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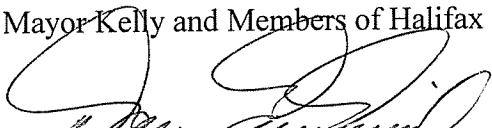


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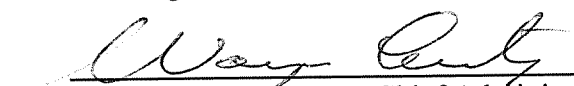
Halifax Regional Council
March 20, 2007

TO: Mayor Kelly and Members of Halifax Regional Council

SUBMITTED BY:



Dan English, Chief Administrative Officer



Wayne Anstey, Deputy Chief Administrative Officer

DATE: March 12, 2007

SUBJECT: Award - Tender No. 07-033, LiDAR Data Acquisition for Halifax Harbour Drainage Basin and East Petpeswick Peninsula and Surrounds

ORIGIN

Relevant Regional MPS policies:

1. EC - 8 (e) (ii); Halifax Harbour Plan policy guideline to anticipate impacts of climate change and weather events on the shoreline of Halifax Harbour.
2. Halifax Harbour Functional Plan: Undertake a mapping and modelling study to predict impacts of climate change and weather events on the shoreline of Halifax Harbour, and subsequent recommendations for mitigation and risk management.
3. E - 21: Potential Hazards to Development Functional Plan: To seek measures to mitigate risks to life and property and to develop management plans for climate change, coastal inundation and storm surge events.

RECOMMENDATION

It is recommended that Council award RFP No. 07-033 - LiDAR Data Acquisition for Halifax Harbour Drainage Basin and East Petpeswick Peninsula and Surrounds to PHB Lasermap for a price of \$147,903.47 (net HST included) for LiDAR data acquisition. It is also recommended that a price of \$13,445.77 (net HST included) in value added services for digital elevation model processing be added to the award for a total combined price of \$161,349.24 (net HST included) with funding from Account #CIV00726 LiDAR Mapping as outlined in the Budget Implications section of this report.

BACKGROUND

Sea level has slowly risen along the Atlantic Coast, accelerated by global warming. Expected increases in the frequency and severity of storm events related to climate change is an additional concern. Rising sea levels and storm surges can result in increased damage to coastal communities and have significant impacts on public safety, coastal infrastructure, environmental assets, utilities, property and community economic development.

This issue was recognized during the development of the Regional MPS, both at the HRM-wide level and more particularly through consultation regarding the Halifax Harbour Planning exercise. As a globally competitive seaport, plus associated harbourfront recreational and residential development and billions of dollars in existing infrastructure, the potential effects of sea level rise and storm surge on Halifax Harbour is seen as a major information gap. Similar risks exist for many other areas of HRM's coastline.

Current available mapping of our coastline have a margin of error that prevents accurate hazard prediction. Light Detection and Ranging (LiDAR) technology can provide the accurate elevations necessary for the development of a digital elevation model (DEM). The DEM can then be used with other computer-based software to create maps that will depict the potential effects of coastal inundations and storm surges.

As a precaution, a policy was developed within the Regional Plan (Policy E-16) that restricts residential development on the coast within a 2.5 metre elevation above the ordinary high water mark. This was approved as an interim measure pending the completion of the Potential Hazards to Development Functional Plan. The policy does not apply to areas within the Halifax Harbour designation.

DISCUSSION

The subject tender is viewed as a pilot project. The contract will deliver a DEM and associated data for approximately 1380 square kilometres. Two areas will be flown (refer to Map 1). The first includes the Halifax Harbour drainage basin, including the Sackville River sub-watershed and the Fall River area, the subject of a current Community Visioning project. The second area is the Petpeswick Peninsula and Surrounds, and includes lands within the Musquodoboit Harbour Community Visioning project and environmentally sensitive lands along the Eastern Shore coastline.

LiDAR is an advanced, laser-based technology that has been used to create predictive coastal inundation and storm surge models in locations such as Charlottetown and portions of the New Brunswick coastline. LiDAR is airborne technology that operates on the same principle as radar, but utilizes laser beams rather than radio waves. It delivers extremely accurate elevation data which is converted into a digital elevation model (DEM). When combined with aerial photography or satellite imagery, it can be a valuable tool for applications such as climate change modelling, coastal

innundation analysis, EMO planning, infrastructure planning, watershed and floodplain analysis, forestry management, and so on.

Upon delivery of the DEM, Natural Resources Canada (NRCAN) has agreed to assist HRM in the preparation of climate change predictive modelling. This will involve incremental sea level rise and storm surge projections and will provide a best estimate (graphically illustrated) of site-specific property/infrastructure vulnerability and where public safety may be in jeopardy. Based on this information, Council, other governments and property owners can determine what mitigation measures might be put in place to minimize risk for future development, and what adaptation measures might be implemented to minimize risk for existing development.

This LiDAR mapping project integrates well with HRM's ClimateSMART (Sustainable Mitigation and Adaptation Risk Toolkit). LiDAR will provide another sound basis for the further development of planning tools to increase HRM's resilience or adaptability to climate change through better risk management decision-making and disaster preparedness.

RFP #07-033, LiDar Data Acquisition for Halifax Harbour Drainage Basin and East Petpeswick Peninsula and Surrounds closed on February 23, 2007.

Proposals were received from the following firms:

PHB.Lasermap*
Terrapoint
Optimal Geographics
Terra Remote
LiDar Services
Airborne Imaging

***Recommended Proponent**

A team consisting of HRM staff, NRCAN, and NSCC evaluated the proposals based on the criteria listed in Appendix A - Evaluation Scorecard.

The final scoring for all proponents is as follows:

Company	Scoring (max. 100)
PHB.Lasermap	77
Terrapoint	74
Optimal Geographics	72
Terra Remote	69
LiDar Services	60
Airborne Imaging	56

BUDGET IMPLICATIONS

LiDAR data collection (flight time) must take place following snow-melt but prior to foliage (bare earth conditions). It is therefore recommended that Regional Council approve the full expenditure of \$161,349.24 (net HST included) from the LiDAR mapping budget, with the understanding that the external funds pledged to the project will be submitted to HRM by the end of March, 2007.

HRM wishes to acknowledge the financial and in-kind contributions that are forthcoming in support of this project from external sources:

- (a) NRCAN committed approximately \$16, 500.00 for the purchase of satellite imagery for this project and will provide in-kind staff resources for the creation of predictive climate change models. NRCAN has also assisted with the technical aspects of the RFP.
- (b) The NS Department of Energy is committing \$50,000.
- (c) Halifax Port Authority is committing \$10,000.
- (d) The Centre for Geographic Sciences, Applied Geomatics Research Group, NSCC, may provide in-kind training assistance in LiDAR data analysis for HRM's GISS technical staff. The Geomatics Research Group also assisted with the technical aspects of the RFP.
- (e) Dalhousie University may provide in-kind assistance with respect to the storage and back-up of LiDAR data.

**Award - Tender No. 07-033, LiDAR
Data Acquisition for Halifax Harbour
Drainage Basin and East Petpeswick
Peninsula and Surrounds**

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March 20, 2007

Budget Summary: Capital Budget CIV00726 LiDAR Mapping

Cumulative Unspent Budget	\$200,000.00
RFP No. 07-033 (net HST included)	<u>\$161,349.24</u>
Balance	\$ 38,650.76

The budget availability has been approved by Financial Services. The estimated budget for this project was approximately \$200,000. The remaining funds will be applied to other mapping projects.

FINANCIAL MANAGEMENT POLICIES / BUSINESS PLAN

This report complies with the Municipality's Multi-Year Financial Strategy, the approved Operating, Capital and Reserve budgets, policies and procedures regarding withdrawals from the utilization of Capital and Operating reserves, as well as any relevant legislation.

ALTERNATIVES

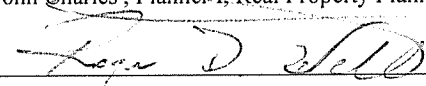
Council could choose not to fund this project or delay it, however, this could jeopardize other restoration funding sources.

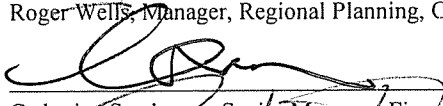
ATTACHMENTS

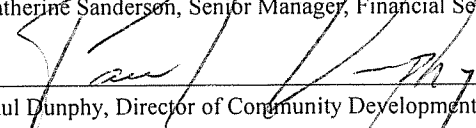
- Appendix A - Proposal Evaluation Criteria
- Appendix B - Map of Area to be Flown for LiDAR mapping

A copy of this report can be obtained online at <http://www.halifax.ca/council/agendasc/cagenda.html> then choose the appropriate meeting date, or by contacting the Office of the Municipal Clerk at 490-4210, or Fax 490-4208.

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Report Approved by: 
Paul Dunphy, Director of Community Development

**Award - Tender No. 07-033, LiDAR
Data Acquisition for Halifax Harbour
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Peninsula and Surrounds**

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**Appendix A - Evaluation Criteria
RFP #07-033, LIDAR DATA ACQUISITION FOR HALIFAX HARBOUR DRAINAGE BASIN AND EAST PETPESWICK PENINSULA AND
SURROUNDS**

Criteria	Max Score	PHB/ Lasermap	Optimal Geographics	Terrapoint	Terra Remote	Lidar Services	Airborne Imaging
1. Expertise of Firm, Project Team, Organization and Personnel	40	30	35	33	30	25	25
- Team Composition							
- Relevant Experience							
- References							
2. Proposed Methodology	25	18	18	20	18	12	14
- Approach to Scope of Services							
- Management of Project - Work Plan							
3. Schedule	10	6	4	6	8	6	6
4. Submission Quality	5	3	4	3	4	3	3
- Completeness							
- Clarity & Conciseness							
5. Fee Proposal	20	20	11	12	9	14	8
- Fee Level of Effort		(\$161,349.24) (net HST incl.)	(\$257,002.44) (net HST incl.)	(\$265,981.11) (net HST incl.)	(\$351,444.50) (net HST incl.)	(\$235,507.83) (net HST incl.)	(\$413,716.00) (net HST incl.)
Total	100	77	72	74	69	60	56

