Request for Proposal

for

2018 Niagara Digital Ortho-Photography Acquisition Project

Request for Proposal No.: 2017-RFP-46

Issued: Thursday November 2, 2017

Submission Deadline: Thursday November 23, 2017 at 2:00 pm

Submission Location: THE PURCHASING OFFICE
The Regional Municipality of Niagara
Campbell West Building
1815 Sir Isaac Brock Way
Thorold, Ontario, L2V 4T7
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Part 1 – Invitation and Submission Instructions

1.1 Invitation to Proponents
This Request for Proposal (“RFP”) is an invitation by The Regional Municipality of Niagara (“Niagara Region”) to prospective proponents to submit proposals for the provision of 2018 Ortho Acquisition Project, as further described in Appendix D – RFP Particulars (the “Deliverables”).

It is the intention of the Niagara Region to acquire digital aerial photography, updates to the existing digital terrain model and ortho-imagery products for the entire Region, see map in Appendix G.

This project will commence with aerial photography in spring 2018 and conclude with delivery of the final ortho-imagery files no later than October 31st 2018. All other deliverable files will be required no later than January 31st, 2019. The intended participants (see 1.2 Proponent Evaluation Team, pg. 28) will be sublicensing the deliverables from Niagara Region and award is contingent sufficient participation. Provisional Optional Deliverables will be awarded contingent to receiving funds from participants as outlined.

The project area consists of:

1. the entire Region including a buffer for the ortho-imagery. The buffer shall include areas within the city of Hamilton, county of Haldimand and New York State, U. S. A.

These areas are illustrated on the maps in Appendix G. Digital versions of these boundaries shall be provided to the Successful Proponent in ERSI shape file format. The index shapefiles shall govern the extent of coverage for project deliverables. Note that image tiles must be complete 1km. x 1 km. squares and must not be clipped to a buffer boundary.

Please refer to Appendix D – RFP Particulars for a detailed description of the Deliverables, material disclosures and mandatory requirements.

Please refer to Appendix E – Conditions of Award for requirements that the proponent must satisfy if selected to enter into a contract for the Deliverables.

1.2 Niagara Region’s Procurement Bylaw
Niagara Region’s procurement processes are governed by its Procurement By-Law No. 02-2016 (http://www.niagararegion.ca/government/bylaws/pdf/2016/Procurement-By-law-02-2016.pdf) (“Niagara Region’s By-law”). It is the proponent’s responsibility to become familiar with and comply with Niagara Region’s By-law.

If the terms of the RFP are more restrictive than the terms of Niagara Region’s By-law, the terms of the RFP will prevail.
PART 1 – INVITATION AND SUBMISSION INSTRUCTIONS

1.3 Niagara Region Contact
For the purposes of this procurement process, the “Niagara Region Contact” shall be:

Vicki Lafford-Field
Purchasing Agent
Procurement and Strategic Acquisitions, Enterprise Resource Management Services
Tel: 905-980-6000 ext. 3659
Vicki.Lafford-Field@niagararegion.ca

Proponents and their representatives are not permitted to contact any employees, officers, agents, elected or appointed officials or other representatives of Niagara Region, other than the Niagara Region Contact, concerning matters regarding this RFP. Failure to adhere to this rule may result in the disqualification of the proponent and the rejection of the proponent’s proposal.

1.4 Accommodations for Proponents with Disabilities
Niagara Region is committed to providing equal treatment to people with disabilities with respect to the use and benefit of municipal services, programs and goods in a manner that respects their dignity and that is equitable in relation to the broader public. In accordance with the Ontario Human Rights Code, Ontarians with Disabilities Act, 2001 (ODA) and Accessibility for Ontarians with Disabilities Act, 2005 (AODA), the Niagara Region will accommodate for a disability, ensuring full and equitable participation throughout the RFP process.

If a proponent requires this RFP in a different format to accommodate a disability, the proponent must contact the Niagara Region Contact as soon as possible and in any event prior to the Submission Deadline. The RFP in the different format will be issued only to the requesting proponent and all addenda will be issued in such different format only to the requesting proponent.

1.5 Contract for Deliverables
The selected proponent will be required to enter into a contract with Niagara Region for the provision of the Deliverables based on the Contract Terms and Conditions set out in Appendix A to the RFP (the “Contract”). It is Niagara Region’s intention to enter into the Contract with one (1) legal entity. The term of the Contract is to be for a period of **fifteen (15) months**.

1.6 RFP Timetable

<table>
<thead>
<tr>
<th>Issue Date of RFP</th>
<th>Thursday November 2, 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deadline for Questions</td>
<td>Tuesday November 14, 2017</td>
</tr>
<tr>
<td>Deadline for Issuing Addenda</td>
<td>Thursday November 16, 2017</td>
</tr>
<tr>
<td>Submission Deadline</td>
<td>2:00 pm on Thursday November 23, 2017</td>
</tr>
<tr>
<td>Public Opening</td>
<td>2:15 pm on Thursday November 23, 2017</td>
</tr>
</tbody>
</table>

Niagara Region Headquarters, Campbell
The RFP timetable is tentative only, and may be changed by Niagara Region at any time.

1.7 **Proponent Meeting**

Not Applicable

1.8 **Proposal Submission**

1.8.1 **Proposals Must Be Submitted to Prescribed Location**

Proposals must be submitted at:

THE PURCHASING OFFICE
The Regional Municipality of Niagara
Campbell West Building
1815 Sir Isaac Brock Way
Thorold, Ontario, L2V 4T7

1.8.2 **Proposals Must Be Submitted on Time**

Proposals must be submitted at the location set out above on or before the Submission Deadline. Proposals submitted after the Submission Deadline will be rejected. Onus and responsibility rests solely with the proponent to deliver its proposal to the exact location (including floor, if applicable) indicated in the RFP on or before the Submission Deadline. Niagara Region does not accept any responsibility for submissions delivered to any other location by the proponent or its delivery agents. Proponents are advised to make submissions well before the deadline. Proponents making submissions near the deadline do so at their own risk.

In the event of any question regarding the timely receipt of any submission, the time on the clock designated by the Manager of Purchasing Services will absolutely prevail over any other timepiece regardless of any discrepancies between the time on the Manager of Purchasing Services’ designated clock and actual time.

1.8.3 **Proposals Must Be Submitted in Prescribed Format**

Proponents must submit eight (8) hard copies of their proposal enclosed in a sealed package that is prominently marked with the RFP title and number (see RFP cover page) and the full legal name and return address of the proponent. One (1) hard copy shall be labelled “Master”. 
PART 1 – INVITATION AND SUBMISSION INSTRUCTIONS

The hard copies of the Pricing Form (Appendix C) and any other information in respect of pricing must be separated from the rest of the proposal and enclosed in a separate envelope marked “Pricing Envelope”. The separate Pricing Envelope must be packaged in the sealed envelope or box with the rest of the proposal.

Proponents must also include in the sealed package one (1) electronic copy of their proposal saved on a USB key. If there is a conflict or inconsistency between the hard copy and the electronic copy of the proposal, the hard copy of the proposal shall prevail.

1.8.4 Proposal Submission Content

Proponents must include all forms and other documents or information listed under Section C – Mandatory Requirements in Appendix D – RFP Particulars. Other than inserting the information requested, a proponent may not make any changes to any of the required forms included in this RFP. Any proposal containing any such changes, whether on the face of the form or elsewhere in the proposal, may be disqualified. Irregularities in proposal submissions will be addressed in accordance with Appendix F – Bid Irregularities.

Proposals should also include the suggested proposal content for evaluation described in Section D of Appendix D – RFP Particulars. Failure to provide the requested information will negatively affect the scoring of the proposal in the evaluation process.

1) Technical Proposal Information – First Envelope

Project Technical Specifications

This section describes to the deliverables associated with this RFP. Submissions must include detailed explanations of technologies to be employed for each heading shown below, and the Proponents must demonstrate experience using such technologies.

In addition to the Form of Proposal (Appendix B), the Proponent shall provide a brief proposal, maximum ten (10) pages not including covering letter, resumes and company credentials. The minimum acceptable font size is 12.

The Technical Proposal to undertake this assignment shall include the following:

A clear outline, including the following general items, in a brief Letter of Proposal to undertake this assignment. The Proposal should include items listed hereunder, but also include other considerations based on the Proponent’s understanding of the Project.

The Proponent should make it known to the Region any omissions or concerns that could affect quality of the project deliverables and associated costs.

The Provisional Optional Deliverables are to be submitted in the first (Technical) Envelope, however, they will not be evaluated for award.
PART 1 – INVITATION AND SUBMISSION INSTRUCTIONS

Project Manager & Senior Staff
- A description of the consulting team, the lead persons, and the relevant experience and qualifications of each individual should be included.
- Disclosure of any perceived conflict of interest.

Technical Support
- Identification of all sub-contractors, their qualifications and experience, as well as their specific role in the project.

Experience and Past Performance Record on Regional and/or Similar Projects
- Three (3) references where contracts have been successfully implemented with similar objectives, size and scope, as detailed in this document, within Ontario shall be provided.

Understanding of Project
- The Proponent’s interest in carrying out the project and an understanding of the objective(s) of this project.
- Schedule and Detailed Work Plan
- The Proponent’s proposed methodology and innovation for carrying out the work.
- The Proponent’s proposed Concepts/Options/Alternatives Considered
- QA/QC policy
- Clearly outline the methodology to be employed to generate the digital ortho-imagery files.
- Ground control and Aerial photography shall be obtained in accordance with Project Requirements; and Deliverables as shown in Table 2.
- Proponents must stipulate the specification(s) and standards that will be employed. These may include but are not limited to:
  a. Ontario Specification for GPS Control Surveys, published by Ontario Ministry of Natural Resources;
  b. Natural Resources Canada’s Interdepartmental Committee on Air Survey (ICAS) Specification for Aerial Photography (2000)
- The Proponent shall be responsible to satisfy all Transport Canada Approvals and similar approvals from the United States to acquire data in the geographic area of concern, where appropriate.
- Indicate understanding and compliance with Specifications, Project Requirements, and Proponent Requirements.
- Describe the methodology that will be employed to provide a product that will support high resolution, with a GSD of 10cm, ortho-imagery for 1:2000 scale map and image accuracies.
- Clearly outline a methodology that will be employed to provide ground control and acquire aerial triangulation (minor control) suitable for 1:2000 scale mapping.
- Stipulate the specification(s) that will be employed during the execution of the project deliverables.
- Describe the approximate horizontal and vertical control layout that will be employed to meet map and image accuracy using their proposed methodology.
- Provide detailed explanations regarding aerial triangulation and adjustment programs.
PART 1 – INVITATION AND SUBMISSION INSTRUCTIONS

- Outline the map accuracy standards that will be employed during project.
- Ensure that all stereo orientation files, suitable for use in Erdas LPS, DAT-EM, BAE SocetSet Softcopy Photogrammetry software are provided to the Region.
- **Acknowledge that complete ownership (all Intellectual Property Rights) of all files, including the DEM/DTM will be owned and returned to Niagara Region and its participants with other deliverables and reports.**
- State whether, and if so in what manner, the DEM/DTM will be pre-processed for ortho-rectification procedures.
- Describe the standards which horizontal and vertical accuracy adjustments will be required to meet or exceed.
- Identify and list other known specifications that may be of interest to the Region for future reference.

2) Financial Proposal – Pricing Envelope

Please provide the requested Pricing Form (Appendix C), and include this in separate and sealed Pricing Envelope.

Proponents must also submit pricing for all Optional Deliverables found in Table 2 on Appendix C – Pricing Form, however, awarding Provisionals Optional Deliverables are dependent on external funding and the Region has the right to award Option 1, Option 2 or all three Options to the Successful Proponent.

The Proponent shall note that the Region may not consider extra items once the Proposal (Technical) envelope is opened. The Region will consider the estimated total service cost for this project as an upset limit based on the work plan and the project duration assumed and will not consider extra items unless prior written approval is obtained from the Region.

Upset Limit: Once the Successful Proponent has been approved, minor revisions to the scope of the assignment may be negotiated. Where such work has been requested and approved by the Region, the Proponent shall submit proper documentation of any additional service to support invoices beyond the limit of the upset figure.

No invoice for services rendered will be honored if that invoice puts the total cost of the job over the upset limit set out in the Agreement. If additional costs are to be incurred over the upset limit, the Proponent shall obtain written authorization from the Region to proceed with these additional costs prior to the additional charges being incurred. Further, the Region will not honour any work that was not authorized in accordance with Regional policy. Verbal authorization, regardless of the source, will not be honored in considering invoices. Any invoice received, that does not meet the above requirements, will be returned unpaid and no late payment charges can be claimed.

1.8.5 Amendment of Proposals

Proponents may amend their proposals prior to the Submission Deadline by submitting the amendment in a sealed package prominently marked with the RFP title and number and the full legal name and return address of the proponent to the location set out above. Any amendment
should clearly indicate which part of the proposal the amendment is intended to amend or replace.

1.8.6 Withdrawal of Proposals

Proponents may withdraw their proposals prior to the Submission Deadline. To withdraw a proposal, a notice of withdrawal must be sent to the Niagara Region Contact and must be signed by an authorized representative of the proponent. Withdrawn proposals will be returned unopened to the proponent.

1.8.7 Proposals Irrevocable after Submission Deadline

Proposals shall be irrevocable for a period of ninety (90) days running from the moment that the Submission Deadline passes.

[End of Part 1]
Part 2 – Evaluation and Ranking

2.1 Stages of Proposal Evaluation
Niagara Region will conduct the evaluation and ranking process in accordance with the stages set out below.

2.2 Stage I – Mandatory Requirements
Stage I will consist of a review to determine which proposals comply with all of the mandatory requirements. Proposals that do not comply with all of the mandatory requirements as of the Submission Deadline will, subject to the express and implied rights of Niagara Region, be disqualified and not evaluated further. The mandatory requirements are listed and described in Section C of Appendix D – RFP Particulars.

2.3 Stage II – Rated Criteria
In Stage II, Niagara Region will evaluate each compliant proposal on the basis of the rated criteria set out in Section D of Appendix D – RFP Particulars.

2.4 Stage III - Pricing
After completion of Stage II, Niagara Region will evaluate the submitted pricing in each qualified proposal in accordance with the evaluation and ranking method described in Section E of Appendix D – RFP Particulars.

2.5 Stage IV - Ranking and Selection of Top-Ranked Proponent
After the completion of Stage III, proponents will be ranked in accordance with the evaluation and ranking method described in Section E of Appendix D – RFP Particulars. Subject to the reserved rights of Niagara Region, the top-ranked proponent with the highest score will be selected to enter into the Contract in accordance with Part 3. The participants will be sublicensing the deliverables from Niagara Region and that award is contingent sufficient participation. Provisional Optional Deliverables will be awarded contingent to receiving funds from participants as outlined.

[End of Part 2]
Part 3 – Terms and Conditions of the RFP Process

3.1 General Information and Instructions

3.1.1 RFP Incorporated into Proposal
All of the provisions of this RFP are deemed to be accepted by each proponent and incorporated into each proponent’s proposal. A proponent who submits conditions, options, variations or contingent statements to the terms as set out in this RFP, including the terms of the Contract in Appendix A, either as part of its proposal or after receiving notice of selection, may be disqualified. If a proponent is not disqualified despite such changes or qualifications, the provisions of this RFP, including the terms of the Contract set out in Appendix A, will prevail over any such changes or qualifications in the proposal.

3.1.2 Proponents to Follow Instructions and Submit Only Requested Information
Proponents should structure their proposals in accordance with the instructions in this RFP. Information must be provided in the form requested. Niagara Region will not consider any supplementary information or documents that proponents have not been requested to submit.

3.1.3 Proposals in English
All proposals are to be in English only.

3.1.4 Information in RFP Only an Estimate
Niagara Region and its advisers make no representation, warranty or guarantee as to the accuracy of the information contained in this RFP or issued by way of addenda. Any quantities shown or data contained in this RFP or provided by way of addenda are estimates only and are for the sole purpose of indicating to proponents the general scale and scope of the Deliverables. It is the proponent’s responsibility to obtain all the information necessary to prepare a proposal in response to this RFP.

3.1.5 Examination of Site
Not applicable

3.1.6 Proponents Shall Bear Their Own Costs
The proponent shall bear all costs associated with or incurred in the preparation and submission of its proposal.

3.1.7 Proposal to Be Retained by Niagara Region
Except as otherwise provided in this RFP, Niagara Region is under no obligation to return the proposal or any accompanying documentation submitted by a proponent.
3.1.8 Trade Agreements

Proponents should note that procurements falling within the scope of Chapter 5 of the Canadian Free Trade Agreement are subject to that trade agreement, but the rights and obligations of the parties shall be governed by the specific terms of this RFP.

3.1.9 No Guarantee of Volume of Work or Exclusivity of Contract

Niagara Region makes no guarantee of the value or volume of work to be assigned to the successful proponent. The Contract will not be an exclusive contract for the provision of the described Deliverables. Niagara Region may contract with others for goods and services the same as or similar to the Deliverables or may obtain such goods and services internally.

3.2 Communication after Issuance of RFP

3.2.1 Proponents to Review RFP

Proponents shall promptly examine all of the documents comprising this RFP, and

(a) shall report any errors, omissions or ambiguities; and
(b) may direct questions or seek additional information
to the Niagara Region Contact on or before the Deadline for Questions. All communications must be made in writing by email and shall be deemed to be received once the email has entered into the Niagara Region Contact’s email inbox. No such communications are to be directed to anyone other than the Niagara Region Contact, and Niagara Region shall not be responsible for any information provided by or obtained from any source other than the Niagara Region Contact. Niagara Region is under no obligation to provide additional information, but may do so in its sole and absolute discretion. It is the responsibility of the proponent to seek clarification from the Niagara Region Contact on any matter it considers to be unclear. Niagara Region shall not be responsible for any misunderstanding on the part of the proponent concerning this RFP or its process.

3.2.2 All New Information to Proponents by Way of Addenda

This RFP may be amended only by an addendum in accordance with this section. If Niagara Region, for any reason, determines that it is necessary to provide additional information relating to this RFP, such information will be communicated to all proponents by addenda issued in the same manner that this RFP was originally issued. Each addendum forms an integral part of this RFP. Such addenda may contain important information, including significant changes to this RFP. Proponents are responsible for obtaining all addenda issued by Niagara Region. In the Form of Proposal (Appendix B), proponents should confirm their receipt of all addenda by setting out the number of each addendum in the space provided.
3.2.3 Post-Deadline Addenda and Extension of Submission Deadline
If Niagara Region determines that it is necessary to issue an addendum after the Deadline for Issuing Addenda, Niagara Region may extend the Submission Deadline for a reasonable period of time.

3.2.4 Verify, Clarify and Supplement
When evaluating proposals, Niagara Region may request further information from the proponent or third parties in order to verify clarify or supplement the information provided in the proponent’s proposal. The response received by Niagara Region shall, if accepted by Niagara Region, form an integral part of that proponent’s proposal.

3.3 Finalization of Contract, Notification and Debriefing

3.3.1 Selection of Proponent and Finalization of Contract
Notice of selection by Niagara Region to the selected proponent shall be in writing. The selected proponent shall enter into the Contract in the form attached as Appendix A to this RFP and satisfy any other applicable conditions, as set out in Appendix E – Conditions of Award of this RFP, within fourteen (14) days of notice of selection. This provision is solely for the benefit of Niagara Region and may be waived by Niagara Region in its sole and absolute discretion.

3.3.2 Failure to Enter into Contract
In addition to all other remedies available to Niagara Region, if a selected proponent fails to enter into the Contract or satisfy any other applicable conditions, as set out in Appendix E – Conditions of Award of this RFP, within fourteen (14) days of notice of selection, Niagara Region may, in its sole and absolute discretion and without incurring any liability, withdraw the selection of that proponent and either proceed with the selection of another proponent or cancel the RFP process.

3.3.3 Notification to Other Proponents
Once the Contract is entered into by Niagara Region and a proponent, the other proponents may be notified directly in writing and shall be notified by public posting in the same manner that this RFP was originally posted of the outcome of the procurement process.

3.3.4 Debriefing
Proponents may request a debriefing after receipt of a notification of the outcome of the procurement process. All requests must be in writing to the Niagara Region Contact and must be made within thirty (30) days of such notification. The intent of the debriefing information session is to aid the proponent in presenting a better proposal in subsequent procurement opportunities. Any debriefing provided is not for the purpose of providing an opportunity to challenge the procurement process or its outcome.
3.3.5 Proposal Dispute Resolution Procedure

If a proponent wishes to challenge the RFP process, the proponent must submit a written objection providing sufficient detail regarding their complaint (a “Substantive Objection”) to the Director of Procurement and Strategic Acquisitions within 7 days from notification of the outcome of the RFP process. Niagara Region will respond to a Substantive Objection in accordance with the following steps:

(a) The Director of Procurement and Strategic Acquisitions will arrange a debriefing with the proponent to explain the RFP process that led to the selection of the successful proponent.

(b) The Director of Procurement and Strategic Acquisitions will investigate the complaint and will make a recommendation to the Commissioner of Corporate Services/Treasurer, CAO or Council, as appropriate.

(c) Should the proponent continue to have concerns about the RFP process and is not satisfied with the decision, the proponent may then request, in writing to the Commissioner of Corporate Services/Treasurer, a mediator, to assist in resolving any outstanding issues between the proponent and Niagara Region.

(d) The recommended mediator will be approved by both the proponent and Niagara Region.

(e) The mediator shall make his/her best efforts to assist the parties to reach a mutually acceptable solution.

(f) Costs for the mediator shall be equally shared by Niagara Region and the proponent.

(g) Any resolution reached through the mediation process shall remain confidential if requested by either of the parties.

3.4 Conflict of Interest and Prohibited Conduct

3.4.1 Conflict of Interest

Niagara Region may disqualify a proponent for any conduct, situation or circumstances, determined by Niagara Region, in its sole and absolute discretion, to constitute a Conflict of Interest.

For the purposes of this RFP, the term “Conflict of Interest” includes, but is not limited to, any situation or circumstance where:

(a) in relation to the RFP process, the proponent has an unfair advantage or engages in conduct, directly or indirectly, that may give it an unfair advantage, including but not
 limited to (i) having, or having access to, confidential information of Niagara Region in the
preparation of its proposal that is not available to other proponents, (ii) communicating
with any person with a view to influencing preferred treatment in the RFP process
(including but not limited to the lobbying of decision makers involved in the RFP process),
or (iii) engaging in conduct that compromises, or could be seen to compromise, the
integrity of the RFP process; or

(b) in relation to the performance of its contractual obligations contemplated in the contract
that is the subject of this procurement, the proponent’s other commitments, relationships
or financial interests (i) could, or could be seen to, exercise an improper influence over
the objective, unbiased and impartial exercise of its independent judgement, or (ii) could,
or could be seen to, compromise, impair or be incompatible with the effective
performance of its contractual obligations.

For the purposes of section (a) (i) above, proponents should specifically consider whether there
were any individuals (employees, advisers, or individuals acting in any other capacity) who (a)
participated in the preparation of the proposal; AND (b) were employees of Niagara Region
within twelve (12) months prior to the Submission Deadline.

In addition to any other situation that may constitute a conflict of interest, suppliers will not be
permitted to submit a proposal if the supplier participated in the preparation of the RFP, and any
such proposal submitted will be disqualified.

3.4.2 Disqualification for Prohibited Conduct
Niagara Region may disqualify a proponent or terminate the Contract if, in the sole and absolute
determination of Niagara Region, the proponent has engaged in any conduct prohibited by this
RFP or Niagara Region’s By-law.

3.4.3 Prohibited Proponent Communications
A proponent shall not engage in any communications that could constitute a Conflict of Interest
and should take note of the Conflict of Interest declaration set out in the Form of Proposal
(Appendix B).

3.4.4 Proponent Not to Communicate with Media
A proponent may not at any time directly or indirectly communicate with the media in relation to
this RFP or any Contract entered into pursuant to this RFP without first obtaining the written
permission of the Niagara Region Contact.

3.4.5 No Lobbying
A proponent, including any agent or representative of a proponent, may not, in relation to this
RFP or the evaluation and selection process, engage directly or indirectly in any form of political
PART 3 – TERMS AND CONDITIONS OF THE RFP PROCESS

or other lobbying whatsoever to advocate for any interest that may be affected by the RFP process or to influence the outcome of the RFP process.

In accordance with Niagara Region’s Procurement By-law:

(a) “Lobbying” means the advocacy of an interest that is affected, actually or potentially by the procurement process or individuals involved in the procurement process including seeking to influence the outcome of the procurement process or subsequent award of a contract.

(b) Proponents, their staff members, or anyone involved in preparing a proposal, shall not engage in any form of political or other lobbying whatsoever or seek to influence the outcome of the procurement process or subsequent award. This restriction extends to all of Niagara Region’s staff and anyone involved in preparing the RFP or participating in the proposal evaluation process, and members of Council.

(c) Niagara Region may reject any proposal by a proponent that engages in lobbying, without further consideration, and may terminate that proponent’s right to continue in the procurement process.

(d) During a procurement process, all communications shall be made through the Niagara Region Contact. No proponent or person acting on behalf of a proponent or group of proponents, shall contact any elected official, consultant or any employee of Niagara Region to attempt to seek information or to influence the outcome of the procurement process.

(e) Elected officials shall refer any inquiries about a procurement process to Niagara Region’s Commissioner of Corporate Services/Treasurer.

3.4.6 Illegal or Unethical Conduct

Proponents shall not engage in any illegal business practices, including activities such as proposal-rigging, price-fixing, bribery, fraud, coercion or collusion. Proponents shall not engage in any unethical conduct, including lobbying, as described above, or other inappropriate communications, offering gifts to any employees, officers, agents, elected or appointed officials or other representatives of Niagara Region, deceitfulness, submitting proposals containing misrepresentations or other misleading or inaccurate information, or any other conduct that compromises or may be seen to compromise the competitive process provided for in this RFP.

3.4.7 Past Performance or Past Conduct

Niagara Region may prohibit a supplier from participating in a procurement process based on past performance or based on inappropriate conduct in a prior procurement process. Such inappropriate conduct shall include but not be limited to the following: (a) illegal or unethical conduct as described above; (b) the refusal of the supplier to honour its pricing or other
commitments made in its proposal; (c) failure to disclose a conflict of interest or (d) any other conduct, situation or circumstance described in Niagara Region’s By-law.

### 3.5 Confidential Information

#### 3.5.1 Confidential Information of Niagara Region

All information provided by or obtained from Niagara Region in any form in connection with this RFP either before or after the issuance of this RFP

(a) is the sole property of Niagara Region and must be treated as confidential;

(b) is not to be used for any purpose other than replying to this RFP and the performance of the Contract;

(c) must not be disclosed without prior written authorization from Niagara Region; and

(d) shall be returned by the proponents to Niagara Region immediately upon the request of Niagara Region.

#### 3.5.2 Confidential Information of Proponent

Proponents are advised that the disclosure of information received in proposals or otherwise relevant to the RFP process will be in accordance with the provisions of all relevant access to information and privacy legislation including primarily the *Municipal Freedom of Information and Protection of Privacy Act, R.S.O. 1990, c. M.56*, as amended (“MFIPPA”). Proponents should identify any confidential information in their proposals. Niagara Region will make reasonable efforts to maintain the confidentiality of such information, subject to its disclosure requirements under MFIPPA or any disclosure requirements imposed by law or by order of a court or tribunal. Proponents are advised that their proposals will, as necessary, be disclosed, on a confidential basis, to advisers retained by Niagara Region to advise or assist with the RFP process. If a proponent has any questions about the collection and use of personal information pursuant to this RFP, questions are to be submitted to the Niagara Region Contact.

### 3.6 Reserved Rights, Limitation of Liability and Governing Law

#### 3.6.1 Reserved Rights of Niagara Region

Niagara Region reserves the right to

(a) make public the names of any or all proponents;

(b) request written clarification or the submission of supplementary written information in relation to the clarification request from any proponent and incorporate a proponent’s response to that request for clarification into the proponent’s proposal;

(c) assess a proponent’s proposal on the basis of
PART 3 – TERMS AND CONDITIONS OF THE RFP PROCESS

(i) a financial analysis determining the actual cost of the proposal when considering factors including quality, service, price and transition costs arising from the replacement of existing goods, services, practices, methodologies and infrastructure (howsoever originally established);

(ii) information provided by references;

(iii) the proponent’s past performance under previous contracts with Niagara Region;

(iv) the information provided by a proponent pursuant to Niagara Region exercising its clarification rights under this RFP process; or

(v) other relevant information that arises during this RFP process;

(d) waive formalities and accept proposals that substantially comply with the requirements of this RFP;

(e) verify with any proponent or with a third party any information set out in a proposal;

(f) check references other than those provided by any proponent;

(g) disqualify any proponent whose proposal contains misrepresentations or any other inaccurate or misleading information;

(h) disqualify any proponent who has engaged in conduct prohibited by this RFP;

(i) make changes, including substantial changes, to this RFP provided that those changes are issued by way of addenda in the manner set out in this RFP;

(j) select a proponent other than the proponent whose proposal reflects the lowest cost to Niagara Region;

(k) reject any proposal that contains pricing which appears to be unbalanced or unreasonable;

(l) cancel this RFP process at any stage;

(m) cancel this RFP process at any stage and issue a new RFP for deliverables the same as or similar to the Deliverables;

(n) accept any proposal in whole or in part; or

(o) reject any or all proposals;
and these reserved rights are in addition to any other express rights or any other rights that may be implied in the circumstances.

3.6.2 Limitation of Liability
By submitting a proposal, each proponent agrees that

(a) neither Niagara Region nor any of its employees, officers, agents, elected or appointed officials, advisors or representatives will be liable, under any circumstances, for any claim arising out of this RFP process including but not limited to costs of preparation of the proposal, loss of profits, loss of opportunity or for any other claim; and

(b) the proponent waives any right to or claim for any compensation of any kind whatsoever, including claims for costs of preparation of the proposal, loss of profits or loss of opportunity by reason of Niagara Region’s decision not to accept the proposal submitted by the proponent, to enter into a contract with any other proponent or to cancel this RFP process, and the proponent shall be deemed to have agreed to waive such right or claim.

3.6.3 Governing Law and Interpretation
The terms and conditions in this Part 3 – Terms and Conditions of RFP Process

(a) are included for greater certainty and are intended to be interpreted broadly and separately (with no particular provision intended to limit the scope of any other provision);

(b) are non-exhaustive (and shall not be construed as being intended to limit the pre-existing rights of the parties); and

(c) are to be governed by and construed in accordance with the laws of the province of Ontario and the federal laws of Canada applicable therein.

[End of Part 3]
Appendix A – Contract Terms and Conditions

The Contract for Deliverables will be the Niagara Region Form of Agreement as follows:
BETWEEN:

THE REGIONAL MUNICIPALITY OF NIAGARA

(referred to as “Niagara Region”)

AND:

[*INSERT FULL LEGAL NAME OF SUPPLIER*]

(referred to as the “Supplier”)

In consideration of their respective agreements set out herein, the parties covenant and agree as follows:

1. **Contract Documents**

The contract between the parties in respect of:

[Insert Name of Project or Brief Description of Deliverables – should match the description used as the title of the RFX document]

is comprised of the following documents, which are collectively referred to as the “Contract” and attached hereto as Schedule “A”:

(a) this Agreement;
(b) the Schedule of Deliverables, Rates and Specific Provisions, attached hereto as Schedule 1;
(c) **Form of Agreement Terms and Conditions** (https://www.niagararegion.ca/business/terms-conditions/form-of-agreement.aspx/), including Article 8 - Indemnity and Insurance, Commercial General Liability Insurance and Automobile Insurance requirements,
(d) the [*Insert RFx Document Name and #*], including any addenda, (the “Solicitation Document”); and
(e) all the documentation submitted by the Supplier in response to the Solicitation Document (the “Supplier’s Submission”).

2. **Interpretive Value of Contract Documents**

Any ambiguity, conflict or inconsistency between or among the documents comprising the Contract will be resolved by giving precedence to the express terms of the documents in the order in which they appear above, so that a first mentioned document shall prevail notwithstanding any term or aspect of a later mentioned document.
3. Execution

This Agreement may be executed and (i) delivered by facsimile transmission or (ii) scanned and delivered by electronic transmission, and when so executed and delivered, will be deemed an original.

IN WITNESS WHEREOF the parties hereto have executed this Agreement as of the date first above written.

The Regional Municipality of Niagara
Per:

________________________
Name:
Title:
Date of Signature:
I have authority to bind the corporation

[**Insert Full Legal Name of Supplier**]
Per:

________________________
Name:
Title:
Date of Signature:
I have authority to bind the corporation
Schedule 1 to Niagara Region Form of Agreement – Schedule of Deliverables, Rates and Specific Provisions

A. Description of Deliverables

[*Describe the Deliverables. Reference can be made to the Solicitation Document and/or Supplier Submission, as appropriate*]

B. Rates and Disbursements

B.1 Maximum Fee

Notwithstanding anything else in the Contract, the total amount payable by Niagara Region to the Supplier under the Contract shall not exceed [*insert maximum contract amount*] ($xxx).

B.2 Personnel and Rates

The following individuals are responsible for the provision of the Deliverables. The Rates for these individuals are set out below and shall remain fixed during the Term of this Contract:

[*insert personnel and rate information or replace this section with other applicable form of rate breakdown*]

C. Payment Terms

The payment terms for the Contract are as follows: [*insert payment terms (i.e. monthly invoices, full payment upon acceptance, progress payments, etc.)*]

D. Client and Supplier Representatives

The Niagara Region Representative and contact information for the Contract is:

[*insert name and title of Niagara Region’s representative in charge of the contract and contact details, including mailing address and email address*]

The Supplier Representative and contact information for the Contract is:

[*insert name and title of Supplier representative in charge of the contact and contact details, including mailing address and email address*]

E. Term of Contract

The Contract shall take effect on the [*insert date*] (the “Effective Date”) and shall be in effect for a period of [*insert # of years or months] from the Effective Date, with an option
in favour of Niagara Region to extend the term for an additional period of [*insert extension period, if applicable, or revise this language as necessary*], unless it is terminated earlier in accordance with the terms of the Contract or otherwise by operation of law.

F. Specific Provisions

F.1 Additional Insurance Requirements

In addition to the Commercial General Liability Insurance and Automobile Insurance requirements specified in the Form of Agreement Terms and Conditions, the Supplier shall purchase and maintain at all times during the term of the Contract the additional insurance coverage listed below:

1) Professional/Errors and Omissions Liability
   a) Errors and Omissions insurance insuring the Supplier in an amount not less than TWO MILLION DOLLARS ($2,000,000) per claim.
   b) The coverage under the Errors and Omissions policy shall be maintained continuously during the term of this Contract and for two (2) years after the termination or expiration of this Contract and shall cover insurable losses arising out of or in association with an error or omission in the rendering of or failure to render the Services. If coverage under the policy is cancelled within the two (2) year period after the termination or expiration of this Contract, the Supplier shall provide Niagara Region with notice within thirty (30) days of cancellation and shall be required to purchase an extended reporting endorsement to confirm that coverage is maintained.

2) Aircraft Liability Insurance
   Aircraft liability insurance with respect to owned or non-owned aircraft used directly or indirectly in the performance of work, including use of additional premises, shall be subject to limits of not less than FIVE MILLION DOLLARS ($5,000,000) inclusive per occurrence for bodily injury, death, and damage to property including loss of use thereof. Such insurance shall be in a form acceptable to Niagara Region. The policies shall be endorsed to provide Niagara Region with not less than 30 days written notice in advance of cancellation, change or amendment restricting coverage.

3) Other Insurance
   Any other type (e.g. include under CGL policy - XCU, Asbestos, Sexual Abuse & Molestation, and/or Electronic Data/Cyber Liability Environmental), form or as otherwise may be required from time to time as identified at any time by either party.
Appendix B – Form of Proposal

1. **Proponent Information**

Please fill out the following form, and name one person to be the contact for the RFP process and for any clarifications or communication that might be necessary.

<table>
<thead>
<tr>
<th>Full Legal Name of Proponent:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any Other Relevant Name under Which the Proponent Carries on Business:</td>
</tr>
<tr>
<td>Street Address:</td>
</tr>
<tr>
<td>City, Province/State:</td>
</tr>
<tr>
<td>Postal Code:</td>
</tr>
<tr>
<td>Phone Number:</td>
</tr>
<tr>
<td>Fax Number:</td>
</tr>
<tr>
<td>Company Website (If Any):</td>
</tr>
<tr>
<td>Proponent Contact Person and Title:</td>
</tr>
<tr>
<td>Proponent Contact Phone:</td>
</tr>
<tr>
<td>Proponent Contact Facsimile:</td>
</tr>
<tr>
<td>Proponent Contact E-mail:</td>
</tr>
</tbody>
</table>

2. **Offer**

The proponent has carefully examined the RFP documents and has a clear and comprehensive knowledge of the Deliverables required under the RFP. By submitting a proposal, the proponent agrees and consents to the terms, conditions and provisions of the RFP, including the Contract Terms and Conditions and offers to provide the Deliverables in accordance therewith at the rates set out in the Pricing Form (Appendix C).

3. **Rates**

The proponent has submitted its rates in accordance with the instructions in the RFP and in the Pricing Form set out in Appendix C.

4. **No Prohibited Conduct**

The proponent declares that it has not engaged in any conduct prohibited by this RFP.
APPENDIX B – FORM OF PROPOSAL

5. Conflict of Interest

The proponent has considered the definition of “Conflict of Interest” in Section 3.4 of the RFP and declares that there is no Conflict of Interest relating to the preparation of its proposal, and no foreseeable Conflict of Interest in performing the contractual obligations contemplated in the RFP.

6. Disclosure of Information

The proponent hereby agrees that any information provided in this proposal, even if it is identified as being supplied in confidence, may be disclosed where required by law or if required by order of a court or tribunal. The proponent hereby consents to the disclosure, on a confidential basis, of this proposal by Niagara Region to Niagara Region’s advisers retained for the purpose of evaluating or participating in the evaluation of this proposal.

7. Proposal Irrevocable

The proponent agrees that its Proposal shall be irrevocable for a period of ninety (90) days following the Submission Deadline.

8. Enter into Contract

The proponent agrees that in the event its proposal is selected by Niagara Region, in whole or in part, it will enter into the Contract based on the term and conditions set out in Appendix A to this RFP in accordance with the terms of this RFP.
9. **Addenda**

The proponent is deemed to have read and accepted all addenda issued by Niagara Region prior to the Deadline for Issuing Addenda. The onus remains on proponents to make any necessary amendments to their proposals based on the addenda. The proponent is requested to confirm that it has received all addenda by completing the statement below:

The proponent has received **addendum/addenda numbers [ ] to [ ]**, inclusive, and all changes specified therein have been included in the proponent’s pricing.

Proponents who fail to complete this section will be deemed to have received all issued addenda.

__________________________  ______________________________
Signature of Witness         Signature of Proponent
Representative

__________________________  ______________________________
Name of Witness              Name of Proponent Representative

__________________________
Title of Proponent Representative

__________________________
Date

I have the authority to bind the proponent

**ORIGINAL SIGNATURES ONLY; NO ELECTRONIC**
Appendix C – Pricing Form

1. Instructions on How to Complete Pricing Form

   (a) Rates shall be provided in Canadian funds, inclusive of all applicable duties and taxes except for Harmonized Sales Tax (HST), which should be itemized separately.

   (b) Rates quoted by the proponent shall be all-inclusive and shall include all labour and material costs, all travel and carriage costs, all insurance costs, all costs of delivery to Niagara Region, all costs of installation and set-up, including any pre-delivery inspection charges, and all other overhead, including any fees or other charges required by law.

   (c) Project Cost and Schedule Breakdown should reflect cost of materials and services for each deliverable component. Furthermore, Project components may also be scaled down at the sole discretion of the Region and could potentially include only acquisition of aerial photography and/or ortho-imagery, without the vector data files. Table 1 must be submitted in full for evaluation.

   (d) Proponents must submit pricing for all Optional Deliverables listed in Table 2 on Appendix C – Pricing Form (to be included in the Pricing Envelope), however, Provisionals Optional Deliverables may be awarded after the Successful Proponent is awarded Table 1 and contingent to receiving funds from participants as outlined. The Region has the right to award Option 1, Option 2, Option 3, or all Options to the Successful Proponent. The Provisional Optional Deliverables are to be submitted in the first (Technical) Envelope, however, they will not be evaluated for award.
2. Pricing Form

I/We, the undersigned, **have the authority to bind the Company**, certify that I/We have examined the INVITATION AND SUBMISSION INSTRUCTIONS, EVALUATION AND RANKING, TERMS AND CONDITIONS OF THE RFP PROCESS, CONTRACT TERMS AND CONDITIONS, FORM OF PROPOSAL and RFP PARTICULARS, do hereby offer and agree to enter into an agreement with the Regional Municipality of Niagara to provide Ortho Acquisition as described herein.

**Table 1: Project Cost and Schedule Breakdown**

<table>
<thead>
<tr>
<th>Deliverables</th>
<th>Description</th>
<th>Lump Sum Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.2A</td>
<td>Ground Control Report Observation Files and Adjustment Report</td>
<td>$</td>
</tr>
<tr>
<td>2.2B, 2.2C, 2.2D, 2.2E</td>
<td>Digital Images, Photo/Flight Index, Camera Calibration Report, Complete Flight Reports Including Flight Planning Photo and Quality Assurance Reports</td>
<td>$</td>
</tr>
<tr>
<td>2.3A</td>
<td>Full Flight Orientation Files</td>
<td>$</td>
</tr>
<tr>
<td>2.4A</td>
<td>Updated DEM/DTM</td>
<td>$</td>
</tr>
<tr>
<td>2.4B, 3.4D</td>
<td>Ortho-rectified Digital Image Files in a 1km x 1km tiled scheme, Ortho-imagery quality assurance report</td>
<td>$</td>
</tr>
<tr>
<td>2.4C</td>
<td>Ortho-rectified Mosaics Image Files (municipalities and other participants)</td>
<td>$</td>
</tr>
<tr>
<td><strong>SUB TOTAL FOR TABLE #1</strong></td>
<td></td>
<td>$</td>
</tr>
<tr>
<td><strong>HST</strong></td>
<td></td>
<td>$</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td>$</td>
</tr>
</tbody>
</table>

**Table 2: Provisions: Optional Deliverables**

<table>
<thead>
<tr>
<th>Deliverables</th>
<th>Description</th>
<th>Lump Sum Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quick Ortho-Imagery</td>
<td>Direct geo-referenced “Quick ortho-images” of the main project area within 3 weeks of flying</td>
<td>$</td>
</tr>
<tr>
<td>Building Footprints Vector Product</td>
<td>Update of existing building footprints vector layer for new, changed, and demolished buildings, or entirely new building footprint layer.</td>
<td>$</td>
</tr>
<tr>
<td>Digital Terrain Model</td>
<td>Update the existing 1 meter contour supporting Digital Terrain Model (DTM) for the Niagara Region that corresponds to its jurisdiction</td>
<td>$</td>
</tr>
</tbody>
</table>

**COMPANY: \\
SIGNATURE:**
Appendix D – RFP Particulars

A glossary of terms is provided in Appendix H for reference throughout the RFP Particulars.

A. The Deliverables

1.1 Project Schedule

The entire project will be completed over the following time frame:

**Project Completion**

- Quick Ortho-imagery (optional product) ............................................ May 31, 2018
- All full Ortho-imagery files .................................................. October 31, 2018
- Ortho-mosaic files ............................................................... November 15, 2018
- All Other Defined Deliverables ................................................ January 31, 2019

Interim deliverable dates will be established for project components. The above dates are subject to change at the sole discretion of the Region.

1.2. Proponent Evaluation Team:

The below organizations are a list of intended participants who could be evaluating the submitted proposals and provide funding for the project. Evaluators will consist of any or all intended participants. The award is dependent upon the participant funding. **The participants will be sublicensing the deliverables from Niagara Region and award is contingent sufficient participation.**

All Participants (to be disclosed at award) are to be included as additional insureds on the supplier’s insurance.

- Niagara Peninsula Conservation Authority
- Niagara Region
- Niagara Parks Commission
- Niagara Region Broadband Network
- Niagara Region Police Service
- City of Niagara Falls
- City of St. Catharines
- City of Welland
- Town of Fort Erie
- Town of Grimsby
- Town of Lincoln
- Town of Niagara-On-The-Lake
- Brock University
- City of Port Colborne
- City of Thorold
- Town of Pelham
- Township of Wainfleet
APPENDIX D – RFP PARTICULARS

2. Project Deliverables

2.1. General

The intent of the project is to acquire digital stereoscopic aerial imagery, digital elevation data and to develop high quality, B&W, RGB colour, NIR, leaf and snow free, digital aerial ortho-imagery at a Ground Sample Distance (GSD) of 10 cm. with a horizontal and vertical absolute accuracy of ± 0.5 metres. The area of interest is the entire Niagara Region (See attached Map in Appendix G) and surrounding area. Digital index files will be provided and will govern the extent of the acquisition.

The lower accuracy, direct geo-referenced “Quick ortho-images” within 3 weeks of flying are optional deliveries of this project. Proponents must submit pricing for all Optional Deliverables listed in Table 2 on Appendix C – Pricing Form (to be included in the Pricing Envelope), however, Provisionals may be awarded after the Successful Proponent is awarded Table 1 and upon the ability to satisfy funding. The Region has the right to award Option 1, Option 2, Option 3, or all Options to the Successful Proponent.

The deliverables are summarized as follows:

- Ground Control and digital aerial photography;
- Mensuration, Aerial triangulation and associated reports;
- Stereo models and orientation parameters;
- Updated Digital Terrain Model and Ortho-rectified image tiles of the project area;
- Mosaics (compressed) of specified areas within the region.
- Direct geo-referenced “Quick ortho-images” (optional)

2.2. Ground Control/Aerial Photography

The following table outlines deliverables associated with the ground control and aerial photography component of the work.

Note: Aerial photography collected after May 15, 2018 requires regional approval prior to acquisition

<table>
<thead>
<tr>
<th>Item</th>
<th>Deliverable</th>
<th>General Description.</th>
<th>Notes</th>
</tr>
</thead>
</table>
| 2.2A | Ground Control Report observation files and adjustment report | - Survey Report on project Ground Control
- Horizontal and vertical observation files
- Network adjustment report for 6 degree UTM, Zone 17 NAD83,CSRS (2010) (Horizontal) and CGVD2013 Southern Ontario Adjustment (Vertical) | Item 2.2.3 |
## 2.2B Digital images
- GSD suitable to produce 10 cm. GSD ortho-imagery
- 80% forward overlap and 30% side lap
- Minimum sun angle: 30 degrees
- Timing: Spring 2018 when ground is snow free, trees leaf free, and shorelines ice free
- Geo-TIFF/JPEG2000 file format, B&W, RGB and NIR

## 2.2C Photo/ Flight Index
- Flight GPS data in ESRI Shapefile format with flight lines, photo centres, photo numbers, Date/Time, Speed, Heading and Altitude attached as attributes.
- Projection: UTM 6 degree, Zone 17
- Datum: NAD83 CSRS (2010)

## 2.2D Camera calibration reports
- MS Word & PDF format

## 2.2E Complete Flight reports including Flight planning, photo and quality assurance reports
- Report on, flight planning before/after flights, aerial photography acquisition and quality assurance in PDF & MS Word format.

### 2.2.1. Project Requirements for Ground Control/Aerial Photography

Industry standard specifications should be used for quality assurance and quality control procedures. It is preferred that all of the photography be acquired on a single day.

The datum and projection must be:
- NAD83 CSRS (2010), UTM, Zone 17 (Horizontal)
- Canadian Geodetic Vertical Datum CGVD2013 Adjustment (orthometric elevations)

### 2.2.2. Ground Control

Horizontal and vertical ground control points will be established (set, surveyed and targeted) by the Successful Proponent as required. Accuracy standards will be determined by the Successful Proponent in order to meet overall project specifications, see section 3: Data Accuracy and Delivery. Successful Proponent must meet and review the ground control component with Regional staff and provide map/plan of proposed locations for approval prior to flying The Region reserves the right to require additional control and targeted points. Regional staff may assist, if requested and under the direction of the Successful Proponent, in setting targets and ground control.

The identified accuracy, see section 3: Data Accuracy and Delivery, of ±0.5 metre (vertical and horizontal) at 95% confidence using the ASPRS Positional Accuracy Standards for Digital
Geospatial Data (2014) for the ortho-images will define and determine the required ground control production procedures.

Whatever procedures are employed, all source control, whether targeted ground control, untargeted photo ID points, or ground control derived from other existing sources must be delivered in a form such that their locations can be verified, tested, and re-used by the Region for future initiatives.

### 2.2.3. Aerial Photography

The imagery shall be collected with a digital camera. All cameras and lenses must have a current (less than three years old) calibration report. Valid calibration reports include ones produced by the original equipment manufacturers, USGS, or NRC.

Flight plans shall be provided in ESRI Shapefile format, prior to and after photography acquisition. Any discrepancies between the flight plan and the actual route beyond the allowable limits set out below must be accompanied by an explanation and justification. The shapefiles are to:

- show the start and end of all flight lines as a polylineZ shapefile
- show the planned and actual location of all photo centres as a pointZ shapefile
- be in the above defined projection and datum
- have attributes for line number and flying height in metres above sea level on the line shapefile
- have attributes for frame number and flight line number on the point shapefile (each line will have frame numbers starting at 1 representing the start of the flight line and incrementing in the direction of the flight path)

Flight lines and acquisition blocks should be limited to reduce significant sun angle differences (shadows) between adjoining/overlapping photos, which may impact the consistency in tonal differences when producing ortho-rectified imagery products and mosaics. All flight lines are to be in an easterly or westerly direction.

Allowable variations from the locations shown on the initial flight plan are:

- average flight line height above mean ground ± 3%,
- individual photo centres within 50 m in XY of their planned location

Exceeding these limits may be cause for rejection, in the discretion of the Region.

Digital imagery will be collected including stereo overlaps:

- forward overlaps of 80%
- lateral overlaps of 30%
- Average forward and lateral overlaps must not be less than 70% and 25% respectively

Raw imagery files shall meet the following requirements:

- The digital camera must have a radiometric range of at least 12 bits. Exposure should be adjusted to maximize the use of this range, without allowing saturation (except in unavoidable reflections).
APPENDIX D – RFP PARTICULARS

- Four spectral bands (red, green, blue and near infrared – RGB & NIR) must be acquired and provided.

- Digital cameras often acquire a panchromatic band at higher resolution than the multispectral bands, and use this to increase the multispectral band resolution by the process of “pan-sharpening”. If this is the case, then:
  - the panchromatic band shall be provided as a separate product;
  - raw multispectral bands shall be provided prior to being pan-sharpened; and.
  - the pan sharpened multispectral bands shall be provided.

All Deliverables shall be provided as uncompressed GeoTIFF and JPEG2000 files. The bit depth per band of the GeoTIFF/JPEG2000 files must equal or exceed the radiometric range of the sensor, and be a value readable by industry-standard software (16 bit is preferable, but 12 bit may be more economic and is readable by some software).

Spectral (RGB & NIR) deliverables will be provided as one 4-band GeoTIFF/JPEG2000 file.

The imagery shall be free of artefacts such as, but not limited to:
- Noticeable joins of image subsets (i.e. due to multi camera merging or pan sharpening processes in digital frame cameras
- Blurring due to camera motion effects not offset by sufficiently fast exposure, integration times or motion compensation in the aircraft
- Halo effect due to image processing algorithms
- Data dropouts due to sensor (camera or scanner) malfunction

Ground Sample Distance (GSD) is defined here as the nominal pixel size in ground units at the nadir point of the sensor plane. For this project the panchromatic and color GSD pixels of the final ortho-imagery must be at least 10cm or greater accuracy.

The nominal GSD must be at least 20% smaller than the final ortho pixel (i.e. for a final pixel size of 10 cm in the ortho-photo the GSD collected at the sensor must have a nominal size of 8cm or smaller). It is unacceptable to use a panchromatic GSD that is coarser than the final ortho pixel minus 20%.

Flying height used will meet the GSD specification required of the panchromatic and pan sharpened multispectral data.

The maximum speed over ground (SOG) shall be regulated to ensure there is no image smearing and to produce square pixels.

The imagery must have the following characteristics:

- Stereo coverage is required throughout the project area. Forward and lateral overlaps must be designed and executed to ensure that there will not be any stereo gaps. Any stereo gaps will be cause for rejection in the sole discretion of the Region.

- Cloud and cloud shadow free over land based features and wetlands.
• Snow free (however some snow cover may be acceptable, provided that the Successful Proponent obtains prior approval of the Region)

• Water bodies free of ice cover (however some ice cover may be acceptable so long as it does not extend onto the shorelines and the Successful Proponent obtains prior approval of the Region)

• No standing water (acceptable limits of standing water may be permitted, but require the prior approval of the Region)

• No visible dust, haze, or smoke (acceptable limits may be permitted, but requires prior approval of the Region)

• Leaf off (acceptable limits may be permitted, but requires prior approval of the Region)

• Sun must be at an azimuth of at least 30 degrees above the horizon

• Sun elevation angle below that which can cause noticeable hot spots that degrade the image quality within the neat stereo model portion of the imagery

• Consistent exposure and post processing so as to allow for a seamless tone match between resulting ortho-photos

• Minimized time difference between adjacent flight lines so as to minimize discrepancy between shadow positions at seams between images

It is preferred that all of the photography be acquired on a single day. Aerial photography collected after May 15, 2018 requires Region approval prior to acquisition

2.2.4. Quality Assurance and Acceptance of Photography:

The Successful Proponent is responsible for project management of and outsourcing the Quality Assurance and Quality Control of aerial photography and for the accuracy and quality assessment of final imagery to organizations/companies other than the original contractor or sub-contractor hired to complete these project tasks. Quality Assurance reports must be filed with the Region prior to undertaking subsequent processing or project tasks so these may be reviewed. Samples of aerial photography, scanned images, and final imagery will be supplied to the Region if requested.

Initial review and quality assurance of photography should be made within 48 hours of flight. Independent report on QA should be delivered to the Region within 7 days of flight. Unacceptable photography should be reflown within 10 days. Any flights after May 15, 2018 require prior approval by the Region. The Region reserves the right to supply its own image expert to assess and certify all aspects of deliverables. The QA report shall be provided and used as basis for acceptance and payment for the photography following the option of the review assessment and certification of image.
APPENDIX D – RFP PARTICULARS

The Region may cancel the project or any part thereof, if the Successful Proponent is unable to provide satisfactory photography. The Successful Proponent will be held solely responsible for all financial costs incurred up to acceptance of photography and also for liquidated damages for contract cancellation and award to a new Proponent.

2.2.5. Deliverables for Ground Control/Aerial Photography

2.2.5.1. Ground Control

Reference Sketches in PDF format showing geographic coordinates and UTM Zone, Easting, Northing and orthometric elevation (related to the appropriate datums) for every point used whether targeted in the field, photo identified or set monuments for ground control purposes.

A written report on the accuracy of all input control used, including its date of creation/acquisition and who it was created by (and if it was originally done for another project or client).

All points used as ground control must also be supplied in a shapefile format with attributes identifying the:

- The source of Geodetic control
- Ancillary methods used to verify accuracy
- The date the control points were placed (date of survey for surveyed points, date of image acquisition for points derived from existing imagery)

2.2.5.2. Flight reports and Photography

Items (in shapefiles, MS-Word/PDF and Image formats) include:

- The planned flight lines and photo center’s

- The actual completed flight plan listing:
  - Dates and times of acquisition for each frame
  - Altitude
  - Air speed
  - Aperture settings
  - Shutter speed for frame based

- Report on discrepancies between the two shapefiles if applicable

- Report on actual flight conditions at time of flight including:
  - Cloud cover
  - Ground conditions
  - Atmospheric conditions
  - Completeness of coverage

- Original Image files in:
  - Non-compressed GeoTIFF/JPEG2000 files
  - Multi-spectral bands as one 4-band file
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- Panchromatic band as a separate file

2.3. Mensuration/Aerial Triangulation

Table D2

<table>
<thead>
<tr>
<th>Item</th>
<th>Deliverable</th>
<th>General Description. Refer to project specifications, requirements &amp; deliverables sections</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.3A</td>
<td>Full Flight Orientation Files</td>
<td>Input &amp; output files for Aerial Triangulation in industry standard format such as Pat-B. Model and orientation information, Image ID, perspective centre, omega, phi and kappa parameters in a comma delimited ASCII file. All files must be provided to allow stereo models to be setup in Erdas LPS, DAT-EM and BAE Photogrammetry Suite software. Reports must be in PDF &amp; MS Word format</td>
<td>Item 2.3.2</td>
</tr>
</tbody>
</table>

2.3.1. Specifications & Project Requirements for Mensuration/Aerial Triangulation:

Successful Proponent’s must stipulate the specification(s) that will be employed. These may include but not be limited to:

- Ontario Specification for GPS Control Surveys, published by Ontario Ministry of Natural Resources;
- Ontario Government Specifications for the Delivery of Digital Topographic Data and Cartographic Representation Products at Medium Scales;
- Natural Resources Canada’s Accuracy Standards for Positioning Version 1.0 (1997);
- National Topographic Data Base Standards and Specifications;
- Natural Resources Canada’s Interdepartmental Committee on Air Survey (ICAS) Specification for Aerial Photography (2000);
- FGDC Geospatial Positioning Accuracy Standards Part 3: National Standard for Spatial Data Accuracy;
- ASPRS Positional Accuracy Standards for Digital Geospatial Data (Edition 1, Version 1.0.-November, 2014)

Accuracy expectations for the ortho-imagery are to support the development and maintenance of vector data layers for 1:2000 scale mapping, and as a visual backdrop to the corporate GIS vector layers. Therefore, minimum accuracy requirements must be in keeping with these requirements.
2.3.2. Deliverables for Mensuration/ Aerial Triangulation:

Regardless of the sensor employed and the techniques used to orient the imagery, sufficient information is required to allow for full use of the source data in a variety of standard, commercial imagery and geographic information systems application software.

This must include:

- the results of aerial triangulation in an industry standard format such as:
  - Pat-B input and output files in ASCII (txt file) format
  - All stereo orientation files, suitable for use in Erdas LPS, DAT-EM, BAE SocetSet Softcopy
  - Photogrammetry software. These files must allow import of the stereo models into a stereo workstation. They shall at a minimum include:
    - adjusted ground values for the above image points (Point ID, X, Y, Z in metres)
    - the co-ordinates and rotations for all photo centres (Image ID, X0,Y0, Z0, Omega, Phi, Kappa, position in metres (UTM projection) and angles in decimal degrees)

- Image orientation data shall be accompanied with a report that details:
  - Procedures followed
  - Software employed
  - Findings on the accuracy achieved with a clearly stated confidence level for both the orientation data and for features that can be extracted from the image and orientation combination (i.e. the Aerial Triangulation may have a different accuracy level than what a road digitized from the stereo model would allow)
  - A statement that the imagery and its associated orientations are fit for the purposes outlined in these guidelines with regard to all data deliverables
  - A statement regarding any deficiencies in the imagery or accuracy, their causes and plans to mitigate the deficiencies.

2.4. Digital Elevation/Terrain Model & Ortho-rectified Images

Table 4

<table>
<thead>
<tr>
<th>Item</th>
<th>Deliverable</th>
<th>General Description. Refer to project specifications, requirements &amp; deliverables sections</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.4A</td>
<td>Updated DEM/DTM</td>
<td>▪ Existing specifications, structure and accuracy <strong>must</strong> be maintained.</td>
<td>Item 2.4.1</td>
</tr>
<tr>
<td>2.4B</td>
<td>Ortho-rectified Digital Image Files in a 1km x 1km tiled scheme.</td>
<td>▪ 10cm GSD tiled GeoTiff format. Tiff world files (TFW) are to be included. Images must be balanced to provide consistent tones when a mosaic is created.</td>
<td>Item 2.4.3 &amp; 2.4.4</td>
</tr>
<tr>
<td>2.4C</td>
<td>Ortho-rectified Mosaics Image Files</td>
<td>▪ ECW and JPEG2000 format. Approximate compression 20:1 ▪ Extents of Municipal mosaics will be provided in digital format.</td>
<td>Item 2.4.3 &amp; 2.4.4</td>
</tr>
</tbody>
</table>
2.4.1. Specifications & Project Requirements for Digital Elevation/Terrain Model:

Niagara Region will provide a DEM/DTM data for ortho-rectification. Points are on a 40m (collected) and 10m (interpolated) grid and coded break-lines are included. Horizontal and vertical accuracy is ± 0.5m.

The Successful Proponent must evaluate the supplied DEM/DTM and provide the Region with written confirmation, prior to contract award that is of suitable accuracy, structure and content to meet all the requirements to produce the ortho-photography deliverables.

If the Regional data is not deemed suitable, the Successful Proponent must offer other collection technologies and include associated acquisition prices as an alternative means of providing a DEM/DTM for ortho-rectification.

The Successful Proponent must update and/or supplement the existing DEM/DTM. The existing structure of the DEM/DEM and the types of features collected must be maintained. A sample of the existing DEM/DTM will be provided with this RFP.

Coded break-lines must be preserved to facilitate improved ortho-rectification. The surfaces of overpasses, bridges, dams, roads and other features that affect the vertical accuracy and visual consistency of the image deliverables must be captured as break-lines and used for ortho-rectification process.

Feature break lines must include:

- Major Ditch centerlines;
- Marsh/Swamp outlines;
- Stream centerlines;
- Shorelines and major rivers;
- Water Bodies;
- Large Dams (tops and bottoms);
- Bridge Decks;
- Significant Driveways / Access ways;
- Railroad centerline;
- Road Edge: paved, gravel, curbed and under construction;
- Large Headwalls;
- Large Retaining Walls;
- Gullies;
- Ridge breaks;
- Top and base of significant piles;
- Top and bottom of bridges, overpasses and ramps top and bottom of quarry / cliff edges;
- Tops and bottoms of slopes;
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- General break lines coded as “pt2pt”
- Culverts

and any other features required to produce a correct representation of the ground surface.

Particular attention must be given to areas of abrupt linear changes in elevation, especially the Garden City Skyway bridge, International bridges, Niagara Escarpment, bridges, buildings, cliffs, Welland Canal, streams and lake shorelines, and additional elevations should be collected to ensure correct ortho-rectification.

The resulting updated DEM/DTM must have horizontal and vertical accuracy equal or better than the existing DEM/DTM (+/- 0.5m). Successful Proponent will be required to undertake quality control procedures and correct possible elevation inconsistencies inherent within data inputs being supplied as part of this project. The Region may provide check-points (maximum 200) and require the Successful Proponent to read these points for analysis and accuracy checks.

Edits may be required for areas of significant change.

Automatically generated terrain models are acceptable as long as appropriately accurate surface models result and final imagery meets accuracy requirements.

2.4.2. Specifications & Project Requirements for Ortho-rectification:

The ortho-images are to be used to support the development and maintenance of vector data layers for 1:2000 scale mapping, and as a visual backdrop to the corporate GIS vector layers. Accuracy, clarity and consistency of the imagery must be sufficient to support these functions.

Industry standard specifications should be used for quality assurance and quality control procedures for the ortho-image tiles.

2.4.3. Proposal Requirements for Ortho-rectification:

Each Proposal must:

- Ensure that each and every aerial photograph is used in ortho-rectification procedures.

- Ensure that the ortho-images have square pixels with a maximum 10 cm. ground sample distance. The imagery will be collected such that the raw, panchromatic uncorrected source imagery has a GSD of not more than 80% of the final 10 cm ortho-photo pixel size. This is to ensure that no significant information is lost during the various production steps and that the overall image quality is of a high standard.

- Detail the QA procedures to be employed in final check of imagery.

- Detail the imagery accuracy and quality standards that will form the basis of acceptance of final imagery.
• Provide detailed explanations regarding the computation of image accuracy and the expected accuracies of final deliverables.

• Provide samples of each file format after initial processing for Regional approval before commencement of processing for remaining images.

• Define the formula being employed to compute file sizes and clearly state expected file sizes of each orthoimagery tile for each delivery format, and total amount of storage capacity required to host the imagery.

• Ensure appropriate seam lines are selected so that images are seamlessly mosaicked before adjoining images are split up into orthoimagery tiles for delivery.

• Ensure that the tile dimension is an integral multiple of the ortho-pixel size. There may not be any partial pixel overlap or gap along the edges of the tiles.

• Indicate whether seam lines will be manually generated or generated automatically.

• Ensure that final imagery appears exactly the same in all delivery formats.

• Indicate the specific method for radiometric balancing that will be performed to ensure contrast within and across images is well balanced;

• Ensure that image tone and degree of contrast is uniform in order for detail to show clearly in shadow and highlighted areas, as well as in the intermediate density areas;

• The ortho-images shall not have any visible colour shifting, contrast patterns or colour-offsets which results in degraded image quality. If some form of dodging of the imagery is required in order to achieve this goal, it shall not leave any artifacts such as lighter or darker toned halos around objects

• Ensure that all tiles must contain valid data. There should be no null or zero values in any tile produced. Tiles containing null or zero values will be rejected.

• Ensure that specular reflection from water surface should be avoided wherever possible in the selection of photographs to be used. In the event that some reflection cannot be avoided, the water area affected should be retouched at some stage in the ortho development so that these areas have a similar tone to other water areas on the sheet. In no case shall retouching remove or alter aquatic features including islands, docks, marsh areas, silt plumes, water currents etc.

• Use a Cubic Convolution method for image resampling.

Each Proposal must:

• Indicate whether there exist other specifications in Canada/Ontario for ortho-rectification and related ortho-imagery procedures or for checking the horizontal and vertical accuracy of ortho-rectified imagery.
Outline any possible image viewing problems that may arise or which Niagara Region should be made aware of when using the required file formats in commercial products including ArcGIS Desktop, ArcGIS Pro, ERDAS, MicroStation, Manifold, AutoCAD and related products.

2.4.4. Quality Control and Quality Assurance (QA/QC) for DEM/DTM and Ortho-images:

The Successful Proponent is responsible for project management of and outsourcing (if required) the QA/QC of aerial photography and for the accuracy and quality assessment of final imagery to organizations/companies other than the original contractor or sub-contractor hired to complete these project tasks.

QA/QC reports must be filed with the Region prior to undertaking significant processing and generation of ortho-imagery products so these may be reviewed. Samples of final imagery must be supplied to the Region. The Region reserves the right to supply its own image expert to assess and certify final image quality and accuracy. These reports should include but are not limited to:

- The hardware used to produce the data sources (manufacturer, make and model of Aerial Camera, etc.)
- The software products used at the various production stages including manufacturers product names.
- The source of all ground control points, their geographic and UTM coordinates their type of control and their accuracy classification.
- The QA/QC steps carried out and the findings of these steps
- The steps undertaken to mitigate any problems found during the QA/QC to ensure compliance with the guidelines
- The results of independent checks of the positional accuracy of all data layers and deliverables. Check points (targets and other photo identifiable points) should be used to verify the horizontal and vertical accuracy of the digital elevation models and all other deliverables.
- Shapefiles must be tested to ensure that they are readable and all data is complete:
  - Have attributes populated with valid data
  - Are topologically clean
  - Match geometrically to other layers as appropriate
- All ortho-rectified image tiles must be inspected to ensure that they meet the image quality guidelines;
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- Mosaics of ortho-rectified image tiles must be inspected to ensure that there are no problems with matches across tile boundaries.

- GeoTIFFs must be tested to ensure that all files (100%) are:
  - Populated with valid image data
  - Have complete GeoTIFF headers
  - Cover the correct area without gaps or overlaps
  - Seamlessly balanced with all others

2.4.5. DEM/DTM and Ortho-images deliverables:

Deliverable for the DEM/DTM and ortho images must include:

- Updated DEM/DTM in Esri shapefile and Autocad dwg (Release 13) formats;
- Ortho-rectified Digital Image Files in a 1km x 1km tiled scheme and in a Geo-TIFF format.
  - Layout of tile partitions with tile/file naming convention using a grid that employs image coordinates of lower left image pixel and UTM coordinates. (e.g. Tile/file name of "54408540" would represent UTM-X 544,000 and UTM-Y 4,854,000). Tiles will be 1km2 and will match existing tile index used by the Region. The tile index will be provided in digital format.
  - Colour and seam balanced mosaics in ECW and JPEG2000 format (20:1 compression) of all 12 municipalities in Niagara plus other areas as defined.
  - The extents of mosaics will be provided in digital format.
  - Ortho-imagery and DEM/DTM quality control & assurance reports

3. Data Accuracy and Delivery

3.1. Accuracy:

All mapping deliverables must adhere to the ASPRS Positional Accuracy Standards for Digital Geospatial Data (2014).

The ortho-images and DEM must have an absolute accuracy of ± 0.5 meter (horizontal and vertical) based on a 95% confidence level. All map data shall be tested against data of a known higher accuracy in order to verify compliance with the ASPRS (2014) requirements. The number of ground control points used for testing shall conform to the recommended number of checkpoints in the ASPRS (2014) accuracy standard for the project area.

Any data set found to be outside the required accuracy will be rejected and will result in further more extensive testing, at the Successful Proponent's expense for another data set that meets the accuracy requirements.

The Successful Proponent must supply a statement, certified by an Ontario Land Surveyor or Certified Photogrammetrist, that the specified accuracies have been met. This statement must include the wording:

This data set was tested to meet ASPRS Positional Accuracy Standards for Digital Geospatial Data (2014) for a ____ (cm) RMSEx / RMSEy Horizontal Accuracy Class. Actual positional
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Accuracy was found to be RMSEx = ___ (cm) and RMSEy = ___ cm which equates to Positional Horizontal Accuracy = +/- ___ at 95% confidence level.

This data set was tested to meet ASPRS Positional Accuracy Standards for Digital Geospatial Data (2014) for a ___ (cm) RMSEz Vertical Accuracy Class. Actual NVA accuracy was found to be RMSEz = ___ cm, equating to +/- ___ cm at 95% confidence level. Actual VVA accuracy was found to be +/- ___ cm at the 95th percentile.

3.2. Delivery format and media:

Industry standard specifications should be used for delivery of raster and vector files.

**Image File Formats:** GeoTiff (.TIF) and World File (.TFW)
8 bit (256 greyscale) for individual tiles
1km x 1km
JPEG2000 and ECW (ER Mapper) for Municipal Mosaics

**Vector File Formats:** ESRI shapefile formats and Autocad Release 13
(e.g. flight lines, photo centres, ortho index with appropriate tile names/filenames, point and line DEM files).

**Reports & ancillary files:** Adobe PDF, MS-Word and ASCII (txt file, comma delimited) formats

**Vertical Datum:** CGVD2013 Southern Ontario Adjustment (Vertical)

**Horizontal Datum:** NAD83, CSRS (2010)

**Projection:** 6° UTM Zone 17

**Grid layout:** layout of tile partitions with tile/file naming convention using a grid that employs image coordinates of lower left image pixel and UTM coordinates. (e.g. Tile/file name of "54408540" would represent UTM-X 544,000 and UTM-Y 4,854,000). Tiles will be 1km x 1km and will match existing tile index used by the Region. The tile index will be provided in digital format.

**Delivery Media:** External Hard Drive(s), USB-3 connection.
Proponent will provide hardware

The Successful Proponent must provide an estimate of the total amount of storage capacity required to store and host all the deliverables.

Inspection and quality control will be carried out by staff of the Region, possibly assisted by their own image and other experts.

4. Other Requirements

4.1. Provisionals: Optional Deliverables

The Provisional Optional Deliverables are to be submitted in the first (Technical) Envelope, however, they will not be evaluated for award.
Proponents must submit pricing for all Optional Deliverables listed in Table 2 on Appendix C – Pricing Form (to be included in the Pricing Envelope), however, Provisionals will be awarded contingent to receiving funds from participants as outlined. **The Region has the right to award Option 1, Option 2, Option 3, or all three Options to the Successful Proponent.**

**Optional #1: Quick Ortho-Imagery**

1. Some systems are capable of using direct measurements for the exterior orientation parameters of each single image at the moment of camera exposure. This allows for minimal ground control and for the aero-triangulation step to be bypassed producing directly geo-referenced mapping products albeit at lower accuracies. Some of these systems can produce ortho-photos with days of imagery acquisition. This document refers to this process as “Quick ortho-images”.

The Region is interested in obtaining proposals for producing, lower accuracy, and direct geo-referenced “Quick ortho-images” within 3 weeks of flying as an optional delivery of this project. The area for these images are shown as “project area” in Appendix G Project Map.

The Successful Proponent must provide all details on the process that will be used for this component, if quoted on, and attach information on the expected accuracies and any other issues that may affect the quality of this product

**Optional #2: Building Footprints Vector Product**

1. Niagara Region requires a mapping contactor to create a vector data set of new, updated and removed “building footprints” from its 2018 aerial photography. See “Appendix G” showing the extent of the Niagara Region and areas that are built-up. The Niagara Region currently has a vector feature dataset of building footprints. They were originally digitized from stereo imagery acquired in 2006. It was subsequently updated in 2011 using Niagara Region aerial photography acquired in 2010.

2. Specifications for these feature extractions are:

   a. Digitize all new buildings/structures (e.g. buildings, sheds, outbuildings, garages, silos, etc.) using stereo-photography methodology from digital aerial photography acquired as part on the 2018 Niagara Ortho-Photography Acquisition Project.
   b. Building and structures greater than 50 sq. meters must be captured. Buildings may be “squared”; however, the general shape of the building must be maintained. See example diagram
   c. Digitize the building roofline and provide the average elevation as an attribute. A feature code of BLR must be attached as an attribute.
   d. Provide the files in ERSI shapefile format
   e. Use a NAD83 CSRS (2010) datum and a UTM, Zone 17 projection. Elevations must be shown above Mean Sea Level
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f. Review and update the existing feature dataset of building footprints collected in 2006 and updated in 2011. Capture and significant additions and changes to the existing building structure. Remove any building that no longer exist. Niagara Regions will provide the existing 2011 shapefile.

3. Niagara Region will perform quality checks on random areas of the dataset. If any errors are found the entire file will be returned for review and correction of missing or incomplete data. Vendor will be given 10 business days to review the file and correct the errors or omissions.

4. A map showing Niagara Region boundaries and built-up areas is included as Appendix G

Optional #3: Digital Terrain Model

1. Specifications
The specifications detailed in this section define the standards which are apply to the photogrammetric compilation and preparation of the elevation data. Any data that fails to meet spec will be rejected and will require resubmission.

1.1 General Guidelines/ Scope of Work
It is intended that the derived DTM support:

a. pre-engineering survey and design;

b. the production of municipal planimetric mapping and detailed topographic mapping at a scale of 1:2,000 with a contour interval of no less than 1.0 meter; and

c. the development of large scale hydrology mapping and associated GIS data.
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The DEMs created from the terrain data and the derivative planimetric mapping will be used to support ongoing surface water inventory and floodplain mapping efforts, and related water resources management applications. Therefore the supplied terrain data must be of sufficient quality and accuracy and be structured (density) to support these needs. **As such, the final data products must be accompanied by signed professional stamp of an Ontario Land Surveyor (OLS) and/or a certified Photogrammetrist (ASPRS).**

1.2 Horizontal Reference System (Datum), Map Projection and Vertical Datum

The datum for the existing input DTMs is NAD83-ORIG, rather than NAD83-CSRS (2010). The specification required NAD83-CSRS (2010) so transformation is required to be precise.

1. The horizontal projection and datum for all the data deliverables will be 6-degree Universal Transverse Mercator Projection grid coordinates on NAD83 – CSRS (2010) (Canadian Spatial Reference System). In accordance with GO-ITS 45.1 – North American Datum 1983 (NAD83), all information will be related to NAD83-CSRS (2010) realization that is officially approved in Ontario.

2. The vertical datum to be used for data deliverables shall be mean sea level as established by the Geodetic Survey of Canada (Canadian Geodetic Vertical Datum CGVD2013 Version).

3. The Geoid model to be used will be the Canadian Gravimetric Geoid 2000 (CGG2000) along with the height transfer software HTv2.0 which relates GPS derived (ellipsoidal heights) to orthometric heights (heights above mean sea level).

4. All data deliverables will be expressed in UTM Easting and UTM Northing and Elevation in untruncated metres.

5. Benchmarks shall be obtained from the provincial geodetic control database known as COSINE for the required horizontal and vertical control related to NAD83 or CGVD2013 to meet the requirements of this project (for any additional ground control, quality control and quality assurance purposes).

1.3 Data Accuracy

1. All mapping product data deliverables must adhere to the following accuracy guidelines defined in Section 3.1 Accuracy.

2. Any data set, found to be outside the required accuracy will be rejected and will result in further more extensive testing being required for other data sets except for those areas of obscured view. How obscured areas will be handled is further clarified in Section 1.5.
1.4 Additional Ground Control

1. Any data used as an additional control source that is derived from previous mapping data (stereo imagery, orthos, shapefiles, etc) must have an accuracy that is at least as good as the required accuracy for the final products.

2. Any new or existing ground control points that are used and produced by field survey must have an accuracy that is at least three times better than the required mapping accuracy for the area(s) it is to be used for controlling.

3. All points used as additional ground control must be supplied in ESRI shapefile format with attributes identifying the:
   a. The source of Geodetic control and any ancillary methods used to verify accuracy
   b. The date the control points were placed (date of survey for surveyed points, date of image acquisition for points derived from existing imagery)
   c. Accuracy specification achieved for the control points

1.5 Vector Elevation Data Capture

1. Elevation data will include mass point datasets for both the operator interpreted spot heights that have been stereo-digitized, and a linearly interpolated post spacing derivative no greater than ten times the specified accuracy.

2. Upon award of contract the Niagara Region will work with the successful proponent to determine the layering specifications (breakline coding) based upon review of the existing DTM datasets.

3. Elevation data will include breakline data for any hydrologically significant features to support the development of a hydrologic terrain surface that meets the project accuracy specifications. A hydrologic terrain surface is defined here as a 3D elevation surface created from elevation points and line and/or polygon breaklines which accounts for any barriers to hydrologic flow. Breakline features must be captured for the following features:

   a) Water body Features
      i. Shorelines of water bodies and islands with constant elevation (lakes, reservoirs, etc.) be delivered as closed polygons with an elevation reflecting the water elevation at time-of-capture.
      
      ii. Surface water features (such as wide rivers) having a width of greater than 5x the desired accuracy level for the project shall be considered a polygonal water feature.

      iii. Includes Lake, Canal, Reservoir, River, Liquid Waste, Pond, Beaver Pond, and Side Channel ‘Waterbody’ feature types as defined by the ‘MNR Large Scale Data Capture Specifications for Hydrographic Features’ referenced in Section 2.4.1 of this document where applicable to defining the terrain at the intended mapping scale and accuracy.
iv. Includes *Island ‘In-Stream Obstacles or Irregularities’* feature type as defined by the ‘MNR Large Scale Data Capture Specifications for Hydrographic Features’ referenced in Section 2.4.1 of this document where applicable to defining the terrain at the intended mapping scale and accuracy.

c) Road Features
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i. Road features, not including bridges and overpasses, will be captured as edge of pavement breaklines as required to create a hydrologically correct digital terrain model.

d) Overpasses and Bridges
   i. The surface of overpass and bridge features will be captured as breaklines.

e) Ditches and other constructed features
   i. Linear surface water features and associated conduits that impact hydrologic flow.

2. Obscured Areas
   a. These are defined as vegetated (or in some rare cases densely shadowed) areas that are considered obscured to the extent that adequate vertical data cannot be clearly determined in order to accurately define the DTM.

   b. These are the only features that may be captured as either a 2D or 3D closed polygon.

   c. These features are for reference information indicating areas where the vertical data may not meet the data accuracy requirements due to heavy vegetation.

3. General Breakline Features
   a) In areas where the mass point elevation data and the above breakline features are not sufficient to create a hydrologically correct DTM, general topographic features such as ridges, valleys, top-of-banks, etc. that help provide better surface representation will be captured as general breaklines of varying elevations.

4. Contours
   a. Contours shall be developed by using a combination of elevation mass points, polygons, and breaklines to generate a TIN.

   b. Contours at the desired interval will be extracted from the TIN without the application of any smoothing, splining, or other modifications to the contour.

   c. If the contours show an area to be in error or suspect, the input mass points and breaklines must be reviewed and edited as appropriate prior to rebuilding the TIN and regenerating the contours.

   d. The contours must be a true reflection of the TIN.

   e. Contours should only be generated at an interval that is two or more times greater than the accuracy standard of the least accurate of features used to build the TIN.

   f. The contours shall have an attribute to indicate if it is an index or intermediate contour, a depression contour, or if it is in an obscured area.

5. The combination of the above elevation features (mass points, breaklines, and obscured areas), shall be referred to herein as the Digital Terrain Model. This
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model shall only consist of ground based features with the possible exception of the obscured areas polygons.

B. Material Disclosures

Qualified Proponents are those which have been in operation, supplying services as described herein, to organizations of the size and complexity of the Niagara Region, for more than three (3) years under the same name.

1. Additional Recommendations
Proponents are encouraged to submit any value added recommendations for consideration by the Region.

In the event that a prepared Proposal does not precisely and entirely meet the requirements of this Request for Proposal, the Region reserves the right to enter into negotiations with the selected Proponent(s) to arrive at a mutually satisfactory arrangement with respect to any modifications to the Proposal.

2. Compliance
Alternative Proposals may be considered however, any deviations to the Region’s RFP document must be clearly defined and are subject to acceptance or rejection by the Region in its discretion. Absence of comment will be assumed to indicate full compliance. Proponents are encouraged to offer comments that clarify the content and intent of their Proposal.

3. Joint Proposals
In the event that a joint Proposal is submitted on behalf of two or more companies, the name and role of each participant in the joint Proposal must be clearly identified and the document signed by an authorized officer of each company.

If a joint Proposal is to be considered it will be necessary for one of the companies listed in the document to be named as the prime contractor and to accept responsibility for the level and quality of service provided and coordinate services as required by the Region.

4. Progress Payments
There will be three progress payments for project deliverables as outlined in the table below:

<table>
<thead>
<tr>
<th>Item</th>
<th>Deliverable</th>
</tr>
</thead>
</table>
| All items in Table D1 | • Ground Control  
| | • Flights and aerial photography acquisition |
| All items in Table D2 | • Mensuration and Aerial Triangulation  
| | • Flight Parameters Report  
| | • Quality Assurance Report  
| | • All Aerial Triangulation Files and Reports |
| All items in Table D3 | • Ortho-rectified Digital Image Files  
| | • Ortho-imagery Quality Assurance Report  
| | • Compressed mosaics |
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Should the agreement covering the project be terminated before the project is complete, and partial payments have been paid by Region, the work associated with this invoice or invoices will become property of the Region. The Successful proponent will transfer this work to the Region on a timely basis.

C. Mandatory Requirements

1. **Form of Proposal (Appendix B)**

Each proposal must include a Form of Proposal (Appendix B) completed and signed by an authorized representative of the proponent.

2. **Pricing Form (Appendix C)**

Each proposal must include a Pricing Form (Appendix C) completed according to the instructions contained in the form.

3. **Proposal Security**

*Not required*

4. **AODA Standards of Accessibility Compliance**

Information and communications (without limitation, documents, materials and presentations) provided to Niagara Region as part of the Deliverables, which shall be posted to Niagara Region’s website shall be provided in an AODA compliant format, specifically without limitation, meaning that the said documents must conform to World Wide Web Consortium Web Content Accessibility Guidelines (WCAG) 2.0 Level AA.

5. **Qualification Requirements**

Qualified Proponents are those which have been in operation, supplying services as described herein, to organizations of the size and complexity of the Niagara Region, for more than three (3) years under the same name.

D. Rated Criteria

1. **Summary of Rated Criteria**

The following is a summary of the rated criteria and weightings for the evaluation of proposals. If a minimum threshold is identified, proponents who do not meet the minimum threshold score will not proceed to the next stage of the evaluation process.
<table>
<thead>
<tr>
<th>CRITERIA</th>
<th>Weighting %</th>
<th>Points (0-10)</th>
<th>Weighted Points</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. PROPOSAL (first envelope)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project Manager &amp; Senior Staff (5%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Qualifications specific to project; a description of the consulting team, the lead persons,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>and the relevant experience and qualifications of each individual should be included.</td>
<td>5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technical Support (5%) (including sub consultants)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Past experience on similar projects and availability and knowledge of Region</td>
<td>5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experience and Past Performance Record on Regional and/or Similar Projects (10 %)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Responsiveness and On-Time deliverables to Project Related Requests</td>
<td>5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Three (3) references where contracts have been successfully implemented with similar</td>
<td>5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>objectives, size and scope, as detailed in this document, within Ontario shall be provided</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Understanding of Project (65%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Approach and methodology</td>
<td>10%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Innovation</td>
<td>5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Compliance with Terms of Reference</td>
<td>20%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Schedule and Detailed Work Plan</td>
<td>10%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Concepts/Options/Alternatives considered</td>
<td>10%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• QA/QC policy</td>
<td>10%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SUBTOTAL – Technical Proposal</strong></td>
<td>85%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proponents must score a minimum score of 70% (59.5/85) in Step 1: Technical Proposal (first envelope). Proposals that do not achieve the minimum score shall not be evaluated further.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2. FEE PROPOSAL (second envelope)</strong></td>
<td>15%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>100%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
E. Evaluation and Ranking Method

The Provisional Optional Deliverables are to be submitted in the first (Technical) Envelope, however, they will not be evaluated for award.

Proponents must submit pricing for all Optional Deliverables listed in Table 2 on Appendix C – Pricing Form (to be included in the Pricing Envelope), however, Provisionals may be awarded after the Successful Proponent is awarded Table 1 and upon the ability to satisfy funding. The Region has the right to award Option 1, Option 2, Option 3, or all Options to the Successful Proponent.

Proponents must score a minimum score of 70% (59.5/85) in Step 1: Technical Proposal (first envelope). Proposals that do not achieve the minimum score shall not be evaluated further.

Subject to the Region of Niagara’s reserved rights and privileges set out in the Request for Proposals, the Contract shall be awarded to the compliant Proponent who has:

(a) met the minimum score;
(b) the highest overall total evaluation score.

The ranking of proponents will be based on the total score calculated by adding the pricing points to the total points for rated criteria.

\[ \text{proponent's total score} = \text{total points for rated criteria} + \text{pricing points} \]

Pricing is worth 15 points. The proponent’s price is based on the Pricing Form, Sub Total from Table #1.

The pricing points for each proponent will be determined based on a relative pricing formula:

\[ \frac{\text{lowest price}}{\text{proponent's price}} \times \text{weighting} = \text{proponent's pricing points} \]

<table>
<thead>
<tr>
<th>Scoring Category</th>
<th>Description</th>
<th>Numeric Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fail</td>
<td>Requirement is not met or is not acceptable.</td>
<td>0</td>
</tr>
<tr>
<td>Poor</td>
<td>Minimally addresses the component, but one or more major considerations of the component are not addressed.</td>
<td>1 - 3</td>
</tr>
<tr>
<td>Fair</td>
<td>The response addresses some aspects of the component, but minor considerations may not be addressed.</td>
<td>4 - 6</td>
</tr>
</tbody>
</table>
### APPENDIX D – RFP PARTICULARS

<table>
<thead>
<tr>
<th>Good</th>
<th>The response addresses the component and provides a reasonably good quality solution.</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Good</td>
<td>There is a high degree of confidence in the proponent’s response as a proposed solution to address the component.</td>
<td>8 - 9</td>
</tr>
<tr>
<td>Exceptional</td>
<td>The proposed solution goes above and beyond the requirements as well as provides a high degree of confidence in its effectiveness.</td>
<td>10</td>
</tr>
</tbody>
</table>
Appendix E – Conditions of Award

The selected proponent must satisfy the following conditions and provide the following information within 14 days of the notice of selection:

1. **Certificate of Insurance**
   The selected proponent must provide Niagara Region with a Certificate of Insurance acceptable to Niagara Region and, if requested by Niagara Region, certified copies of the insurance policies. The Certificate of Insurance must comply with the insurance requirements outlined in the Contract Terms and Conditions (Appendix A) and must be on Niagara Region’s form of Certificate of Insurance, which can be found on Niagara Region’s website – [www.niagararegion.ca/business/fpr/cert-insurance.aspx](http://www.niagararegion.ca/business/fpr/cert-insurance.aspx). If the Certificate of Insurance is provided in a non-original form (e.g. a facsimile, photocopy or scanned electronic copy), the proponent acknowledges and agrees that Niagara Region is fully entitled to treat any such Certificate as an original and that the proponent will be responsible for the accuracy and validity of the information contained therein. If required by Niagara Region, certified copies of all the above-mentioned policies shall be delivered to Niagara Region. All subsequent policy renewals and certificates of insurance thereafter, during the time that the Contract is in force, shall be forwarded to Niagara Region within fifteen (15) days of their renewal date.

2. **Workplace Safety and Insurance Board Clearance**
   The selected proponent shall provide:
   
   (a) A valid, current Clearance Certificate declaring that the selected bidder is registered with Workplace Safety and Insurance Board ("WSIB"), and has an account in good standing; or
   
   (b) A Letter of Good Standing issued by WSIB.

   If WSIB coverage is not required by law to be carried by the selected proponent, the selected proponent shall provide one of the following (as the case may be):
   
   (a) An Exemption Letter from WSIB, satisfactory to Niagara Region’s Director of Legal and Court Services;
   
   (b) An Independent Operators Status Certificate issued by WSIB; or
   
   (c) Such further and other evidence as may be satisfactory to Niagara Region’s Director of Legal and Court Services.

   In addition to the indemnification provided by the selected bidder elsewhere in this RFP, the selected bidder agrees to indemnify Niagara Region and its respective elected officials, directors, officers, agents, employees, and volunteers, successors and assigns.
APPENDIX E – CONDITIONS OF AWARD

for all losses, claims, expenses (including reasonable legal fees) or other charges related to the selected bidder’s status with WSIB.
Appendix F – Bid Irregularities

NOTE: In this Appendix, references to “bids” shall be interpreted to mean “proposals” and references to “bidders” shall be interpreted to mean “proponents”.

RESPONSES FOR ADMINISTERING IRREGULARITIES CONTAINED IN BIDS

<table>
<thead>
<tr>
<th>IRREGULARITY</th>
<th>RESPONSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Late Bids.</td>
<td>Automatic rejection. Returned unopened to the bidder.</td>
</tr>
<tr>
<td>3. Insufficient Financial Security</td>
<td></td>
</tr>
<tr>
<td>A) No Bid Deposit, uncertified cheque, or financial security not an original (e.g. a photocopy or a facsimile of a financial security).</td>
<td>Automatic rejection.</td>
</tr>
<tr>
<td>B) Amount of financial security is insufficient:</td>
<td>Automatic rejection.</td>
</tr>
<tr>
<td>i. Amount of security is expressed as a percentage of the total bid sum.</td>
<td>Automatic rejection, unless in the opinion of Procurement and Strategic Acquisitions the insufficiency in the financial security is de minimus (trivial or insignificant).</td>
</tr>
<tr>
<td>ii. Amount of security is expressed only as a dollar figure.</td>
<td>Automatic rejection.</td>
</tr>
<tr>
<td>C) i. Name or signature of Supplier is missing or incomplete.</td>
<td>Automatic rejection.</td>
</tr>
<tr>
<td>ii. Seal of Supplier is missing or incomplete.</td>
<td>Two (2) working days* to obtain missing or incomplete items.</td>
</tr>
<tr>
<td>D) Name, signature, or seal of bonding company is missing or incomplete.</td>
<td>Automatic rejection.</td>
</tr>
<tr>
<td>E) Failure to provide a letter of agreement to bond (if required).</td>
<td>Automatic rejection.</td>
</tr>
<tr>
<td>4. Bid Document – execution</td>
<td></td>
</tr>
<tr>
<td>A) Bids completed in erasable medium.</td>
<td>Automatic rejection.</td>
</tr>
<tr>
<td>B) i. Signature of representative authorized to bind the Supplier missing or incomplete on the prescribed form which is to be submitted in response to a Bid Solicitation.</td>
<td>Automatic rejection.</td>
</tr>
<tr>
<td><strong>IRREGULARITY</strong></td>
<td><strong>RESPONSE</strong></td>
</tr>
<tr>
<td>----------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>ii. Electronic signature of representative or absence of corporate seal authorized to bind the Supplier shown on the prescribed form which is to be submitted in response to a Bid Solicitation.</td>
<td>Two (2) working days* to obtain original signature.</td>
</tr>
<tr>
<td>C) Form of Proposal missing or incomplete.</td>
<td>Two (2) working days* to correct to the satisfaction of Procurement and Strategic Acquisitions, otherwise automatic rejection.</td>
</tr>
<tr>
<td>D) Form of Quotation or Tender missing or incomplete.</td>
<td>Automatic rejection.</td>
</tr>
<tr>
<td>E) Signature of witness, if required, missing or incomplete.</td>
<td>Two (2) working days* to correct, otherwise automatic rejection.</td>
</tr>
<tr>
<td>F) Date of Bid missing or incomplete.</td>
<td>Two (2) working days* to correct, otherwise automatic rejection or, if stated in the Bid Solicitation, automatic rejection.</td>
</tr>
<tr>
<td>5. Incomplete, illegible or obscure Bids or Bids which contain information not called for, erasures, overwriting or strike outs (not initialed).</td>
<td>Two (2) working days* to correct to the satisfaction of Procurement and Strategic Acquisitions, otherwise automatic rejection.</td>
</tr>
<tr>
<td>6. Document, in which all necessary Addenda have not been acknowledged.</td>
<td>Two (2) working days* to confirm Bid to the satisfaction of Procurement and Strategic Acquisitions or, if stated in the Bid Solicitation, automatic rejection.</td>
</tr>
<tr>
<td>7. Failure to attend mandatory site visit (if required).</td>
<td>Automatic rejection.</td>
</tr>
<tr>
<td>8. Bid received on documents other than those provided in the Bid Solicitation.</td>
<td>Automatic rejection, unless allowed for in the Bid Solicitation.</td>
</tr>
<tr>
<td>9. Failure to insert the bidder’s business name in the space provided in the Bid Solicitation form.</td>
<td>Automatic rejection unless, in the opinion of Procurement and Strategic Acquisitions the incomplete nature is trivial or insignificant.</td>
</tr>
<tr>
<td>10. Mathematical errors.</td>
<td>Two (2) working days* to initial the corrections as made by the Corporation. Unless otherwise stated in the Bid, the unit price shall prevail and the total Bid price shall be adjusted accordingly. The Corporation reserves the right to waive initialing and accept Bid as corrected.</td>
</tr>
</tbody>
</table>
## APPENDIX F – BID IRREGULARITIES

<table>
<thead>
<tr>
<th>IRREGULARITY</th>
<th>RESPONSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>11. Qualified Bids (Bids qualified or restricted by an attached statement).</td>
<td>Automatic rejection</td>
</tr>
<tr>
<td>12. Bids containing minor obvious clerical errors.</td>
<td>Two (2) working days* to confirm Bid to the satisfaction of Procurement and Strategic Acquisitions.</td>
</tr>
<tr>
<td>13. Any other irregularities.</td>
<td>The Commissioner of Enterprise Resource Management Services, or Designate, shall have authority to waive other irregularities or grant two (2) working days * to initial such other irregularities considered to be minor.</td>
</tr>
</tbody>
</table>

** Where “working days” specified, this is from the hour the Bidder is notified by Niagara Region staff of the irregularity
Appendix G
Glossary of Terms

In this Request for Proposal, unless the context requires otherwise:

“2D” means Two-Dimensional;

“3D” means Three-Dimensional;

“AODA” means Accessibility for Ontarians with Disabilities Act;

“ASPRS” means American Society for Photogrammetry & Remote Sensing;

“B&W” means Black and White;

“CGG2000” means Canadian Gravitmetric Geoid 2000;

“CSRS” means Canadian Spatial Reference System;

“CMAS” means Circular Map Accuracy Standard;

“Deliverables” are defined in the Agreement and are the products and data to be generated/provided by the Respondent as further described in this RFP;

“DEM/DTM” means Digital Elevation Model and/or Digital Terrain Model;

“ESRI” means the Environmental Systems Research Institute;

“FGDC” means Federal Geographic Data Committee;

“GO-ITS 45.1 NAD83” describes the North American Datum 1983 (NAD83) as the standard horizontal geodetic datum;

“GPS” means Global Positioning System;

“GSD” means Ground Sample Distance;

“CGVD2013” means Canadian Geodetic Vertical Datum of 2013;

“ICAS” means Natural Resources Canada’s Interdepartmental Committee on Air Survey

“LMAS” means Linear Map Accuracy Standard;

“MNR” means Ministry of Natural Resources;

“NAD83” means the North American Datum of 1983;

“Niagara Region” means the Regional Municipality of Niagara;

“NIR” means Near Infrared;

“NRC” means National Research Council Canada;
“NVA” means Non-vegetated Vertical Accuracy;

“OLS” mean Ontario Land Surveyor;

“Respondent” means a bidder or Respondent who solicits a proposal pursuant to this RFP;

“RGB” means Red Green Blue;

“RFP” means this Request for Proposal, including the appendices attached hereto and all instruments supplemental hereto or in an addendum, amendment or confirmation hereof;

“RMSE” means Root Mean Square Error;

“QA” means Quality Assurance;

“QC” means Quality Control;

“SOG” means speed over ground;

“TIN” means Triangulated Irregular Network;

“WCAG” means Web Content Accessibility Guidelines;

“Work” means the work to be performed by the Respondent pursuant to the Service Agreement and is more particularly defined therein;

“WSIB” means Workplace Safety and Insurance Board;

“USGS” means United States Geological Survey;

“UTM” means the Universal Transverse Mercator coordinate system;

“VVA” means Vegetated Vertical Accuracy;