Public Works and Government Services Canada | Travaux publics et Services gouvernementaux Canada

RETURN BIDS TO:
RETOURNER LES SOUMISSIONS À:

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LETTER OF INTEREST
LETTRE D'INTÉRÊT

Title - Sujet
CFLEWM project

Solicitation No. - N° de l'invitation	**Date**
W8476-196070/B	2020-05-26
Client Reference No. - N° de référence du client	**GETS Ref. No. - N° de réf. de SEAG**
W8476-196070	PW-$$QE-015-27791
File No. - N° de dossier	**CCC No./N° CCC - FMS No./N° VME**
015qe.W8476-196070	

Solicitation Closes - L'invitation prend fin
at - à 02:00 PM
on - le 2020-08-20

Time Zone
Fuseau horaire
Eastern Daylight Saving Time EDT

F.O.B. - F.A.B.
Plant-Usine: ☐ **Destination:** ☐ **Other-Autre:** ☐

Address Enquiries to: - Adresser toutes questions à:	**Buyer Id - Id de l'acheteur**
Picknell, Christine	015qe
Telephone No. - N° de téléphone	**FAX No. - N° de FAX**
( ) - ( )	( ) -

Destination - of Goods, Services, and Construction:
Destination - des biens, services et construction:

Specified Herein
Précisé dans les présentes

Comments - Commentaires

Instructions: See Herein

Instructions: Voir aux présentes

Vendor/Firm Name and Address
Raison sociale et adresse du fournisseur/de l'entrepreneur

Delivery Required - Livraison exigée	**Delivery Offered - Livraison proposée**
See Herein	

Vendor/Firm Name and Address
Raison sociale et adresse du fournisseur/de l'entrepreneur

Telephone No. - N°de téléphone
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Name and title of person authorized to sign on behalf of Vendor/Firm (type or print)
Nom et titre de la personne autorisée à signer au nom du fournisseur/ de l'entrepreneur (taper ou écrire en caractères d'imprimerie)

Signature **Date**

Issuing Office - Bureau de distribution
Security and Information Operations Division/Division de la securite et des operations d'information
11 Laurier St. / 11, rue Laurier
8C2, Place du Portage
Gatineau
Québec
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Canada

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PART I – INTRODUCTION

1. Purpose and Objectives of this Request For Information

Public Services and Procurement Canada (PSPC), on behalf of the Department of National Defence's DND/CAF, is releasing this Request for Information (RFI) to inform Industry and to seek input on the possible procurement and related costing for the Canadian Forces Land Electronic Warfare Modernization Project. This RFI will be continually amended to advise industry, on an on-going basis, of industry engagement activities and resulting feedback. To facilitate this process it is Canada's intention to keep the RFI open until such time as a final Request for Proposal (RFP) is released; however, responses to the RFI are requested by the date listed in Table 1 – Procurement / Engagement Activities and Related Dates.

The RFI and engagement process provides Industry with the opportunity to present their capabilities and considerations regarding Canada's requirements for the CFLEWM Project. Canada may use the information gathered to assist in the development of an RFP. The intent is to actively engage and consult Industry throughout the procurement process to ensure a successful project end-state.

This RFI is being issued with the following key objectives:

- Establish a continuous single point of official project(s) communication with potential suppliers;
- Obtain proposed solutions from Industry to meet the CFLEWM Preliminary Statements of Requirements (PSORs) and sustainment requirements;
- Establish a Rough Order of Magnitude cost estimates associated with potential solutions
- Obtain additional sustainment requirements - including items such as Intellectual Property (IP) rights, supply chain collaboration, etc. for a more comprehensive sustainment;
- Understand current market capacity and interest;
- Understand industrial capabilities relevant to the CFLEWM platforms;
- Solicit advice on industry capabilities to develop the Industrial and Technological Benefits (ITB) Value Proposition (VP) with questions about industrial capacity for performing work related to the future contracts in Canada, strengthening Canadian supply chains, and making long-term investments in the Canadian IT sector;
- Answer questions from potential suppliers and via one on one meetings ensuring all interested participants receive the same information;
- Inform Industry of the proposed procurement approach; and
- Set the conditions for successful follow-on project activities.

The objective of requesting Industry's proposed solutions is to ensure that the CFLEWM requirement continues to develop in line with the capabilities of Industry. To ensure that the project proceeds with an achievable scope and budget, the information received from Industry will be used to develop accurate costing models based on the equipment and sustainment needs recommended by Industry. To facilitate the accuracy of the models, Canada requires detailed performance data on each system component, their sustainment needs, and any integration complexities or constraints that must be considered when scaling the system to evaluate various operation scenarios.

The objective of requesting Rough Order of Magnitude (ROM) pricing associated to the respondent proposed technical solution is to ensure a level of accuracy which will allow Canada to prepare documentation for further CFLEWM Project approval gateways. In addition to the various unit costs associated to the suggested solution for items such as, but not limited to, Command and Control (C2) software, EW Analysis software, training and simulation software, and tactical equipment, the project needs to obtain from respondents associated costing for activities, reports, and sustainment associated with delivery and maintenance of equipment.

Interested firms are encouraged to review the documentation attached to the RFI and provide comments and/or questions, in writing, to the PSPC email as per section 1.10.

2. Proposed Engagement and Procurement Process

The proposed engagement and procurement process for this project began with an LOI and will conclude when a, or multiple, RFP(s) is/are issued, or when Canada otherwise advises suppliers that the engagement process has concluded. This RFI consists of a multi-phased approach as detailed below. Please be advised the proposed procurement activities beyond this initial RFI are for discussion only and may be amended at any time. The decision to conduct any further procurement activities has not been taken.

Phase 1

Request for Information (RFI): An RFI will provide more detailed information to industry and will act as a continuous single point of official project communication. Chiefly it will solicit detailed industry feedback on operational and technical requirements and cost.

Unclassified One-on-One Meetings: Due to Covid-19 in-person meetings will not be held at this time. We may offer virtual meetings upon demand. Respondents are to inform PSPC of their interest for a virtual one-on-one meeting to discuss the RFI.

The one-on-one meetings will allow the potential responders to present their solutions, identify their concerns and pose their questions. While the government participants do not plan to provide new information during one-on-one meetings, any new information discussed will be posted for all potential bidders through an amendment to the RFI.

The intent of these meetings are to:

a) Provide suppliers with an overview of the details of the CFLEWM project; and

b) Invite suppliers to give feedback and bring forward any potential solutions to CFLEWM project.

All one-on-one supplier consultations will be concluded prior to the Requested Response Date of the RFI. Canada may request further consultations with any suppliers at any time during or after the Requested Response Date of the RFI to obtain clarifications on feedback received.

Request for Information Response Date: The RFI contains a requested response date as detailed in Table 1 – Procurement / Engagement Activities and Related Dates. The RFI issued in Phase 1 will remain open to continue to:

- advise suppliers of the security requirements of any further industry engagement activities; and
- answer questions from Industry to ensure all interested participants receive the same information.

Phase 2

Invitation to Qualify (ITQ): It is possible that an ITQ will be used to pre-qualify suppliers in accordance with the terms and conditions of that ITQ in order to become “Pre-Qualified Suppliers” for any later phases of the procurement process. Only Pre-qualified Suppliers will be permitted to bid on any subsequent solicitations issued as part of the procurement process. If an ITQ is used, it will be issued on buyandsell.gc.ca and will invite interested, compliant parties to submit a response in order to be considered accordingly. Suppliers are not required to submit a response to this RFI in order to submit a response to the ITQ. Note that the ITQ may only be related to a given portion of the project, while other portions may go directly to the next step of releasing one or multiple draft RFP(s).

Draft Request for Proposal(s)(RFP(s): One, or multiple, draft RFP(s) may be issued to Industry, or to those suppliers who qualified on the ITQ, should that method be pursued, to further refine the requirement by addressing Industry’s concerns and considering industry recommendations.

Phase 3

Request for Proposal(s): The RFP(s) may be issued to Industry or to those suppliers who qualified on the ITQ, should that method be pursued.

Evaluation: Bids will be evaluated in accordance with the terms of the RFP(s).

Phase 4

Contract Award: A single or multiple contract(s) may be awarded to the winning bidder(s) in accordance with the terms of the RFP.

3. Procurement Timeline

Canada is at the preliminary stage of a potential procurement process; however it is Canada's intention that the engagement and procurement activities follow the timeline below. Suppliers are advised to note the dates for information requested by Canada and are asked to submit the information requested on or before that date.

Table 1 - Procurement / Engagement Activity and Related Dates

Procurement / Engagement Activity		Date
Phase 1		From RFI release to ITQ
	RFI	May 2020 and will remain open until RFP release date
	• Unclassified One-on-one Meetings	TBD
	• RFI Response Date	20th August 2020
Phase 2	Intent to Qualify (ITQ)	Summer 2021
Phase 3	Draft RFP	2022
Phase 4	Final RFP	2023
Phase 5	Contract Award	2024

PART II – REQUEST FOR INFORMATION

1. Instructions for Responding to this Request for Information

1.1. Nature of the Request for Information

Respondents are reminded that this is an RFI and not an RFP. As such, respondents are requested to provide their comments, concerns and recommendations regarding how the requirements or objectives described in this RFI could be satisfied. Respondents should explain any assumptions they make in their responses.

Responses will not be used for competitive or comparative evaluation purposes, and thus the response format is not as rigorously defined as would normally be for an RFP. However, for ease of use and in order for the greatest value be gained from responses, Canada requests that respondents follow the structure outlined in the Format of Responses.

Whether or not any potential supplier responds to this RFI will not preclude that supplier from participating in any future procurement and participation in this RFI is encouraged. Also, the procurement of any of the goods and services described in this RFI will not necessarily follow this RFI.

1.2. Response Costs

Canada will not reimburse any organization for expenses incurred in responding to this RFI, including, but not limited to, expenses incurred for participating in the additional engagement activities or security sponsorship process.

1.3. Treatment of Responses

Use of Responses: Responses will not be evaluated. However, the responses received may be used by Canada to develop or modify the procurement approach. Canada will review all responses received. Canada may, at its discretion, review responses received after the RFI Response Request Date.

Review Team: A review team composed of representatives of DND, PSPC and ISEDC will review the responses. Canada reserves the right to hire any independent consultant or to use any Government of Canada (GC) resources that it considers necessary to review any response. In addition, a Fairness Monitor (Raymond Chabot Grant Thornton Consulting Inc.) has been assigned to ensure the fairness, openness and transparency of the overall procurement process. Not all members of the review team will necessarily review all responses.

Confidentiality: Respondents should mark any portions of their response that they consider proprietary or confidential. Responses will be handled in accordance with the provisions of various legislations including the *Access to Information Act* (R.S. 1985, c. A-1) the *Privacy Act* (R.S., 1985, c. P-21), and the Defence Production Act (R.S. 1985, c. D-1).

Clarifications: Canada may, at its discretion, contact any respondents to follow up with additional questions or for clarification of any aspect of a response or for one-on-one meetings.

1.4. National Security Exception

To protect national security interests, Canada may invoke its right under national and international trade agreements to use a National Security Exception (NSE) for this requirement.

An NSE allows Canada to remove a procurement from some or all of the obligations of the relevant trade agreement where Canada considers it necessary to do so in order to protect its national security or other related interests specified in the text of the NSE.

1.5 Government Furnished Information

A CFLEWM High Level System Design and Scenario Vignette has been prepared by the project team (Appendix 1 and 2 to Annex A). It is identified as using Government Furnished Information (GFI). These documents are available from the Contracting Authority on request. This request must be accompanied by a fully executed original copy of the **Non-disclosure Agreement (Annex G - NDA).**

Please send your request with signed NDA to:

TPSGC.PADivisionQE-APQEDivision.PWGSC@tpsgc-pwgsc.gc.ca

It is not mandatory to obtain the GFI in order to provide a respond to the RFI.

1.6. Nature and Format of Responses Requested

Respondents are requested to provide their comments, concerns and, where applicable, alternative recommendations regarding how the requirements described in the RFI could be satisfied. Respondents are also invited to provide comments regarding the content, format and/or organization of any draft documents included in this RFI. Respondents should list and explain any assumptions that they make in their responses.

1.7. Contents of the RFI

The information contained in this document remains a work in progress and respondents should not assume that new requirements will not be added to any bid solicitation that is ultimately published by Canada. Nor should respondents assume that none of the requirements will be deleted or revised. Comments regarding any aspect of the requirement are welcome. This RFI also contains specific questions addressed to industry.

1.8. Solicitation Caveat

This RFI does not imply that Canada has made a final decision on any procurement possibilities. The DND/CAF may not select any of the solutions or equipment identified in the responses. Canada shall not be liable under any circumstances to any supplier who has prepared a response to this RFI.

1.9. Format of Responses

Industry is invited to respond to this RFI and provide the following information no later than the specified response request date. Respondents are asked to consider the following in preparing their response:

- Cover Page: If the response includes multiple volumes, respondents are requested to indicate on the front cover page of each volume the title of the response, the solicitation number, the volume number and the full legal name of the respondent.

- Title Page: The first page after the cover page should be the title page, which should contain the following information:
    1) the title of the respondent's response and the volume number;
    2) the name and address of the respondent;
    3) the name, address and telephone number of the respondent's contact;
    4) the date, and
    5) the RFI's Solicitation Number.

- General Layout and File Format: Respondents may use the written format of their choice but should use Annex D and E provided and keep the same section numbering to facilitate Canada's review and analysis of all responses. Responses should be provided electronically in MS Word, MS Excel, and/or PDF format. The layout of the submission is requested as follows:
    1) Section 1: Summary – 1 to 2 pages, up to a maximum of 2 pages, summarizing the submission in total,
    2) Section 2: Corporate Profile, up to a maximum of 2 pages;
    3) Section 3: Proposed Concept of Solution, Annex D (costing) and Annex E; and
    4) Section 4: General Comments and Advice, up to a maximum of 20 pages;

- Number of Copies: Canada requests that respondents submit a copy of their response in unprotected (i.e. no password) MS Word, MS Excel, and/or PDF format by email, if the size of the document is less than 5MB, to: TPSGC.PADivisionQE-APQEDivision.PWGSC@tpsgc-pwgsc.gc.ca

1.10 Enquiries

All enquiries and other communications related to this RFI shall be directed exclusively to the PSPC Contracting Authority. Since this is not a bid solicitation, Canada will not necessarily respond to enquiries in writing or by circulating answers to all respondents; however, respondents with questions regarding this RFI may direct their enquiries to: TPSGC.PADivisionQE-APQEDivision.PWGSC@tpsgc-pwgsc.gc.ca

Please ensure the subject line states: **CFLEWM RFI**

Suppliers are encouraged to submit questions and provide feedback even if they choose not to participate in the one-on-one meetings.

1.11. Language of Response

Responses may be submitted in French or English, at the preference of the respondent.

1.12. Submission of Responses

Time and Place for Submission of Responses: Canada requests suppliers submit responses by the 20th of August, 2020.

Identification of Response: Each respondent should ensure that its name, the solicitation number appears in their response provided via email as per above instructions.

2. Security

2.1 CFLEWM Security Requirements

It is anticipated that the following security requirements may apply to the ITQ, Draft RFP, RFP and Contract:

Interested suppliers may be required to hold a valid Facility Security Clearance (FSC) at the level of TOP SECRET, with approved Document Safeguarding at the level of SECRET; Personnel cleared to TOP SECRET and Restricted to citizens of CAN, USA, AUS, UK, NZL.

It is anticipated that the ITQ, Draft RFP, RFP and resulting contract may require access to Controlled Goods. Prior to access, the contractor must be registered in the Controlled Goods Program of Public Works and Government Services Canada (Public Works and Government Services Canada (PWGSC).

Security clearance(s) must be issued by PSPC's Canadian Industrial Security Directorate (CISD). The security clearance of foreign suppliers will be confirmed through the International Industrial Security Directorate (IISD) with their own domestic industrial security programs. Please be advised that the proposed procurement activities beyond this initial RFI are for discussion only and may be amended at any time. The decision to conduct any further procurement activities has not been taken.

2.2 Security Sponsorship

As the security requirements for the ITQ, Draft RFP, RFP and Contract have not been finalized, Canada may at a later date sponsor interested suppliers or potential bidders whose organizations currently do not hold the anticipated clearance(s). Should Canada choose to sponsor suppliers, this RFI will be amended to add the Security Requirements Check List (SRCL) and associated security clauses. Interested suppliers are encouraged to initiate the security clearance process as soon as the security requirements have been finalized.

Engagement Activities and any resulting Procurements will not be delayed in order to provide time for suppliers to obtain required security clearances.

3. Industrial and Technological Benefits (ITB) Policy

The ITB Policy, including the Value Proposition, apply to the CFLEWM Project. Engagement with industry through the RFI will help determine the application of the ITB Policy and how Canada could leverage opportunities for economic benefit from this procurement through the Value Proposition. Suppliers will have an opportunity to discuss the ITB Policy, Value Proposition, and how they might be applied to this procurement during one-on-one meetings.

4. Official Languages

Any future contract for a solution to this project will require the Contractor to provide all documentation in addition to technical and client support in both official languages.

5. Information Requested by Canada

5.1. Documents of Interest

Attached to this RFI are the following documents for which Canada is seeking comments from industry:

- Annex A – Canadian Forces Land Electronic Warfare Modernization (CFLEWM) Description;
- Appendix 1 to Annex A, High Level System Design;
- Annex B – Sustainment;
- Annex C – Industrial Technological Benefits / Value Proposition;
- Annex D – Costing Requirements / Questions
- Annex E – CFLEWM High Level Mandatory Requirements and Questions

The information contained in this document are at a preliminary stage and remain a work in progress and respondents should not assume that new requirements will not be added to any bid solicitation that is ultimately published by Canada. Nor should respondents assume that none of the requirements will be deleted or revised. Comments regarding any aspect of these draft documents are welcome.

5.2 Information Requested

Using the format identified in section 1.8, Canada requests responses as follows:

Section 1 - Executive Summary:

Respondents are asked to provide:

a. A summary of the respondent's submission in total.

Section 2 – Corporate Profile

Respondents are asked to provide:

a. Provide a brief introduction and corporate capability description, highlighting products, services, Canadian based capabilities, and experience in delivering Electronic Warfare solutions relevant to the project objectives. With respect to delivering Electronic Warfare solutions, please specify in which category it applies, Command, Sense, Act and Shield;
b. Provide a summary of your intended role(s) (e.g., system integrator, component provider, site installer, in-service support provider, etc.);
c. Describe established partnerships with other industries, if any, that would be of benefit to the development of the project capability requirements;
d. Provide security clearance level for your organization (if applicable) including Facility Security Clearance (FSC), Controlled Good Registration and any Document Safeguarding Capability (DSC); and
e. Outline any key assumptions, constraints, concerns, conclusions and recommendations that, in respondent's opinion, Canada should consider as the project evaluates the various options.

Section 3 - Proposed Concept of Solution.

Respondents are asked to provide answers as described in Annex D, costing, acquisition and sustainment and Annex E

Section 4 - General Comments and Advice

Respondents are asked to provide comments, remarks, and advice concerning:

a. Recommendations and short justifications on how the DND should structure their procurement approach and contract(s), including the use of performance incentive(s), to optimize procurement flexibility and implementation of the proposed project capability packages;

b. Key assumptions, constraints, risks, concerns, viability of options, conclusions and recommendations for the project options described in Annex A and Annex E;

c. The ITB/Value Proposition questions provided in Annex C;

d. Any other advice that would improve the project and its implementation; and

e. Other general concerns with respect to the project.

ANNEX A

CANADIAN FORCES LAND ELECTRONIC WARFARE MODERNIZATION DESCRIPTION

Requirements

1.1. Overview

1.1.1. The Canadian Army (CA) requires the ability to detect, identify, target and acquire threats and objects of interest within the battlespace. It needs to be able to use this information to plan, target, make decisions and information-share while conducting land operations. This must be a capability nested within the Canadian Armed Forces (CAF), which requires a Land EW system that can integrate, synchronize and coordinate sensors and sensor information digitally from the Land domain into the Joint and Coalition environments. Currently the CA has a limited ability to digitally move and share information with other CAF elements (Army, Navy, Air Force, and Special Operations Forces), other governmental departments (RCMP) and coalition partners (NATO). A digitized system and modern sensors are necessary to rapidly and accurately share information and manage resources in an increasingly advanced operational environment with new, emerging, threats (e.g. UAS).

1.1.2. The future Land EW capability needs to have modern sensors capable of detecting, recognizing, identifying, tracking and locating all threats in the land environment in order to inform intelligence requirements, decision making, targeting, brigade manoeuvres, fires and effects. As the CA moves to a modern force structure that utilizes general purpose units capable of conducting everything from brigade manoeuvres to dispersed platoon operations, it must be supported by flexible and scalable EW assets the exploit Multi-Function EW (MFEW) capabilities that optimize the Sense operational function. An essential aspect of this capability is the command and control of the various sensor assets, analysis tools, and Force Protection Electronic Attack (FPEA) systems. The ability to rapidly and efficiently share data, information as well as contextual intelligence across the battlefield to support decision making at all tactical levels is also seen as a critical CFLEWM capability. As such, the resultant CFLEWM solution must support highly mobile and rapidly evolving operations across a dispersed communications network to support decision-making activities in order to help assure a tactical advantage for friendly forces.

1.1.3. The CFLEWM Project seeks to equip the Field Force with Division associated EW elements such as (but not limited to) Brigade HQ and Battle Group HQ Electronic Warfare Coordination Centre (EWCC), Electronic Warfare Operation Center (EWOC) and All Source Intelligence Centre (ASIC) Electronic Warfare Analysis Sections (EWAS) with modern equipment, training, and software.

1.2. Introduction

1.2.1. Strong, Secure, Engaged (SSE): Canada's Defence Policy outlines the level of ambition for the CAF and presents a new strategic vision for defence. SSE states that the CAF will be prepared to simultaneously deploy to two different theatres of operation, including one as a lead nation. This predicates the need for the CA to have enough assets to support simultaneous operations of 500 to 1500 personnel in two different operational theatres or one brigade group of up to 4800 personnel. In order to meet the objectives laid out in SSE, Canada needs an agile, multi-purpose, and combat-ready military, operated by highly trained, well led, and well-equipped soldiers. CFLEWM addresses these SSE imperatives by focusing on Initiatives #37, #42, and #63. Specifically, SSE Initiative #37 seeks to modernize the fleet of Improvised Explosives Device Detection and Defeat capabilities; Initiative #42 commitments to modernize land-based Command and Control (C2), Intelligence, Surveillance, Reconnaissance, and Target acquisition systems, while Initiative #63 will acquire Joint Signals Intelligence capabilities that improve the military's ability to collect and exploit electronic signals intelligence on expeditionary operations.

1.2.2. The CFLEWM project will deliver on the above Initiatives through the acquisition of agile Electronic Warfare capabilities. This acquisition will include hardware, software, and training systems, which will greatly enhance interoperability within the CAF, within NATO, Five Eyes (FVEY), and other Allies, while assisting the CA to modernize land-based C2, intelligence, surveillance and reconnaissance systems.

1.3. Missions

1.3.1. The GoC articulates eight core missions that the CAF should be able to undertake for the protection of Canada and Canadians and the maintenance of international peace and stability.

I. Detect, deter and defend against threats to or attacks on Canada;

II. Detect, deter and defend against threats to or attacks on North America in partnership with the United States, including through North American Aerospace Defence (NORAD);

III. Lead and/or contribute forces to NATO and coalition efforts to deter and defeat adversaries, including terrorists, to support global stability;

IV. Lead and/or contribute to international peace operations and stabilization missions with the United Nations, NATO and other multilateral partners;

V. Engage in capacity building to support the security of other nations and their ability to contribute to security abroad;

VI. Provide assistance to civil authorities and law enforcement, including counter-terrorism, in support of national security and the security of Canadians abroad;

VII. Provide assistance to civil authorities and non-governmental partners in responding to international and domestic disasters or major emergencies; and

VIII. Conduct search and rescue operations.

1.3.2. The capabilities provided by CFLEWM are applicable to core missions 1 through 6 but may also support non-munition effects applications in missions 7 and 8. For example, on the domestic front, CFLEWM could support mission 8 by conducting geolocation of a signal should a lost person or persons attempt to contact rescuers by RF or cellular, which in turn would result in a more rapid and accurate coordination of search and rescue assets.

1.3.3. To deliver these specific operational outputs at the assigned responsiveness levels, the CAF must possess its own modern electronic warfare assets that are operationally ready at all times and capable of deployment in both combat and aid to civil power situations. A baseline scenario demonstrating a brigade group defensive with hybrid elements will be made available upon request as Annex A, Appendix 2, CFLEWM Scenario Vignette.

1.4 Organization

1.4.1 The CA is the element responsible for conducting land-based operations to accomplish mission objectives. In a concerted effort to achieve missions across the spectrum of conflict, the CA trains and fights at the brigade group level and is responsible to coordinate activities focused on supporting the mission. The brigade group consists of approximately 4,800 soldiers, organized in eight major units generally including Artillery, Armour, Infantry, Engineer, and Combat Service Support organizations. These units operate together in “battle groups” to provide the joint force with the requisite firepower, mobility, protection, sustainment, and C2 functions to effectively coordinate their employment.

1.4.2 The CA almost always operates with other elements (i.e. Navy, Air Force), in joint operations or with allies and coalition partners (NATO, FVEY, etc.), all of whom bring multiple assets, such as fighter aircraft, Remotely Piloted Aerial Systems (RPAS), and ships, each of which produce effects that can influence the land battle. CFLEWM must produce a solution that not only integrates with these capabilities but enhances the Commander’s decision-

making cycle. Modern land operations require intense coordination with all of these elements, allies, and partners to ensure mission success.

1.4.3 Electronic Warfare personnel and assets are employed at every single level of combined land operations as either commanders, planners, advisors, or operators from the Division, Brigade Group, and Battle Group (EW assets are not normally attached to Combat Team/Company Group but can be for very specific tasks). Their primary tasks involve the planning, coordination, and synchronization of EW assets and effects in support of their supported organization. Based on current CA structures, the following types, quantities, and capabilities of Electronic Warfare capabilities can exist in and below Division. *NOTE: Actual deployment will be mission specific and task-tailored.

1.4.3.1 Division.

- 1x EW Regt;
- 1x EWCC at Main HQ;
- 1x EWCC at Alternate HQ;
- 1x CSS Sqn;
- HFDF:
- UAS with ES sensors, and EA systems;
- ELINT;
- SIGINT;
- HF jamming; and
- Integration of effects in cyberspace.

1.4.3.2 Brigade Group Level. *3x Battle Groups per Brigade Group.

- 1x EW Sqn;
- 1x EWCC;
- 1x EWOC;
- Ground based ES against C2 and ground radar;
- Ground based VHF C2 and radar jamming; and
- Imitative deception.

1.4.3.3 Battle Group Level.

- 1x EWCC;
- 1x EW Troop;
- 1x Electronic Warfare Liaison Officer (EWLO);
- Ground based ES against C2; and
- Ground based VHF C2 jamming.

1.5 Project Scope

1.5.1. The scope for the CFLEWM project covers the hardware, software, and specialty equipment necessary to provide an agile, modern EW capabilities to the Army. The CFLEWM project scope will include the following system components:

a) It must have an effective command capability which includes: an intuitive and interactive GUI, the ability to understand the EME; importing and exporting data to/from strategic, joint and allied partners; allow EW and Cyber Electromagnetic Activities (CEMA) to be efficiently planned, executed and controlled; allow both centralised and distributed operations; and minimize friendly force interference;

b) It must sense Signals of Interest (SoI) and allow them to be classified, analysed, exploited and geographically located. This includes the ability to import/export data about the EME to/from the command system, resulting in actionable information/intelligence;

c) It must be able to act within the EME by allowing the execution of offensive EM non-kinetic actions, the ability to interfere with adversarial use of the EM spectrum, be linked to the sense function to allow an

assessment of friendly actions in the EME, and be controlled both locally by the operator and remotely from the command system;

d) It must be able to simultaneously detect, identify, target, geographically locate, and engage (suppress) current and emerging EME threats, and allow data about the EME to be imported/exported to/from the command system, in addition to carrying out limited Sense, Act, and Shield functions from a single platform;

e) It must be institutionalized within CA doctrine, training, and support in order to ensure an enduring capability;

f) It must support both mounted and dismounted operations;

g) It must be interoperable with the Five Eyes allies/partners (US, UK, AUS, NZ), and select NATO members:

h) It must be flexible enough to adapt to new types/categories of signals and threats, such as RC-IED and S-UAS, while supporting the range of friendly force operations in a dynamic and controllable fashion;

i) It must include Integrated Logistics Support (ILS) and spare parts;

j) It must provide In Service Support (ISS); and

k) It must provide project management and engineering services.

1.6 Role and Function

1.6.1 The role of CFLEWM is to provide an effectively commanded and flexible land based Electronic Warfare capability which can sense and act within the EME and includes the ability to interfere with adversarial use of the EME, provide protection by shielding friendly forces from electromagnetic threats, and be an enduring capability through appropriate sustainment mechanisms. In addition to conventional capabilities, the solution will incorporate Multi-Function EW (MFEW) systems deployed on F Echelon vehicles. The resultant solution will have the ability to dynamically task EW assets based on EME exploitation.

1.6.2 The CFLEWM project will utilize open architecture which will support the implementation of digital standards and memorandums of agreement adopted by allies, thus improving our interoperability with coalition partners. These systems will provide a vital contribution to the force protection and precision lethality of formed units conducting joint and combined operations, while reducing the risk to our own forces and increasing chances of mission success by maximizing the effectiveness of every deployed EW system.

1.7 Threat Analysis

1.7.1 The success of all operations, particularly in high intensity conflicts, is based on the soldier’s ability to observe, orient, decide, and act more quickly than an adversary. This is especially critical in the application of EW, as this capability, when combined Joint Fires Enablers, can significantly influence the success of land operations. The ability to leverage the proliferation of the full spectrum of current and future battlefield sensors and effectors makes this a vital capability in current and future conflict.

1.7.2 Based on the SSE policy review, the guidance on the threat environment that CFLEWM needs to be able to operate in is very broad. The entire operational spectrum of conflict from peace through war must be covered, including potential threats such as terrorism and conventional state actors. The CFLEWM capability will be required to address and operate within the following types of conflicts and threats:

a) Future adversaries may be nation states or, alternatively, terrorist and criminal groups and other non-state actors;

b) Future operations may be in far distant theatres or in closer regions to Canada including but not limited to urban, arctic, forest, jungle or desert terrain;

c) The CAF must be developed as a balanced force able to shape the environment and/or answer combat challenges that are considered credible priorities;

d) The CAF must be able to conduct joint fires independently or within an allied coalition. The CAF must be able to lead coalitions and also to play useful roles under US or other coalition leadership;

e) The CAF must be a force that excels in joint, interagency, and coalition operations;

f) CFLEWM solutions must be tailorable to achieve specific effects across the spectrum, including political effects;

g) CFLEWM solutions must be able to operate in environments of extreme electromagnetic interference, with non-kinetic effects to specific targets, with minimal collateral damage and within an appropriate timeframe; and

1.8. Concept of Operations

1.8.1 In order to provide the CA with a modern EW capability, CFLEWM envisions deployable assets manned and maintained by 21 EW Regt at CFB Kingston, Ontario with the support of 33 Signals Regt at Ottawa, Ontario. These assets will consist of MEWTs, LEWTs, MFEW, and EA platforms. The project currently plans to employ Multi-Function Electronic Warfare (MFEW) assets with F Echelon vehicles. The capability would be commanded and controlled (C2) through an EWCC at Bde HQ, and/or an EWOC operating forward of a formation HQ. Initial analysis will be conducted at the collection asset or the EWOC, with more intensive analysis and exploitation occurring in the Electronic Warfare Analysis Section (EWAS) located at Bde HQ or in the ASIC. In addition to feeding into the Enterprise, these systems would be integrated with the results of the Joint Fires Modernization, ISR Modernization, and GBAD projects, in addition to being interoperable with RCAF/RCN elements, the FVEYS community and selected NATO partners. Figure 1 illustrates the basic CONOP, and Figure 2 represents CFLEWM capabilities in relation to the five Operational Functions of COMMAND, SENSE, ACT, SHIELD, and SUSTAIN.

1.8.2 For a more comprehensive description of the CONOP and system, please request Appendix 1 to Annex A, High Level System Design (HLSD), and Appendix 2 to Annex A, CFLEWM Scenario Vignette. These documents will be made available after a Non-Disclosure Agreement (NDA) has been received from the requestor.

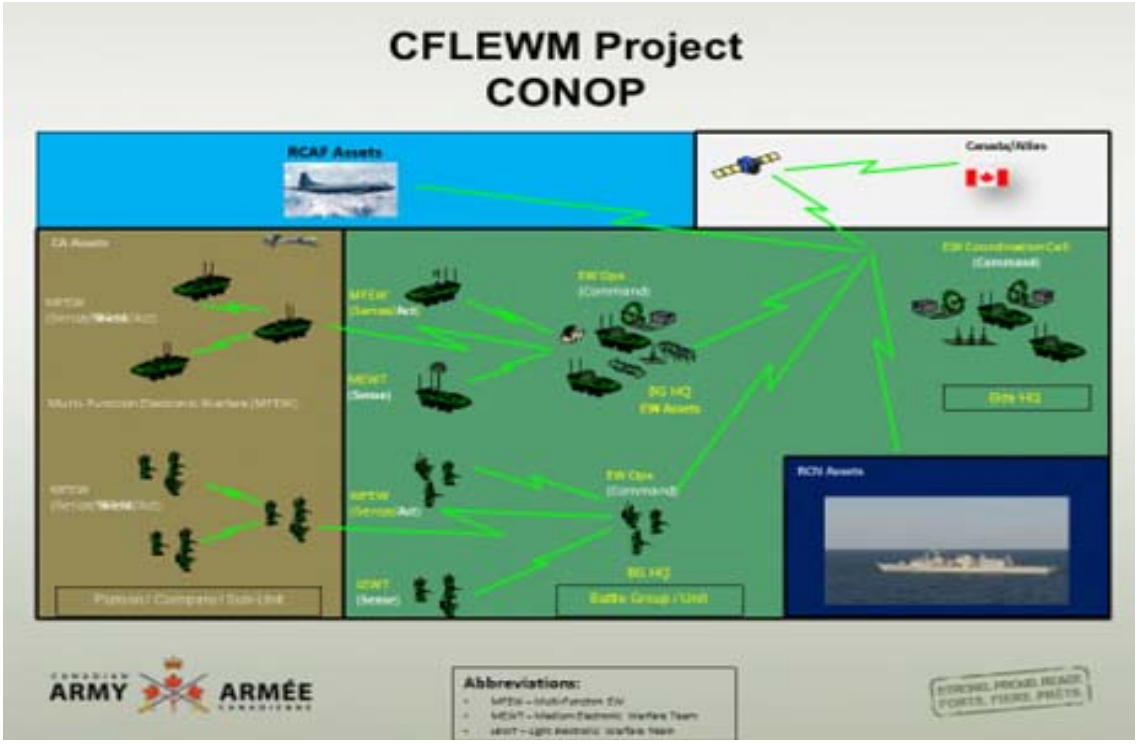

Figure 1. Basic CFLEWM CONOP visualization of Bde HQ, BG, and F Ech elements.

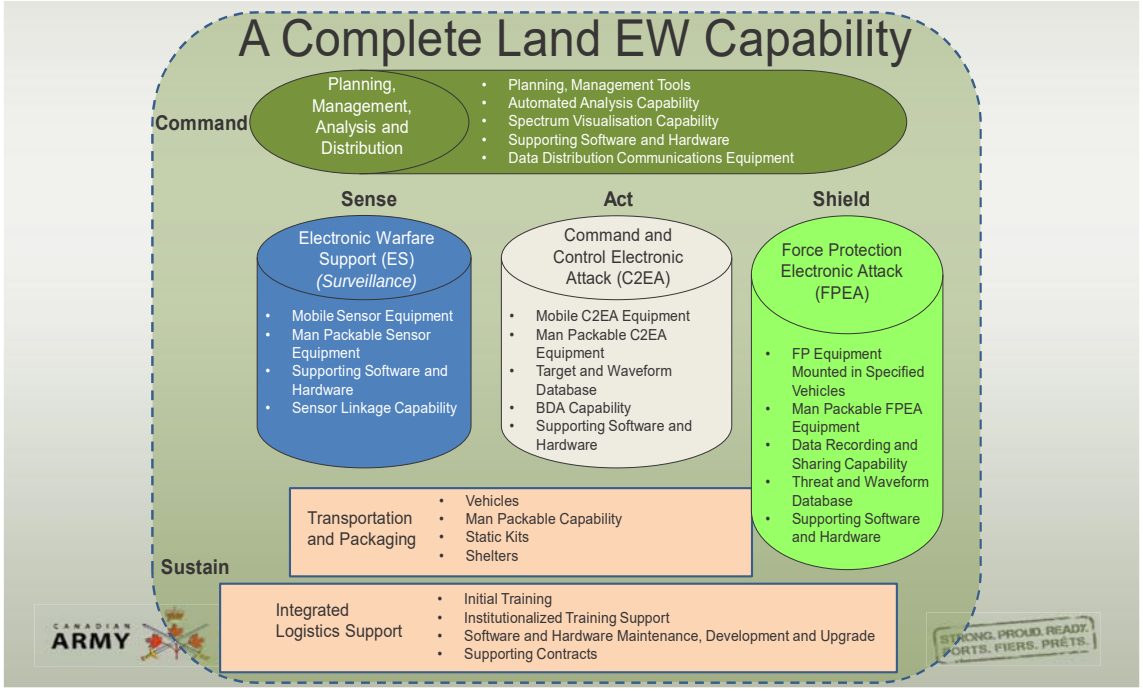

Figure 2. CFLEWM capabilities as they relate to the five Operational Functions.

1.8.3 Command and Control

1.8.3.1 CFLEWM will not only replace and refresh equipment currently in use by 21 EW Regt but will herald an evolution in the way the CAF conducts tactical electronic warfare. Although some “stove piping” may exist for the foreseeable future, it is imperative that future Land EW assets and capabilities export to and import from the Enterprise, RCAF and RCN elements, in addition to allies. Therefore, a far more dynamic C2 relationship must be established between Land EW assets and the supported commander. To this end, the CFLEWM solution will include a Command level visualization element in the form of an intuitive and interactive Graphic User Interface (GUI) that will quickly provide a commander with the information required to rapidly influence the decision-making cycle.

1.8.3.2 Centralized C2 is essential to the conduct of any military operation. With respect to EW, this is especially true. From the strategic level down to the operational and tactical levels, there needs to be a seamless way to properly communicate, plan, and coordinate between different operational elements in the delivery of EW effects in support of deliberate and dynamic operations. Currently, there are significant gaps in the ability of EW leadership to dynamically influence the Commander’s decision-making cycle.

1.9 Training

1.9.1 A vital component of the CFLEWM project are the training systems. CFLEWM will allow land force elements to plan and execute realistic and immersive virtual simulation. The systems will aim to leverage existing and future operational and training networks to establish interoperable systems that permit soldiers to train at home just as they would fight in operations. A suite of training systems will either replicate or integrate the specialty equipment used by 21 EW Regt execute its mission on the tactical battlefield. These devices will be networked into the C2 systems in order to train the planning, coordination, and synchronization of EW activities. Various other sensors that support EW operations will either be incorporated while training or simulated as entities in order to replicate the complexities of coordinating multiple sensor systems. Similarly, those assets which deliver non-kinetic effects will be simulated to increase the realism and benefit of training.

1.9.2 All consolidated elements of the CFLEWM capability will provide:

a) The ability to achieve Technical Interoperability within the CAF and a Joint Coalition environment;

b) The ability to achieve Operational Interoperability including to coordinate and employ EW assets within the CAF and a Joint Coalition context;

c) The ability to coordinate the delivery of non-kinetic effects;

d) The ability to scale non-kinetic effects vice “brute force” attacks;

e) The ability to coordinate non-lethal effects with Joint Fires, and GBAD in support of all missions according to the operational environment;

f) The ability to improve situational awareness, enable faster decision making, facilitate more rapid dissemination of a commander’s intent;

g) The ability to provide virtual training regardless of infrastructure constraints at Regular and Reserve Force bases across Canada;

h) The ability to provide realistic and immersive simulation, by using simulated or in-service equipment in customizable mission scenarios; and

1.10 Government Furnished Equipment (GFE) / Government Supplied Material (GSM) / Government Furnished Information (GFI)

1.10.1 CFLEWM specific equipment, systems and software will operate on existing CA platforms and infrastructure. Department of National Defence (DND) may identify, as GFE, GSM, or GFI vehicle platforms, networks and C2 systems required for all CFLEWM equipment. As a reference, the CA tactical and HQ networks are TCP/IP based, with MS Windows as OS, and the tactical bearer extensions generally are low-bandwidth, software-defined data radios. Respondents need only consider hardware, software, and integration costs for CFLEWM specific equipment when it comes to merging with GFE.

APPENDIX 1 TO ANNEX A – CFLEWM HIGH LEVEL SYSTEM DESIGN (HLSD) (NDA required)

Available upon request after NDA received, as per instructions in section 1.5 of Part 2.

APPENDIX 2 TO ANNEX A – CFLEWM SCENARIO VIGNETTE (NDA required)

Available upon request after NDA received, as per instructions in section 1.5 of Part 2.

ANNEX B

SUSTAINMENT

Overview

1.1 The Army Structure of Sustainment – Lines of Support

1.1.1 The Army works from a sustainment continuum that stretches from national resources to the individual soldier. Capabilities along the continuum are organized into layers, most commonly referred to as echelons or lines of support. Although the flow is generally linear, one line of support to the next, the system operates on the principle of flexibility that allows, and indeed encourages, the bypassing of lines of support where and when appropriate. The allocation of capabilities within each line conforms to the level of need, the threat as well as the requirement for mobility and protection. The grouping of capabilities into lines of support ensures that each level of command is effectively sustained, but without the burden of holding capabilities better held elsewhere. A line of support may contain a number of sustainment units.

1.2 Lines of Maintenance Support

1.2.1 First Line. A maintenance organization allocated to a unit (i.e. battle group, battalion or regiment). A first line maintenance organization generally performs repairs of limited duration, must have mobility to match the supported unit, and is designed to be the interface with the equipment operators to diagnose faults. 'Limited duration' generally refers to repairs that take four or less hours.

1.2.2 Second Line. A maintenance organization allocated to a formation (i.e. brigade or brigade group). A second line maintenance organization is characterized by its ability to perform maintenance tasks of a longer duration than a first line organization. It generally has access to a greater range of parts and tooling. 'Longer duration' is generally defined as repairs that take between 4 and 12 hours.

1.2.3 Third Line. A maintenance organization allocated to a base or theatre of operations. Third line maintenance augments second line and can provide support to the Materiel Management and Distribution System (MMDS) through component repair and calibration. At third line, repair facilities are more robust and static in nature and repair resources are dedicated to production rather than battlefield survivability. An example is a maintenance workshop at a theatre base on operations, or base level facilities in Canada.

1.2.4 Fourth Line. A national level maintenance organization. Fourth line support is provided from static facilities outside the theatre of operations. It includes national resources such as 202 Workshop Depot, civilian manufacturers, and contractors.

1.3 Types of Maintenance

1.3.1 Preventive Maintenance. Systematic and/or prescribed maintenance intended to reduce the probability of failure. This includes preventative maintenance servicing by both operators and technicians.

1.3.2 Corrective Maintenance. Maintenance actions carried out to restore a defective item to a specified condition.

1.4 Canadian Armed Forces Maintenance Technicians

1.4.1 Canadian Armed Forces Maintenance Technicians who could be involved in the maintenance of the CFLEWM system (in general terms):

a) Army Communication and Information Systems Specialist Communication Systems Technologist (ACISS-CST): Perform preventive and corrective maintenance on all types of radios, radar and data processing, cryptographic, terminal, audio and video equipment.

1.5 Supply Chain

1.5.1 The Canadian Armed Forces (CAF) has two main supply depots in Canada (Edmonton and Montreal) in which materiel from suppliers arrive and are catalogued. From each of these locations, materiel is shipped to CAF bases for distribution to units who are the end user. In terms of spare parts, there is typically a stock level assigned to each location based on the dependent unit's fleet types, fleet size and training frequency, as well as the type of maintenance that can be performed at that specific unit. The stock levels, totaled across all depots and supply locations, are called scaling. A single supply depot is normally assigned for a significant portion of materiel being shipped to international operations.

1.6 Integrated Logistic Support (ILS)

1.6.1. ILS plans and directs the identification and development of logistic support and system requirements for military systems, with the goal of creating systems that last longer and require less support, thereby reducing costs and increasing return on investments. ILS therefore addresses these aspects of supportability not only during acquisition, but also throughout the operational life cycle of the system. The impact of ILS is often measured in terms of metrics such as reliability, availability, maintainability and system safety.

1.7 Sustainment Requirements – ILS Services

1.7.1 Logistic Support Analysis (LSA). LSA is the process by which the logistic support necessary for a new system/equipment is identified. It is comprised of tasks and actions needed to identify and quantify logistic resource requirements, and to optimize the type, quantity, and distribution of these resources with respect to life cycle costs and availability. LSA will include data associated to preventative and corrective maintenance tasks. Additionally, the resources required to complete the maintenance tasks will be identified. These resources include spare parts, consumables, Special Tooling and Test Equipment (STTE), and personnel.

1.7.2 The support analysis data are required to be structured as a Logistic Support Analysis Record (LSAR). The LSAR Database normally includes the following items:

a) All components (including repairable parts and consumables);

b) Manufacturer information, total Line Replaceable Units (LRU)/Spares and Unit Costs Estimate;

c) Recommended Spares/Parts. The recommended Spares/Parts will be used to create the Recommended Spares Parts List (RSPL); and

d) Indicate if item is a Maintenance Significant Item (MSI).

1.7.3 The Logistic Support Analysis Data listed below are populated in the LSAR if identified as a Maintenance Significant Item:

a) Failure Rate;

b) Mean Time to Repair (Hours);

c) Shelf Life (months);

d) Maintenance Concept; and

e) Preventative Maintenance Frequency.

1.8 Initial Provisioning, Spare Parts and STTE

1.8.1 Industry will be asked to recommend an initial scaling of spare components and sub-systems, in sufficient quantities to support the determined availability of the fleet. The scaling of spare components and sub-systems will reflect the data within the LSA. The CFLEWM project is responsible for acquiring the initial spare parts and two (2) years of annual replenishment spares in addition to the test equipment and consumables, which must be sufficient to sustain the CAF during the initial provisioning period of 2 years, based on the scaling agreed upon between the Project Management Office (PMO) and contractor.

1.8.2 Spare Parts – The initial provisioning period will allow data to be recorded in terms of performance metrics and spare parts usage. This data will be used to properly formulate the basis of the sustainment requirements for the remaining life of the fleet.

1.8.3 Spare Parts Management – The CFLEWM Project is investigating the capabilities of Industry to perform spare parts management, such as warehousing, maintaining and distribution.

1.8.4 Special Tooling and Test Equipment (STTE) – The Original Equipment Manufacturer (OEM) will be expected to identify and provide all STTE required to service, diagnose and repair the fleet as outlined in the LSA.

1.9 Contracted Maintenance and Training Services

1.9.1 Operator Training. When procuring a new fleet, operator training is typically coordinated up front as part of the initial procurement. This allows the CAF to operate the fleets upon initial delivery. Initial Cadre Training is provided by the contractor to a specific quantity of operators and operator-trainers. Ongoing training on operation of CFLEWM will be provided at the Canadian Forces School of Communications and Electronics (CFSCE) located at Canadian Forces Base (CFB) Kingston. Ongoing training may also be delivered as part of a long-term support contract if required. The CFLEWM Project is investigating the capabilities of Industry to provide ongoing operator training as part of a long-term support contract if required.

1.10 Field Service Representative (FSR)

1.10.1. FSRs are individual technician representatives of a supplier to provide maintenance or training services at a site chosen by the CAF. Depending on the fleet, FSR services may be requested at a variety of CAF locations, potentially world-wide or in theatre of operations.

1.10.1.1 Maintain. FSRs could be employed to carry out maintenance tasks and technical investigations in order to sustain the fleet at the predetermined availability.

1.10.1.2 Train. FSRs could be employed across Canada at the major base hubs to train a predetermined number of operators and/or technicians.

1.10.1.3 Repair and Overhaul. FSRs could be employed across Canada at the major base hubs to undertake or assist in repair and overhaul activities.

1.11 Service Facilities

1.11.1. Similar to FSRs, support could be provided at contractor facilities. The CFLEWM Project is also seeking information from Industry on the capabilities to complete repairs, training, and Repair and Overhaul (R&O) in commercial service facilities both within Canada and internationally.

1.12 Excluded Maintenance Services.

1.12.1. Operational requirements dictate that 1st and 2nd line support in expeditionary operations be provided by CAF technicians. Any contracted support in these instances would be from a 3rd line role, providing support from a theatre base of operations. Tasks of such a contractor arrangement could include support to 1st and 2nd line organizations when operational tempo and geography allow.

1.13 Engineering Services

1.13.1. The CFLEWM Project is exploring the capabilities of Industry to carry out engineering and technical tasks, which are critical to continuously ensuring availability of the system.

1.13.2. Engineering Services. Work may include modifications, system/sub-system/component reliability assessments or failure analysis. Mechanisms for such tasks might include: Technical Investigation and Engineering Support (TIES) contract; Special Investigations and Technical Studies (SITS) contract; Additional Work Request (AWR); or In-Service Support (ISS) contracts.

1.14 Embedded Contractors

1.14.1. The CFLEWM project is investigating the ability of Industry to work embedded in DND facilities in order to enhance communication and provide responsive technical solutions.

1.15 Technical Data Package

1.15.1. Communication. Access to Technical Publications and OEM updates/modifications is critical for the effective management of any fleet.

1.15.2 Provision of Technical Publications. There will be a requirement to provide OEM technical publications such as operator manuals, preventative & corrective maintenance manuals, and available commercial part numbering listings (as procured by OEM).

1.15.3 The CFLEWM Project is investigating the capabilities of Industry to provide updates to technical publications over the 15-20 year life-cycle of the systems.

1.15.4 The CFLEWM Project is investigating the capabilities of Industry to provide Technical Drawing Packages.

1.16 Configuration / Obsolescence Management

1.16.1. There will be a requirement to conduct Configuration Management (CM) to establish and maintain consistency of the performance, functional, and construction attributes of the deliverables with the requirements, design, and operational information.

1.16.2 The CFLEWM Project is investigating the capabilities of Industry to provide Configuration Management services over the 15-20 year life-cycle of the systems.

1.16.3 There will be a requirement to conduct first article inspection and pre-delivery inspections.

1.16.4 There may be a requirement to conduct functional configuration audits and physical configuration audits.

1.16.5 Obsolescence Management. There will be a requirement to provide obsolescence management during the initial provisioning period, which is expected to include but is not limited to high risk components/sub-systems list and obsolescence management issues reports (as required). The CFLEWM Project is investigating the capabilities of Industry to provide obsolescence management services, to ensure that the effects of obsolescence in terms of

equipment support, effectiveness and support costs are mitigated by a combination of reactive and proactive management activities.

1.17 Software

1.17.1. The system will have a software requirement that in itself will be complex due to integration and will require some or all of the aforementioned ILS services throughout its lifecycle. The software for the system must be given due consideration with respect to configuration management, incremental improvements, and obsolesce management such that it is able to keep pace with current technology and user expectations.

1.17.2. Network Architecture. It is anticipated CFLEWM will require access to networked data. The CFLEWM team is investigating the most appropriate network architecture, technical interface, redundancy, and data storage method to reach the desired system availability and uptime.

1.18 Testing

1.18.1. There will be a requirement to prove defined CFLEWM capabilities in a test setting. This may include, but is not limited to:

1.18.1.1 DND User Trials - Test & Evaluation to demonstrate that the system meets the requirements and specifications; and

1.18.1.2 Contractor Capability Testing – Testing could include but is not limited to: Interference, compatibility with allies, level of noise emission, start-up, operate, conduct various tasks, extreme weather operations.

1.19 Intellectual Property

1.19.1. Canada must have sufficient Intellectual Property (IP) access to ensure it is able to conduct low-level upgrades “in-house”.

1.20 Preliminary Concept of Sustainment

1.20.1. Maintenance

1.20.1.1 First line performed in expeditionary operations by CAF technicians. Domestically, CAF technicians may be supported by FSRs. Third and fourth line maintenance is anticipated to be conducted by contractor/FSR both domestically and on operations.

1.20.1.2 An initial period of maintenance support to be provided by the contractor, with an additional support contract to be considered separately over the lifecycle of the CFLEWM system. Maintenance of any simulation system is anticipated to be provided by the contractor should it have unique maintenance requirements from the CFLEWM system.

1.21 Supply

1.21.1. The CFLEWM project will acquire two years spares and technical stores to the appropriate CAF depot(s). The depot(s) will hold an additional operational stock of at least 30 days of supply of parts, but options for contractor housing of spares and technical stores delivery will be explored.

1.22 ILS Services

1.22.1. It is expected that configuration management, engineering support, technical data packages, and operator and maintenance manuals will be part of a long-term service contract. Access to data for logistic support analysis will be essential, as will the integration of fleet data with the CAF’s SAP enterprise resource planning tool, Defence Resource Management Information System (DRMIS).

1.23 Lifecycle and R&O

1.23.1. The estimated life expectancy of the equipment is currently anticipated at 15-20 years.

1.24 Training

1.24.1. Initial cadre training for both operators and maintenance personnel to be developed and delivered by contractor, with training materials transferred to the CAF to be adapted for our own use. The number of serials will depend on the length and complexity of the training package, but the end state will be achieved when training responsibilities are transferred successfully to Army and/or long-term arrangements are made for contracted training (if needed). Simulators are expected to be part of the training solution for operators and there may be a requirement for at least one maintenance training aid for Canadian Forces School of Communication and Electronics (CFSCE).

1.25 Key Performance Indicators (KPIs) by which sustainment may be measured

1.25.1 Of prime concern is the availability of the CFLEWM system to perform its mission. The following are a few common metrics that we are considering to measure the sustainment system performance. While the metrics below emphasize mean values, other measures of central tendency may be examined (i.e. median, mode) if appropriate.

1.25.1.1 Mean time to repair (MTTR). The mean time to conduct a corrective maintenance action by technicians.

1.25.1.2 Mean operating time between failures (MTBF). For a stated period in the life of a functional unit, the mean value of the lengths of operating time between consecutive failures under stated conditions.

1.25.1.3 Mean downtime (MDT). Downtime consists of all preventive and corrective servicing and repair time plus time awaiting parts or labour and other administrative delays.

1.25.1.4 Uptime. Represents the time the equipment is operated and available for use.

1.25.1.5 Mean time to deliver spare parts (MTTDSP). Mean time from when order placed in DRMIS to delivery of part to appropriate maintenance organization.

1.25.1.6 Mean time between maintenance (MTBM). For a stated period in the life of a functional unit, the mean length of operating time between maintenance. MTBF only considers preventative and corrective maintenance performed by technicians, not that which is considered operator maintenance.

1.25.1.7 Availability. The probability an item is in operable and committable state at the start of a mission when the mission is called for at an unknown (random) time. We will quantify availability in three ways:

1.25.1.8 Inherent availability: $= \frac{MTBF}{MTBF+MTTR}$

This expression of availability is a characteristic of the equipment being maintained and does not reflect on the maintenance environment.

1.25.1.9 Achieved availability: $= \frac{MTBM}{MTBM+MDT}$

This measure reflects the reliability and maintainability of the equipment as it only includes preventive and corrective maintenance activities.

1.25.1.10 Operational availability: $= \frac{Downtime}{Downtime+Uptime}$

Operational availability reflects on the maintenance environment as well as the equipment. This is the measure of availability which gives the true availability of the system for operators.

Annex C

Canadian Forces Land Electronic Warfare Modernization Industrial and Technological Benefits

Application of the Industrial and Technological Benefits (ITB) Policy

Note

Canada has received some feedback from industry on opportunities for economic benefits related to the CFLEWM project. As we continue to engage industry during this RFI process, we welcome any additional or updated feedback from industry.

The Industrial and Technological Benefits (ITB) Policy, including Value Proposition, may be applied on the Canadian Forces Land Electronic Warfare Modernization (CFLEWM) project. Engagement with industry through the Request for Information (RFI) will help determine the application of the ITB Policy and how Canada could leverage opportunities for economic benefit through this procurement.

The ITB Policy including Value Proposition

The ITB Policy is a powerful investment attraction tool and companies awarded defence procurement contracts are required to undertake business activities in Canada equal to the value of the contract. The ITB Policy encourages companies to establish or grow their presence in Canada, strengthen Canada's supply chains, and develop Canadian industrial capabilities.

The goal of the ITB Policy is to support the long-term sustainability and growth of Canada's defence sector, including small and medium-sized businesses (SMB) in all regions of the country, to enhance innovation through research and development (R&D) in Canada, to support skills development and training, and to increase the export potential of Canadian-based firms. The ITB Policy includes the Value Proposition (VP), which requires bidders to compete on the basis of the economic benefits to Canada associated with their bid. Winning bidders are selected on the basis of price, technical merit and their VP. VP commitments made by the winning bidders become contractual obligations in the ensuing contract.

For more information about the ITB Policy, please visit www.canada.ca/itb.

Key Industrial Capabilities:

To maximize the economic impact that can be leveraged through the VP, Canada will look to use the ITB Policy to motivate defence contractors to invest in Key Industrial Capabilities (KICs). KICs align with Canada's defence policy, *Strong, Secure, Engaged*, and the *Innovation and Skills Plan* by supporting the development of skills and fostering innovation in Canada's defence sector. The KICs represent areas of emerging technology with the potential for rapid growth and significant opportunities, established capabilities where Canada is globally competitive, and areas where domestic capacity is essential to national security.

Based on initial analysis of the CFLEWM project, this procurement encompasses the KICs of **Cyber Resilience, Defence Systems Integration, and Artificial Intelligence**, where Canada has world leading capabilities. Canada will be seeking to motivate high value economic opportunities and partnerships to support the growth of Canada's defence sector, as well as enhance supply chain participation and skills development opportunities for Canadian industry.

The definitions for the relevant KICs for this project are:

Cyber Resilience

Cyber resilience spans every element of the domestic commercial, civil and national security sectors and addresses the vulnerabilities created by the expansion of information technology and the knowledge economy. Activities in this segment include design, integration and implementation of solutions that secure information and communications networks. These and other technologies should focus on achieving effective development of the following cyber capabilities:

Information security

The practice of defending electronic and digital data and information from unauthorized access/intrusion, use, disclosure, disruption, modification, perusal, inspection, recording or destruction;

IT security

Secure content and threat management (endpoint, messaging, network, web, cloud), security, vulnerability and risk management, identity and access management and other products (e.g. encryption/tokenization toolkits and security product verification testing), and education, training services and situational awareness;

Operational technology (OT) security

Monitoring, measuring and protecting industrial automation, industrial process control and related systems. Cyber resilience may involve the development of tools and the integration of systems and processes that permit hardening of tactical systems or broader networks, encryption, cyber forensics, incident response, and others. Capabilities developed in this domain may increasingly draw on AI as an enabling technology; for example, networks may autonomously and dynamically defend against intrusions and repair themselves if disrupted.

Defence Systems Integration

Design and integration of complex military systems that hinge on the seamless linking together of multiple sub-systems to yield an effective operational capability. These capabilities span various military platforms and enable the operation and management of weapons, defensive systems, command and control systems, sensors, decision support systems, electronic warfare devices and a platform's core sub-systems in a tightly coordinated fashion essential under highly stressing combat conditions. These systems need to present information to their operators stemming from multiple sources in a manner that is understandable, secure, and supports decision-making in a complex environment. This definition does not include the various constituent systems (e.g., missile launching systems, radars, electronic warfare systems, etc.) that the work of defence systems integration aims to combine into a cohesive whole. Rather, the definition focuses on the skills and other capabilities needed to perform the integration work, and to create the user interface that is needed in such complex mission systems.

Artificial Intelligence

Artificial Intelligence (AI) spans a range of technologies that allow machines to execute tasks that normally require human intelligence, such as pattern and speech recognition, translation, visual perception, and decision-making. AI develops or draws on disciplines such as search and mathematical optimization, machine learning, deep learning, self-learning, and neural networks. AI can reduce operator workload and automate easily repeatable tasks that otherwise require significant human involvement. AI promises enhanced efficiency in the use of trained personnel, less exposure of humans to dangerous environments, and more rapid responses to changes in the military operating environment. It can also permit the analysis of large volumes of data in support of intelligence analysis, mission planning and rehearsal, logistics and business management, cyber security and resilience, and many other activities. AI is relevant across a broad set of both defence and non-defence domains.

CFLEWM ITB and VP Industry Questions

Defence Sector

The ITB Policy seeks to promote economic development and long-term sustainment of Canadian businesses engaged in the manufacturing and delivery of products and services used in government defence and security applications.

1. Please describe the production activities or services your company performs in the KICs of Cyber Resilience, Defence Systems Integration, and Artificial Intelligence? Please detail which activities are currently performed in Canada.

2. Industry feedback and analysis indicated that a minimum of 60% of the work on this project could be completed in Canada using Canadian resources. What opportunities and constraints do you foresee in regard to meeting this minimum?

Supplier Development

The ITB Policy seeks to improve the competitiveness of Canadian industry by encouraging Canadian industrial participation and the scaling up of Canadian companies including small and medium-sized businesses (SMB) in the supply chains of bidders and tier-one suppliers for the CFLEWM project.

3. What are the opportunities and constraints for Canadian companies to be integrated into your company's existing and developing supply chains?
   a. What are the opportunities and constraints to integrating Canadian SMBs (less than 250 full time equivalents) into these supply chains?
   b. What are the opportunities and constraints to integrating small Canadian companies (less than 50 full time equivalents) into these supply chains?

4. The ITB Policy requires that at least 15 percent of the contractor's ITB obligation (equal to the value of the contract) be represented by work with Canadian SMBs with less than 250 employees. To what extent can you commit to a SMB requirement of over 15 percent in order to nurture the development of Canadian SMBs (includes both work on this procurement (Direct) and work in other business areas (Indirect))?

5. Apart from this procurement, in what other areas of production and service-provision do you see opportunities to assist SMBs, that have capabilities within the KICs identified above, to scale up in order to respond to domestic and global demand?

Skills Development and Training

The ITB Policy fosters the development and sustainment of a diverse, talented, and innovative Canadian workforce through access to training, education, opportunities and programs.

Examples of Skills Development and Training activities:

i. Work integrated learning programs (e.g., co-operative education; work placements);
ii. Apprenticeship programs;
iii. A new or existing skills development program at or through a post-secondary institution;
iv. Support for security certifications (e.g.: Secret; U.S. International Traffic in Arms Regulations - ITAR) or cybersecurity compliance certifications for Canadian companies, especially small and medium-sized businesses;

6. What Skills Development and Training activities does your company currently provide? How do these activities support skills development and training in the KICs of Cyber Resilience, Defence Systems Integration, and Artificial Intelligence?

7. What Skills Development and Training challenges does your company anticipate within the KICs of Cyber Resilience, Defence Systems Integration, and Artificial Intelligence and how is your company seeking to overcome them?

Research and Development (R&D)

The ITB Policy promotes scientific investigation that explores the development of new goods and services, new inputs into production, new methods of producing goods and services, or new ways of operating and managing organizations.

8. Please describe your company's priority areas for R&D investment. As part of your answer, please identify to what extent these priority areas align with the KICs of Cyber Resilience, Defence Systems Integration and Artificial Intelligence?

9. Recognizing the role that post-secondary institutions and public research institutes play in fostering innovation in Canada, please describe what potential opportunities your company foresees undertaking in Canada with these organizations and what specific research areas you would pursue.

10. What should the minimum R&D requirement be (as a percentage of anticipated bid price) in order to motivate bidders to invest in high-value innovation within Canada's KICs?

Export

The ITB Policy promotes the ability of Canadian companies, including SMBs, to successfully tap into export markets, thereby increasing their productivity, and competitiveness in the global market.

11. What export opportunities will be available to your company as a result of this procurement? How would this procurement assist your company to further develop capabilities and access new markets in Canada and abroad?

12. Which components of the CFLEWM solution are potentially the most exportable and why?

Other Questions

13. Comparatively to price and technical merit, Value Proposition typically has a weight of 10-20% of the overall bid evaluation. What is your view on the weighting of the Value Proposition for the CFLEWM project?

14. Within the Value Proposition, what are your recommended minimum percentages of weighting for each of the Value Proposition pillars (i.e. Defence Sector, Supplier Development, Skills and Training, R&D, and Exports)?

15. Are there other relevant KICs which align with the work to be conducted for the CFLEWM project? If yes, please indicate which KICs should be considered and why. As part of your response, please describe how the proposed KICs would enhance the opportunities that could be leveraged through the Value Proposition for Canadian industry.

ANNEX D

COSTING REQUIREMENTS/QUESTIONS

Initial Acquisition

1. The purpose of the Canadian Forces Land Electronic Warfare Modernization (CFLEWM) costing annex is to request Rough Order of Magnitude (ROM) costing information from suppliers in order to allow Canada to prepare its documents for the Project Approval. Respondents are asked to provide ROM pricing for as many questions and activities as possible in this annex. The list of deliverables is as complete as possible at this time; however, if a specific cost element is not provided for any reason (e.g. it is included in the price for another item), please provide an explanation in your response.

2. Please provide a breakdown, to the lowest level possible, of the cost of the CFLEWM solution your firm suggests that would enable Canada to meet all of the requirements laid out in Annexes A and B. Please note, any and all information you can provide, even if incomplete, will significantly enhance the project.

3. The suppliers can provide alternative costing models then the one provided.

Table 1 - Acquisition Costs

Description	Proposed Solution	Quantities	Estimated unit price 0 = No Cost
C2 and Analysis Software - The CFLEWM project requires software that will enhance the Command and Control of EW assets in near real time, and quickly influence the commander's decision-making cycle. Specifically, **C2 Level** software must allow command staff and operators to Plan, Manage, and Analyze the EMS, in order to generate an EOB, which is further graphically illustrated with a SCOP. All EW assets falling under the five operational functions of COMMAND, SENSE, ACT SHIELD and SUSTAIN are controlled and synchronized through the intuitive and interactive C2 GUI. Further, the GUI provides a "see through" capability which allows operators to plan operations without causing or experiencing unacceptable interference to Friendly Forces. C2 Level software would be utilized in EWCC and EWOC vehicles and shelters. The project also requires **Operator Level** software designed to enhance the ability of EW operators to monitor the EMS, contribute to the EOB and SCOP, while maintaining a limited ability to control assets, and conduct rudimentary analysis. The software will allow operators to detect, classify, identify, geolocate, and possibly exploit Signals of Interest (SoI). Operator Level software would be found in EWCC, EWOC, MEWT, and LEWT vehicles and shelters. **EW Analysis** software will allow EW operators and intelligence personnel to further refine the classification, identification, and exploitation of SoI in the pursuit of actionable intelligence. EW Analysis software would be utilized by those personnel working in EWAS shelters. Additionally, software will also facilitate an operator's ability to execute EA against specific targets / target areas as opposed to "brute force" attacks. This software would be found in vehicles specifically tasked with carrying out EA. Ultimately, resultant software must be able to facilitate the above tasks while easing operator workload through the use of AI/MI, in addition to importing and exporting data to and from the Enterprise, RCAF, RCN, and FVEY partners. Quantities must provide for the fielding of a Canadian Mechanized Brigade Group HQ, 1 x Battle Group, and op stock. (Reference Annex A)			
a) C2 and Analysis Software			$ _____ .__
			$ _____ .__
			$ _____ .__
			$ _____ .__
			$ _____ .__
			$ _____ .__
*If possible, please include average operating costs - Hourly, Annually...etc. Please provide a detailed response.			

Tactical Equipment – The CFLEWM must result in COTS and/or MOTS equipment and systems that will enable EW personnel to plan, manage, and execute EW resources and missions with the capability to detect, identify, classify, and exploit SoI, in addition to conducting EA missions at the tactical level. These systems must employ open architecture and standards, be scalable, modular, and task-tailored to meet the full spectrum of Canadian Army (CA) core missions. Specifically, equipment will include state-of-the-art Sense equipment in MEWTs, LEWTs, shelters, and as UAS payloads. The project will also provide for EA equipment, which is vehicle mounted, remote/disposable and as a UAS payload. The project will result in Multi-Function Electronic Warfare (MFEW) systems providing mounted and dismounted ECM against RCIED as primary function. These MFEW will also have ES and EA capabilities. Signals detected and collected by all supplied equipment will feed into an EW Operational Database (EW ODB) for subsequent distribution to associated systems. All equipment will support the requirement for Joint Combined operations with the RCAF and RCN, the FVEY community, and select NATO partners. (Reference Annex A)

b) Tactical Hardware and Equipment Procurement and Installation/Integration			$ _____ .__
			$ _____ .__
			$ _____ .__
			$ _____ .__
			$ _____ .__
			$ _____ .__
			$ _____ .__
			$ _____ .__
			$ _____ .__

*If possible, please include average operating costs - Hourly, Annually...etc. Please provide a detailed response.

Training Systems – The CFLEWM project must result in a training system that greatly enhance the ability of Canadian Army EW personnel to plan operations, manage EW assets, and exploit the EMS. This training system will be scalable and incorporate a simulated environment that will reduce the time and costs involved in training EW operators. The training and simulation solution will allow for individual and collective training that is realistic and immersive, while integrating in-service equipment and systems, or similes, within customizable mission scenarios. Training system deliverables will include, as a minimum, Instructor Lesson Plans, Training Plans, Presentations, Reference Materials, Handouts and Study Materials, Scenario and Mission Plans, Training Aids, and Simulators and Equipment required to assess student progress. The system must provide for the training of both operators and maintainers. (Reference Annex A)

c) Training Systems			$ _____ .__
			$ _____ .__
			$ _____ .__
			$ _____ .__
			$ _____ .__
			$ _____ .__
			$ _____ .__
			$ _____ .__
			$ _____ .__
			$ _____ .__
*If possible, please include average operating costs - Hourly, Annually...etc. Please provide a detailed response.			

Sustainment

1. Project cost for activities related to sustainment of CFLEWM equipment.

2. **Notes**: Please indicate each deliverable and associated costs if applicable in reference to section 1.

Table 2 – Sustainment Costs

	Description	Estimated unit price 0 = No Cost
Ongoing Annual Program Management Cost that captures the costs for the following CORE activities:		$ _____.__
2.1	**Sustainment Requirements – ILS Services**	
2.1.1	Integrated Logistic Support (ILS) Plan	
2.1.2	Logistic Support Analysis (LSA)	
2.2	**Configuration Management (CM)**	
2.2.1	Conduct Configuration Management	
2.2.2	Conduct First Article Inspection	
2.2.3	Conduct Pre-Delivery Inspection	
2.2.4	Conduct Functional Configuration Audit	
2.2.5	Conduct Physical Configuration Audit	
2.2.6	Provide updates to technical publications over the 15-20 year life cycle of the CFLEWM System.	
2.3	**Obsolescence Management (OM)**	
2.3.1	High Risk Components / Sub-systems list	
2.3.2	Obsolescence Management Issues Report (as required)	
2.3.3	Cost of proposed solution to track KPI performance metrics	
2.4	**Initial Provisioning and Supply Services**	
2.4.1	Initial spare parts and two (2) years of annual replenishment spares	$ _____.__
2.4.2	Spare parts management at commercial facilities and delivery both to Canadian facilities and internationally	$ _____.__
2.4.3	Warehousing of spare parts at contractor facilities.	$ _____.__

2.5	Special Tools and Test Equipment (STTE) for the preventive and corrective maintenance the CFLEWM System	
2.5.1	STTE requirements / STTE Package	$ _____.__
2.6	**Contracted Maintenance and Training Services**	
2.6.1	Initial Cadre Training (ICT) – Operator Training (English and French)	$ _____.__
2.6.2	Initial Cadre Training (ICT) – Technician Training (English and French)	$ _____.__
2.6.3	ICT Courseware (Operator and Technician). (English and French)	$ _____.__
2.6.4	Training Aids for Maintenance Training.	$ _____.__
2.7	**Service Facilities**	
2.7.1	Cost associated with 1st, 2nd, 3rd, and 4th line repairs in commercial service facilities both within Canada and internationally	$ _____.__
2.7.2	Cost associated with repair and overhaul at contractor facilities.	$ _____.__

2.8	Engineering Services		
2.8.1	**Technical Investigation and Engineering Services (TIES)**		
2.8.2	Technician	HOURLY RATE	$ _____.__
2.8.3	Engineer	HOURLY RATE	$ _____.__
Provide any other related labor categories along with the costing information			
		HOURLY RATE	$ _____.__
		HOURLY RATE	$ _____.__
		HOURLY RATE	$ _____.__
2.9	**Fielding and Maintenance support**		
2.9.1	FSR - Maintain	HOURLY RATE	$ _____.__
2.9.2	FSR - Train	HOURLY RATE	$ _____.__
2.9.3	FSR - Repair and Overhaul	HOURLY RATE	$ _____.__

2.10	Technical Data Package	
2.10.1	Operator Manual (English and French)	$ _____.__
2.10.2	Preventative & Corrective Maintenance Manuals (English and French)	$ _____.__
2.10.3	Associated costs for Technical Drawing Packages	$ _____.__
2.11	**Software**	
2.11.1	Licencing / renewal / subscription	$ _____.__
2.11.2	Integration or ongoing support costs (as required)	$ _____.__
2.12	**Testing**	
2.12.1	Support DND-led User Trial	$ _____.__
2.12.2	Contractor-Led Capability Testing	$ _____.__
2.12.3	Support DND-led testing	$ _____.__
2.13	**Intellectual Property (if applicable)**	
2.13.1	Licence to IP rights specified (if applicable)	$ _____.__

Any other costs that may be relevant to ongoing sustainment of the CFLEWM system as a whole		
Item, Description, Etc.	Quantity, Hourly, Etc.	Cost
		$ _____.__
		$ _____.__
		$ _____.__
		$ _____.__
		$ _____.__
		$ _____.__
		$ _____.__
		$ _____.__

APPENDIX 1 TO ANNEX D – CFLEWM ITEMIZED DELIVERABLE LIST TO AID IN ROM COSTING[1]. (Reference Annex A and B)

For Context, the CFLEWM project requires sufficient hardware and software to equip a doctrinal Electronic Warfare Regiment (1 x HQ Sqn, 3 x Direct Support Sqn, 1 x General Support Sqn, and 1 x CSS Sqn) tasked with supporting a deployed Brigade HQ, and 1 x Battle Groups, with additional equipment for training and Op Stock.

GENERAL SOFTWARE DELIVERABLES		
Item	Description	Quantity
1	C2 Software Package: Software specifically designed to Plan and Manage EW operations, and assets, including MFEW. This will be an intuitive and interactive GUI, which will enhance the ability of EW leadership to quickly influence the commander's decision-making cycle. Software will normally be used for EWCC and EWOC tasks.	12
2	Operator Software Package[2]: Software designed to allow operators of MEWT, LEWT, and Shelters to detect, identify, classify as signals of interest (SoI), and exploit adversarial signals. Software will enhance the ability of EW operators to contribute to the maintenance of EOB, SCOP and BDA. Software will utilize AI/MI in order to reduce operator cognitive stress. Ability to monitor MFEW may be required.	35
3	EW Analyst Software Package: Software designed to allow operators to conduct initial signal analysis.	35
4	EW Analyst Software Package – Enhanced: Software designed to allow EW operators and Intelligence personnel to conduct deep analysis of SoI in order to produce actionable intelligence. Software will normally support EWCC, EWOC, and EWAS tasks.	8
5	EA Software Package[3] Software designed to assist in the planning and execution of EA activities.	8
6	DF Software Package[4]	5
7	UAS ES Software Package: Software capable of controlling an UAS ES payload.	2
8	UAS EA Software Package: Software capable of controlling an UAS EA payload.	2
9	EW Health Monitoring Software: Software designed to report the availability and functionality of all EW assets. Software will monitor and report on Availability, MTTR, MTBF, MDT, MTBM, etc.	36+
10	Data Management Software Package: Software designed to automatically update the EW DB with minimal input from EW operators.	8
11	MFEW Monitoring and Control Software: Software to collect data from and push updates to MFEW systems.	36+
12	EW Training and Simulation Software: Simulation software integrated into the operational equipment if capability exists[5].	36+
13	Any additional software required to conduct individual and collective training.	TBD

[1] Note: This is a rudimentary list of minimal Hardware/Software deliverables to aid Business. Business is encouraged to modify or comment on the list when submitting their Costing data, based on their respective CFLEWM solution. Business is further requested to include all integration costs.
[2] Operator software package may be split in order to address differing MEWT, LEWT, and Shelter requirements. Business to advise.
[3] If possible, same software to support all EA functions.
[4] If not included in Operator Software Package.
[5] If this capability does not exist or is cost prohibitive, a standalone solution will be pursued.

General Hardware Deliverables		
Item	Description	Quantity
1	C2 Hardware: Hardware and associated equipment required to conduct C2 of all EW assets[6]. Equipment will be mounted in MEWT and/or Shelters.	12
2	MEWT Sense Hardware: Hardware and associated equipment required to conduct robust Sense activities.	18
3	LEWT Sense Hardware: Hardware and associated equipment required to conduct light Sense activities, mounted or dismounted.	9
4	Static Hardware: Hardware and associated equipment to conduct Sense operations from static Shelters.	8
5	EA Hardware	10
6	DF Hardware(s) (HF to EHF bands required)	5
7	UAS ES Payload[7]	2
8	UAS EA Payload[8]	2
9	MFEW Mounted[9]: Hardware and associated equipment required for Bde HQ and 1 x BG to conduct MFEW (principally ECM against RCIED). To be carried in F Echelon vehicles.	515
10	MFEW Dismounted[10]: Hardware and associated equipment required for 1 x BG to conduct MFEW (principally ECM against RCIED).	265
11	Any additional hardware required to conduct individual and collective training.	TBD

[6] Hardware and associated equipment would include all necessary antenna, receivers, transmitters, computers, tablets, cabling, etc.
[7] 17kg (350W max) payload currently envisioned.
[8] 17kg (350W max) payload currently envisioned.
[9] Based on requirement to equip a Bde HQ and 1 x BG (Ref: LoO 3 and 4).
[10] Based on requirement to equip 1 x BG (Ref: LoO 3).

ANNEX E

CFLEWM HIGH LEVEL MANDATORY REQUIREMENTS AND QUESTIONS TO INDUSTRY

High Level Mandatory Requirements (HLMR)

1.1 General

1.1.1 This annex contains the preliminary HLMR for Canadian Forces Land Electronic Warfare Modernization (CFLEWM) project, which define a set of high level functional and performance requirements. Respondents are requested to provide information describing how their proposed solution meets each of the HLMR.

1.1.2 Each of the HLMRs presented here are done so in relation to one of the five operational functions of COMMAND, SENSE, ACT, SHIELD, and SUSTAIN. The annex concludes with a set of important supplementary questions and direction to Industry.

1.2 EW COMMAND

1.2.1 **Understanding the EME.** The command system must be able to ingest all internal and external EW/Cyber Electromagnetic Activities (CEMA) data and display a visual Spectrum Common Operating Picture (SCOP) that, with minimal training, can be understood by command and staff personnel.

1.2.2 **Exporting and Importing Data**. The command system must be able to export and import EW/CEMA data with strategic, joint and allied partners in a format or formats they can ingest.

1.2.3 **Planning EW Operations**. The command system must allow EW operations planning using the SCOP and other tools which can create products in standard military formats. These products will be exported to: the sense, act and shield systems, as well as the in-service combined arms command support systems.

1.2.4 **Execute and Control EW Operations**. The command system must allow EW operations to be conducted using a combination of automated, centralized and distributed processes.

1.2.5 **Analyze Friendly Force Interference**. The command system must be able to determine/quantify the risk of EW operations interfering with friendly force systems.

1.3 EW SENSE

1.3.1 **Detect Signal of Interest (SoI).** The sense capability must operate within the specified frequency range and signal types and protocols to be able to detect SoI.

1.3.2 **Categorise the SoI**. The sense system must be able to categorize SoI by identifying the general characteristics of the signals and be able to import/export data to/from the command system.

1.3.3 **Analyse the SoI**. The sense system must be able to conduct detailed analysis of the SoI to enable further exploitation of the signal and be able to import/export data to/from the command system.

1.3.4 **Exploit the SoI.** The sense system must include tools able to exploit the SoI in order to develop intelligence products and be able to import/export data to/from the command system.

1.3.5 **Geographically Locate SoI.** The sense system must be able to internally/externally cooperatively geographically locate SoI and import/export the location data to the command system.

1.3.6 **Survey the EME.** The sense system must be able to develop a general awareness of the EME and import/export the EME data to/from the command system.

1.3.7 **Record SoI.** The Sense system must be capable of recording the SoI for further analysis.

1.4 EW ACT

1.4.1 **Execute Non-Kinetic Actions.** The act system must be capable of executing offensive non-kinetic CEMA operations.

1.4.2 **Target Adversarial use of the EME.** The act system must be able to operate within the frequency range, power levels, signal types and protocols of adversarial systems in order to interfere with their use of the EME.

1.4.3 **System Interoperability.** The act system must be configurable to minimize adverse effects and interference on other national and allied electronic systems (i.e. Command, Control, Communication, Computers, Intelligence, Surveillance, and Reconnaissance, Counter Unmanned Aerial Systems capability, Allied systems, and vehicle electronics).

1.4.4 **Control of Act System.** The act system must have the capability to be controlled; autonomously, locally by the operator and remotely by the command system.

1.4.5 **Act Configuration.** The act system must be configurable to counter new and evolving threats through acquirable software and development tools that will allow the rapid development of new configuration files.

1.5 EW SHIELD

1.5.1 **Control of Shield System.** The shield system must have the capability to be controlled; autonomously, locally by the operator and remotely by the command system.

1.5.2 **Detect EM Threats.** The shield system must have the ability to detect the EME and identify threat devices such as Radio Controlled Improvised Explosive Device triggers.

1.5.3 **Target EM Threats.** The shield system must be able to operate within the frequency range and signal types of the threat triggers in order to be able to target the devices.

1.5.4 **Geographically Locate.** The shield system must be able to internally and externally cooperatively geographically locate threat device signal and be able to import/export the location data to the command system.

1.5.5 **Suppress EME Threats.** The shield system must be able to inhibit the link between EME threat devices and dramatically reduce the probability of their intended operation at a minimum safe distance.

1.5.6 **Record EME.** The shield system must have the ability to analyse and assess the EME autonomously, locally by the operator, and remotely by the command system to facilitate the identification of changes to threat devices and/or adversary Tactics, Techniques, and Procedures through logs and recordings.

1.5.7 **Shield System Interoperability.** The shield system must be configurable to minimize adverse interference with other electronic systems.

1.5.8 **Shield Configuration.** The shield system must be configurable to counter new and evolving EM threat signals, through acquirable software and development tools that will allow rapid development of new configuration files.

1.6 EW SUSTAIN

1.6.1 **EW Training**. The capability must have the ability to support individual training and be interoperate with collective training systems (i.e. simulation).

1.6.2 **Support to Operations**. The capability must be able to support both mounted and dismounted operations in an integrated fashion.

1.6.3 **In Service Support**. The capability must include in-service support contracts which include ILS, training, and engineering support.

1.7 COMMON TO ALL

1.7.1 **Compatibility.** The capability must be able to operate in a coalition environment by allowing EW data to be fed into and leveraged from the Five Eyes partners.

1.7.2 **Flexibility.** The system must be capable in a wide range of deployment environments, locations and be able to perform against threat signal types by changing frequency bands, power levels and configuration files in a timely manner.

1.8 SUPPLEMENTARY QUESTIONS AND DIRECTION TO INDUSTRY

1.8.1 What solutions does your company provide that could help DND realize the capabilities presented in the CFLEWM CONOP described in Annex A? Specifically, describe in detail the overall system architecture you would propose?

1.8.2 In keeping with the desire for Open Architecture, what standards do you recommend, and why?

1.8.3 Are the solution and/or standards you recommending currently used by the FVEY community?

1.8.4 Confirm your solution will be interoperable with the FVEY community. How will your command system ensure interoperability with the FVEY's community?

1.8.5 Provide comments regarding the technical feasibility of each HLMR detailed in this annex, including Technology Readiness Level (TRL), if known.

1.8.6 If vendors cannot provide the full capability, they will provide a plan, including other vendors they could potentially partner with to address all HLMRs.

1.8.7 Provide a technical description of the proposed solution along with a statement of capability, illustrating how the proposed solution can achieve the HLMR in this annex.

1.8.8 What ability does your solution have to conduct Sense, Act, and Shield from the same platform (i.e. Multi-Function EW)?

1.8.9 Does your solution utilize S-UAS? If so, describe how?

1.8.10 Describe the extent to which your solution utilizes Artificial Intelligence (AI), and its sub-field of Machine Learning (ML).

1.8.11 As a conceptual design, would you modify the current HLSD as presented in Appendix 1 to Annex A? If so, what do you see as required changes?

1.8.12 How does your solution address the need to update an EW Database (EW DB) from a large number of distributed sources?

1.8.13 Can you provide suggestions for a data replication policy/strategy regarding the distributed updating of the EW DB?

1.8.14 What is the single greatest benefit of the Procurement Option you are recommending, and what is the biggest risk?

1.8.15 Does your solution include the ability to Command and Control (C2) all Command, Sense, Act, Shield EW assets, both locally and remotely in a congested and congested environment? If so, describe the C2 concept with

deployed sensors and networking considerations (bandwidth, latency, tactical data links, network protocols, integration with GFE, standards).

1.8.16 Does your solution include Sensor Management Tools and System Health Monitoring and Reporting Tools?

1.8.17 What Configuration/Tasking Tools can you provide, and are they manual, automated, or remote controlled?

1.8.18 Does your solution conform to CAF and/or NATO communications standards regarding message size, format and predefined messages?

1.8.19 To what extent is an intuitive and interactive Graphic Users Interface (GUI) and/or Man Machine Interface utilized in your solution?

1.8.20 Does your solution provide for the import/export of data to strategic, joint and allied network partners? If so, describe the concept involved.

1.8.21 Describe how your concept will address full Spectrum Operations and EW reporting as it relates to the Command, Control, and Coordination of both EW and CEMA?

1.8.22 How will you monitor active connections with EW sensors deployed for remote control and management of EW assets to actively track targets?

1.8.23 What mission planning tools will be available as part the EW command software?

1.8.24 How will you update, prioritize and categorize Signals of interest into the GUI?

1.8.25 How will you display the electromagnetic spectrum activity (classification of emitters, occupancy maps, CEMA, threat picture, Friendly communication plan, EW tasks and missions, geolocation, and direction finding information, and the Electronic Order of battle of friendly and adversary forces) into the GUI? What database dependencies will be required to support the EW command software?

1.8.26 How will you integrate military maps and symbols into the display of military overlays (e.g. APP 6, MIL-STD-2525, etc.?

1.8.27 How will you control and display of survey information into the GUI?

1.8.28 Which other nations have fielded your system? For how many years have these forces fielded your systems?

1.8.29 Describe how your solution can operate in a Positioning Navigation Timing degraded or denied environment

1.8.30 What will be your measure of effectiveness for geolocation and direction finding?

1.8.31 Does your solution synchronize SCOP and reporting functions with the command system?

1.8.32 How does your solution envision the timely and accurate execution of EM non-kinetic actions?

1.8.33 Describe the EW and CEMA effects your solution can deliver, i.e. spoofing, signal hijacking, etc.

1.8.34 Describe how you would interfere with adversarial use of the EM spectrum while mitigating EM fratricide?

1.8.35 Does your solution provide for future capabilities such as 5G exploitation?

1.8.36 Based on the CFLEWM CONOP in Annex A, what is your solution to Intercept, Classify, Analyze, Exploit, and Geolocate Signals of Interest (SoI)?

1.8.37 Confirm the ability to quickly produce information/intelligence from intercepted signals, which in turn can be used to exploit the EME and/or influence the Commander's decision making cycle regarding friendly force manoeuver.

1.8.38 What additional capabilities does your solution contain that have not been articulated by the CFLEWM project?

1.8.39 How will your solution provide Force Protection for both mounted and dismounted operations?

1.8.40 Provide suggestions on how the capability can be sustained through-out its life cycle.

1.8.41 Does your solution provide for "evergreen" sustainment, i.e. can new sensors be added as they evolve, and are low-level hardware additions possible?

1.8.42 Provide feedback on sustainment as outlined in Annex B.

1.8.43 What would be a reasonable target for the KPIs referenced in Annex B? (e.g. Availability, Mean Time Between Critical Failure, Mean Time to Repair) Please provide evidence to support.

1.8.44 Does your company see a project life expectancy of 15 to 20 years as being achievable? If so, provide suggestions as to how the project could be sustained over this length of time.

1.8.45 Explain how you would provide Logistic Support Analysis (LSA).

1.8.46 Mean Time to Deliver Spare Parts (MTTDSP) could you achieve to the main supply depots in Edmonton and Montreal? What MTTDSP could you achieve to CAF bases in Wainwright, Edmonton, Gagetown, Petawawa, Shilo, and Valcartier?

1.8.47 Do you suggest alternative KPIs to what is listed in Annex B? If so, describe them and why they are preferable.

1.8.48 Describe your software and hardware tracking of KPIs. Is it compatible with DRMIS? If so, how?

1.8.49 Please describe, if any, the Special Tooling and Test Equipment (STTE) required for your proposed solution.

1.8.50 Explain how you would provide Field Service Representatives (FSR), *within* Canada, in order to inspect, repair, test, maintain, equipment, and/or train personnel. FSRs may require security clearance to access restricted areas on CAF bases.

1.8.51 Explain how you would provide Field Service Representatives (FSR), *outside of* Canada, in order to inspect, repair, test, maintain, equipment, and/or train personnel. FSRs may require security clearance to access restricted areas on CAF bases.

1.8.52 Is your company able to share the Intellectual Property (IP) required for the Canadian Army to upgrade system components "in-house"?

1.8.53 Does your solution include the ability to "swap" components between equipment?

1.8.54 Has your company ever provided comprehensive training directly related to the solution you are promoting?

1.8.55 How would your solution provide operator training to the Canadian Army at delivery, and over the 15 – 20 year life cycle of the project?

1.8.56 How would your solution provide maintainer training to the Canadian Army at delivery, and over the 15 – 20 year life cycle of the project?

1.8.57 Are you proposing a simulation solution in support of training? If so, describe the system and any sustainment requirements unique to the simulator over the life of the project.

1.8.58 What training aids are required for maintenance training for the CFLEWM system? Are there specific qualification necessary to safely and effectively perform maintenance on the CFLEWM system?

1.8.59 Describe the capability of the training system. Is it part of the operational system or is it a standalone capability? If standalone, can it connect to the user on operations?

1.8.60 Does the training system provide the necessary control and monitoring capabilities to objectively provide soldier feedback and a level of measured training progression?

1.8.61 Can the training system be used as a rehearsal tool for actual operations?

1.8.62 Does the training system have an option or mode for the training of maintainers and technicians?

1.8.63 What level of “spares” are initially required by your solution to ensure two years of reliable availability?

1.8.64 Describe the requirements for storage of the CFLEWM system and suggest a storage plan.

1.8.65 Does your solution include a long-term supply and maintenance regime?

1.8.66 Describe the preventive maintenance cycle required to maintain the CFLEWM system. If known, please include: frequency, level of technical proficiency required (e.g. operator or technician), required time, and any other special considerations (e.g. infrastructure requirements, tooling).

ANNEX F

CFLEWM ACRONYMS

ABCANZ	America, Britain, Canada, Australia, and New Zealand Armies
ACA	Airspace Coordination Area
ACIS	Army Communication and Information Systems Specialist
AGM	Attack Guidance Matrix
AI	Artificial Intelligence
ArtyMIS	Artillery Managed Information System
ASCA	Artillery Systems Cooperation Activities
ASCC	Airspace Coordination Centre
ATACMS	Army Tactical Missile System
ATAK	Android Tactical Assault Kit
ATG	Artillery Tactical Group
AWR	Additional Work Request
BC TAC	Battery Commander Tactical Command Post
BDZ	Base Defense Zone
CA	Canadian Army
CAF	Canadian Armed Forces
CAS	Close Air Support
CFLEWM	Canadian Forces Land Electronic Warfare Modernization
C2	Command and Control
C4ISR	Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance
CDE	Collateral Damage Estimate
CFB	Canadian Forces Base
CFL	Coordinated Fire Lines
CM	Configuration Management
COP	Common Operating Picture
CO TAC	Commanding Officer Tactical Command Post
CSNI	Consolidated Secret Network Infrastructure
DND	Department of National Defence
DGMS	Digital Gun Management System

DRMIS	Defence Resource Management Information System
DTED	Digital Terrain elevation Data
EA	Electronic Attack
ECM	Electronic Countermeasures
EMC	Electromagnetic Compatibility
EMI	Electromagnetic Interference
EO	Electronic-Optronic
EPLRS	Enhanced Position Location Reporting System
ES	Electronic Support
EW	Electronic Warfare
EWAS	Electronic Warfare Analysis Section
EWCC	Electronic Warfare Coordination Centre
FFA	Free-fire Area
FOO	Forward Observation Officer
FSCC	Fire Support Coordination Centre
FSCL	Fire Support Coordination Line
FSR	Field Service Representative
FVEY	Five Eyes
GAJT	GPS Anti-Jam Technology
GFE	Government Furnished Equipment
GFI	Government Furnished Information
GoC	Government of Canada
GPS	Global Positioning System
GSM	Government Supplied Material
HAFEZ	Hostile Aircraft Free Engagement Zone
HLMR	High Level Mandatory Requirements
HPTL	High Payoff Target List
HLSD	High Level System Design
HUMS	Health and Usage Monitoring Systems
IFCSS	Indirect Fire Control Software Suite
IFF	Identification Friend or Foe
ILS	Integrated Logistic Support

IP	Intellectual Property
ISS	In-Service Support
JFM	Joint Fires Modernization
JPTL	Joint Priority Target List
JTAC	Joint Terminal Attack Controller
KPI	Key Performance Indicators
LAV-6	Light Armoured Vehicle 6
LAV OPV	Light Armoured Vehicle Observation Post Vehicle
LEWT	Light Electronic Warfare Team
LCSS	Land Command Support System
LRU	Line Replaceable Units
LSA	Logistic Support Analysis
LSAR	Logistic Support Analysis Record
MDT	Mean downtime
METCM	Standard Computer Meteorological Message
METGM	Standard Gridded Data Meteorological Message
METTA	Standard Target Acquisition Meteorological Message
MEWT	Medium Electronic Warfare Team
MFEW	Multi-Function Electronic Warfare
MGRS	Military Grid Reference System
MIDB	Modernized Integrated Database
MLRS	Multiple Launch Rocket System
MMDS	Materiel Management and Distribution System
MOA	Memorandum of Agreement
MSI	Maintenance Significant Item
MTBF	Mean operating time between failures
MTBM	Mean time between maintenance
MTTDSP	Mean time to deliver spare parts
MTTR	Mean time to repair
NATO	North Atlantic Treaty Organization
NFA	No Fire Area
NORAD	North American Aerospace Defence

OEM	Original Equipment Manufacturer
PER	Probable error in range
PGK	Precision Guidance Kit
PGM	Precision guided munitions
PMO	Project Management Office
R&O	Repair and Overhaul
RCAF	Royal Canadian Air Force
RCN	Royal Canadian Navy
RFA	Restricted Fire Area
RFL	Restricted Fire Line
ROM	Rough Order of Magnitude
ROZ	Restricted Operating Zone
RPAS	Remotely piloted aerial systems
RSPL	Recommended Spares Parts List
SA	Situational Awareness
SAAFR	Standard Use Army Aircraft Flight Route
SaaS	Software-as-a-Service
SACC	Standard acquisition clause and condition
SCOP	Spectrum Common Operating Picture
SITS	Special Investigations and Technical Studies
SSE	Strong, Secure, Engaged
STACC	Surveillance and Target Acquisition Coordination Centre
STTE	Special Tooling and Test Equipment
TACP	Tactical Air Control Party
TDL	Tactical Data Link
TIES	Technical Investigation and Engineering Support
TLAM	Tomahawk Land Attack Missile
TST	Time-sensitive targets
UPS	Universal Polar Stereographic
UTM	Universal Transverse Mercator
VMF	Variable Message Format
WinTAK	Windows Tactical Assault Kit

ANNEX G

NON-DISCLOSURE AGREEMENT

NON-DISCLOSURE AGREEMENT
CANADIAN FORCES LAND ELECTRONIC WARFARE MODERNIZATION PROJECT

This Agreement made in duplicate this_____ day of _____2020.

(Day number) (Month) (Year)

BETWEEN Her Majesty the Queen in Right of Canada as Represented by the Minister of Public Works and Government Services ("Canada")

AND _____ receiving the unclassified

(Full legal name of organization in print)

information as constituted pursuant to the laws of _____ and having a

(Insert laws in print)

place of business at _____ (the "Recipient").

(Complete address in print)

Whereas Canada has issued a Request for Information (RFI) No. W8476-196070/B, to solicit information for the Canadian Forces Lane Electronic Warfare Modernization (CFLEWM) Project; and

Whereas in accordance with the provisions of the RFI Canada has provided for the disclosure of certain information listed in Appendix 1 and 2 to Annex A of the RFI ("Information"); and

Whereas the Recipient wishes to receive the Information solely for the purpose of preparing a response to the CFLEWM RFI.

Therefore, in consideration of the premises and the mutual promises, conditions and agreements of this Agreement the Parties hereto agree as follows:

1. Subject to the terms and conditions of this Agreement Canada agrees to disclose the Information to the Recipient on an as requested basis.

2. The Recipient agrees that it shall use the Information solely for the purpose of preparing a response to the CFLEWM RFI and for no other purpose.

3. The Recipient acknowledges that the Information may be subject to certain proprietary rights belonging to various parties and shall not be used by the Recipient or disclosed to anyone at any time except for the purposes of, and in accordance with, this Agreement and for no other purpose and shall ensure that its personnel do likewise.

4. The Recipient shall not disclose the Information to anyone unless and until the proposed recipient has signed an agreement in terms identical to this Agreement with the necessary changes to reflect names, addresses, offices and the like. Such disclosure shall be made only to a recipient with a need to know and solely for the purposes of the preparation of a proposal in response to the CFLEWM RFI.

5. The Recipient shall not copy, reproduce or otherwise duplicate the Information or any information reflecting the Information in whole or in part or allow others to do so for any purposes other than the preparation of a bid in response to this CFLEWM RFI unless Canada has given its express, prior, written approval.

6. Whether in storage or in use, the information shall be protected by the Recipient with the same degree of care as the Recipient uses to protect its own proprietary intellectual property of like importance against public disclosure, but in no case any less than reasonable care.

7. The Recipient shall return the Information when it is no longer required for the preparation of a proposal in response to the CFLEWM RFI, when required by Canada to do so, or with its proposal. In like fashion the Recipient shall return any copies it may have been allowed to make which are in a media that is capable of being sent with the proposal, shall destroy any other copies or any information reflecting the Information on any media whatsoever, and shall ensure that anyone to whom the Information has been divulged do likewise. Those who do not submit a proposal must nevertheless comply with this paragraph by the Closing Date of the CFLEWM RFI.

8. The obligations herein contained shall survive the submission of a bid and the performance of any contract awarded and shall continue thereafter in full force and effect.

9. This Agreement shall be interpreted, and the relationship of the parties be determined, in accordance with the laws in force in the province of Ontario in Canada.

IN WITNESS THEREOF, this Agreement has been executed by duly authorized officers of

_____

(Name of Recipient in print)

Per: _____ _____

(Name of duly authorized officer in print) (Title of duly authorized officer in print)

_____ _____

(Signature of duly authorized officer) (Date in print)