775-50-3972/Vol 01

Dear Sir/ Madame,

Re: Addendum One: 3972EOI – DESIGN, BUILD, FINANCE, AND OPERATE A DISTRICT ENERGY UTILITY AT RIVER GREEN IN RICHMOND, BC

This Addendum includes items of clarification, forms part of the Contract Documents and shall be read, interpreted and coordinated with all other parts. Please review and consider the following information in the preparation of your submission:

I. Screening Study:

Please be advised that the screening study referenced on page three, section 2.8 of the Request for Expressions of Interest document is available in PDF format, upon request.

Interested respondents are advised to send a written request to purchasing@richmond.ca and to provide full contact information, including company name, contact person, telephone number and email address.

The study consists of three PDF files, which are sizes 331 KB, 728 KB and 2 MB.

Yours truly,

Kerry Gillis, FOR:
Sumita Dosanjh
Buyer II - Contracting Specialist
City of Richmond

pc: *John Irving, P.Eng. MPA, Director, Engineering*



Business & Financial Services Department
Telephone: 604-276-4097
Fax: 604-276-4162

July 16, 2010
File: 02-0775-50-3972/Vol 01

Dear Sir/ Madame,

Re: Addendum Two: 3972EOI – DESIGN, BUILD, FINANCE, AND OPERATE A DISTRICT ENERGY UTILITY AT RIVER GREEN IN RICHMOND, BC

This Addendum includes items of clarification, forms part of the Contract Documents and shall be read, interpreted and coordinated with all other parts. Please review and consider the following information in the preparation of your submission:

I. Information Session:

Please delete section 4.2 from the Request for Expressions of Interest Document. No information session is currently planned.

Yours truly,

Kerry Gillis, FOR:
Sumita Dosanjh
Buyer II - Contracting Specialist
City of Richmond

pc: *John Irving, P.Eng. MPA, Director, Engineering*