



RETURN BIDS TO:
RETOURNER LES SOUMISSIONS À:
See RFI Section 8.0
(Part 2 of 2 - Page 6 of 7)

LETTER OF INTEREST
LETTRE D'INTÉRÊT

Comments - Commentaires

Title - Sujet RFI - ENHANCED RECOVERY CAPABILITY	
Solicitation No. - N° de l'invitation W8476-175567/A	Date 2017-04-19
Client Reference No. - N° de référence du client W8476-175567	GETS Ref. No. - N° de réf. de SEAG PW-\$\$BL-298-26297
File No. - N° de dossier 298bl.W8476-175567	CCC No./N° CCC - FMS No./N° VME
Solicitation Closes - L'invitation prend fin at - à 02:00 PM on - le 2017-06-09	
Time Zone Fuseau horaire Eastern Daylight Saving Time EDT	
F.O.B. - F.A.B. Specified Herein - Précisé dans les présentes Plant-Usine: <input type="checkbox"/> Destination: <input type="checkbox"/> Other-Autre: <input checked="" type="checkbox"/>	
Address Enquiries to: - Adresser toutes questions à: Dadashzadeh, Feridon	Buyer Id - Id de l'acheteur 298bl
Telephone No. - N° de téléphone (873) 469-4772 ()	FAX No. - N° de FAX () -
Destination - of Goods, Services, and Construction: Destination - des biens, services et construction: Specified Herein Précisé dans les présentes	

Instructions: See Herein

Instructions: Voir aux présentes

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

Issuing Office - Bureau de distribution
Armoured Vehicles Support/Soutien des véhicules blindés
11 Laurier St./11, rue Laurier
Place du Portage Phase III 6C1
Gatineau
Québec
K1A 0S5

Delivery Required - Livraison exigée See Herein	Delivery Offered - Livraison proposée
Vendor/Firm Name and Address Raison sociale et adresse du fournisseur/de l'entrepreneur	
Telephone No. - N° de téléphone Facsimile No. - N° de télécopieur	
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



Enhanced Recovery Capability (ERC) Project Request for Information (RFI)

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Enhanced Recovery Capability (ERC) project Request for Information (RFI)

1.0 Purpose and Nature of the Request for information (RFI)

1.1. Public Services and Procurement Canada (PSPC) is requesting Industry feedback regarding the Enhanced Recovery Capability (ERC) project for the Government of Canada (GC), the Department of National Defence (DND) and the Canadian Armed Forces (CAF). ERC is a Canadian Army (CA) sponsored project that will replace the existing fleet of CAF heavy tow trucks and associated recovery equipment with an enhanced capability to match the new, heavier CAF wheeled vehicle fleets.

1.2. The objectives of this RFI are to:

- a) Develop a shared understanding with Industry about the ERC project;
- b) Provide information to Industry and seek their feedback on ERC requirements including those related to operational requirements, sustainment, Industrial and Technological Benefits (ITB) policy and costing; and
- c) Allow interested suppliers to pose their ideas, questions and concerns.

1.3. This RFI is neither a call for tender nor a Request for Proposal (RFP). No agreement or contract will be entered into based on this RFI. The issuance of this RFI is not to be considered in any way a commitment by the GC, nor as authority to potential Respondents to undertake any work that could be charged to Canada. This RFI is not to be considered as a commitment to issue a subsequent solicitation or award a contract for the work described herein.

1.4. Although the information collected may be provided as commercial-in-confidence (and, if identified as such, will be treated accordingly by Canada), Canada may use the information to assist in drafting performance specifications (which are subject to change) and for budgetary purposes.

1.5. Respondents are encouraged to identify, in the information they share with Canada, any information that they feel is proprietary or confidential. Canada will handle the responses in accordance with the *Access to Information Act*. Canada will not disclose proprietary or commercially sensitive information concerning Respondents or third parties, except and only to the extent required by law. For more information, please see <http://laws-lois.justice.gc.ca/eng/acts/a-1/>.

1.6. Respondents are asked to identify if their response, or any part of their response, is subject to the Controlled Goods Regulations.

1.7. Participation in this RFI is encouraged, but is not mandatory. There will be no short-listing of potential suppliers for the purposes of undertaking any future work as a result of this RFI. Similarly,



participation in this RFI is not a condition or prerequisite for the participation in any potential subsequent solicitation.

1.8. Respondents will not be reimbursed for any cost incurred by participating in this RFI. Responses to this RFI will not be returned to Respondents.

1.9. Responses will not be formally evaluated. However, the responses received may be used by Canada to develop or modify the procurement approach. Canada will review all responses received by the RFI closing date. Canada may, in its discretion, review responses received after the RFI closing date.

1.10. A review team composed of representatives of DND, CAF, PSPC and Innovation, Science and Economic Development (ISED) Canada will review the responses. Canada reserves the right to hire any independent consultant, or use any GC resources that it considers necessary to review any response. Not all members of the review team will necessarily review all responses.

2.0 Background Information

2.1 Ground vehicles are and will continue to be critical equipment used by all Canadian Armed Forces when conducting land-based operations. Experience during past domestic and international missions proves that vehicle casualties are inevitable. Vehicles suffer mechanical breakdown, they get stuck in mud and soft terrain, they are involved in accidents and they suffer battle damage from enemy action. The rapid recovery and repair of combat vehicles is critical for maintaining operational momentum and for reducing the need for replacement vehicles and the subsequent burden of transporting them to the mission area. In combat operations, recovery in the face of the enemy is also critical for preventing damaged vehicles and equipment from falling into enemy hands.

2.2 The current fleet of heavy tow trucks was designed in the 1980s and entered service in 1992 to recover the light, medium and heavy trucks of the Cold War era. The heavy tow trucks were life-extended between 2006 and 2010 and will reach the end of their service life in 2019. A Canadian Armed Forces transition is underway which will see the introduction of larger, heavier trucks than in the past that are built to accommodate the weight of better armour protection systems while maintaining or improving mobility and payload capacity, particularly using intermodal bulk cargo containers such as standard sea containers. The current heavy tow trucks are too small to support these new larger heavier trucks and their associated bulk cargo containers, and they also lack the capacity for adequate add-on-armour without a significant reduction in payload and mobility.

2.3 The Enhanced Recovery Capability project will replace and improve the existing fleet of Canadian Armed Forces heavy tow trucks and associated recovery equipment. Recovery is the process of extricating disabled or damaged vehicles by pulling, lifting or righting them, and then moving them to a safe place where repairs can be completed. The project deliverables are expected to include, but not be limited to heavy tow trucks, trailers and other special equipment for lifting and towing. A number of the new tow trucks will also receive cab armour to protect the crews when conducting recovery operations in high threat mission areas.

2.4 The equipment to be delivered by this project is intended to support the new fleets of light, medium and heavy trucks and their bulk cargo containers. There will also be circumstances during which this equipment must be used in the recovery of wheeled armoured vehicles such as the Light Armoured



Vehicle (LAV) or the Tactical Armoured Patrol Vehicle (TAPV), and in rare instances they will be required to service or assist in the servicing of main battle tanks.

2.5 This RFI is one step of the Industry Engagement process. The intent, following receipt of RFI responses from Industry, is to continue interactive engagement with Industry throughout the project phases leading to the RFP in accordance with the Defence Procurement Strategy.

3.0 Potential Work Scope and Constraints:

3.1 Please see Appendix 1 to Annex A, Preliminary Operational Requirements.

4.0 Legislation, Trade Agreements, and Government Policies

4.1 The following is indicative of some of the legislation and government policies that could impact any follow-on solicitation(s):

- d) A National Security Exception may apply
- e) Agreement on Internal Trade (AIT) may apply
- f) North American Free Trade Agreement (NAFTA) and World Trade Organization – Agreements on Government Procurement (WTO-AGP) may apply or, otherwise, Industrial and Technological Benefits (ITB) Policy will apply
- g) Defence Production Act will apply
- h) Treasury Board Policy on Government Security will apply
- i) Controlled Goods Program (CGP) will apply
- j) Federal Contractors Program for Employment Equity (FCP-EE) may apply

4.2 The above is not an exhaustive list.

5.0 Schedule

5.1 In providing responses, the following schedule should be utilized as a baseline:

- a) Industry Day and one-on-one sessions – 8-10 May 2017;
- b) RFI Responses Due – See the RFI cover page (Part 1 of 2 – Page 1 of 1)
- c) Draft RFP Release – Fall 2019;
- d) RFP Release – Spring 2020;
- e) Contract Award – Industry should assume that contract award will be no earlier than Winter 2020;
- f) Initial Delivery – 2021; and
- g) Final Delivery – 2024.



6.0 Industry Day and One-on-one Sessions

Potential Respondents are invited to participate in the industry day and one-on-one activity by completing and submitting Annex E – Industry Day and One-on-one Session Registration Form.

Registration Deadline: **April 26, 2017 at 2:00 PM, Eastern Daylight Saving Time**

Industry Day: **May 8, 2017 (8:30 AM – 12:00 PM)**

Industry Day Location: **Ottawa/Gatineau**

One-on-One Sessions: **May 8 (2:00 PM – 4:00 PM); May 9 and 10, 2017 (9:00 AM – 4:00 PM)**

One-on-One Sessions Location: **235 Queen Street, Ottawa, Ontario K1A 0H5, Canada**

6.1 By April 27, the Contracting Authority will directly communicate with the interested suppliers who will have submitted a duly completed Annex E by the Registration Deadline in order to provide the status of their requests and/or the exact location for the Industry Day and/or the exact date, time and location for the one-on-one sessions.

6.2 The number of seats for the Industry Day is expected to be adequate but is limited. Therefore, the interested suppliers' requests will be processed on a first-come first-served basis with 14 seats (2 per supplier) set aside for those who are a manufacturer of a potential ERC system among the interested suppliers. Depending on the number of requests, Canada may limit the number of attendees per supplier to as few as 2 in order to accommodate a greater number of suppliers. In that case the limit will be communicated to the Registered Suppliers (i.e. those with spots reserved for the Industry Day and/or a one-on-one session) by April 27.

6.3 The number of days allocated to one-on-one sessions is fixed with a maximum of 14 sessions in total. While Canada will try to accommodate as many interested suppliers' requests as possible, the sessions will be allocated on a first-come first-served basis with 7 sessions being set aside for those who are a manufacturer of a potential ERC system among the Registered Suppliers.

6.4 The duration of one-on-one sessions will depend on the number of suppliers but will not be shorter than 45 minutes.

6.5 Each one-on-one session will involve representatives of Canada, a fairness monitor and one supplier at a time.

6.6 Any new information provided by Canada during one-on-one sessions will be posted on the Government Electronic Tendering System (GETS) for all suppliers.



7.0 Response Preparation Instructions

7.1 This RFI is aimed at engaging industry to refine the CAF requirements and support concepts. Respondents are encouraged to be innovative in their proposed method(s) of capability delivery and support options.

7.2 To facilitate the review of responses to this RFI, Respondents are strongly encouraged to follow the response format described below and to provide requested information if available. As well, Respondents may include any additional information they believe to be relevant to the Project.

7.3 Response Format and Content

- a) Executive Summary: Respondents are requested to provide a high level description of their ERC solution and their experience with manufacturing and/or sustaining such a capability.
- b) Respondents are requested to respond to the questions in the following Annexes:
 - I. Annex A – Preliminary Operational Requirements Questions;
 - II. Annex B – Sustainment Requirements Questions;
 - III. Annex C – Project Value Proposition Questions; and
 - IV. Annex D – Costing Questions.
- c) Provide the earliest date the Respondent can deliver the first vehicle following a contract award and a schedule for follow on deliveries including any production/delivery constraints.
- d) A point of contact for the Respondent should be included in the package.

8.0 Enquiries and Submission of Responses

8.1 All enquiries and other communications related to this RFI and associated Industry Engagement activities must be directed exclusively to the PSPC Contracting Authority, using the ERC e-mail address below. Since this is not a bid solicitation, Canada will not necessarily respond to enquiries in writing or by circulating answers to all Respondents.

8.2 Respondents are requested to submit their responses by e-mail, or through a web portal, to the PSPC Contracting Authority, using the ERC e-mail address below.

tpsgc.padgamdCRA-apdmpbERC.pwgsc@tpsgc-pwgsc.gc.ca

8.3 Alternatively, Respondents may submit their responses (in 4 paper copies or on 4 CDs/DVDs to the PSPC Contracting Authority below:

Feridon Dadashzadeh
Supply Team Leader
Public Services and Procurement Canada
11 Laurier Street, Gatineau, QC K1A 0S5
Place du Portage, Phase III, 6C1
Telephone: 873-469-4772



9.0 Changes to the RFI and the Closing Date

9.1 Changes to this RFI may occur and will be advertised on GETS. Canada asks Respondents to visit Buyandsell.gc.ca regularly to check for changes, if any.

9.2 Responses to this RFI are to be submitted to the PSPC Contracting Authority identified above, on or before the time and date indicated on the cover page of the RFI document.

10.0 Clarification of Responses

Canada may, in its discretion, contact any Respondents at any time to clarify any aspect of a response.

11.0 Fairness Monitor

11.1 Canada has engaged the services of an organization to act as an independent third party Fairness Monitor (FM) for the ERC procurement process. The role of the FM is to provide an attestation of assurance on the fairness, openness, and transparency of the monitored activities.

11.2 The Fairness Monitor's duties will include, but will not be limited to:

- a) observing the procurement process;
- b) providing feedback to Canada on fairness issues; and
- c) attesting to the fairness of the procurement process.

11.3 Please note, for the purpose of carrying out its Fairness Monitor related obligations, the Fairness Monitor will be granted access to industry responses and related correspondence received by Canada pursuant to this RFI and may act as an observer at the subsequent follow-up activities.

11.4 The Fairness Monitor engaged for this procurement is RFP Solutions Inc.

PRELIMINARY OPERATIONAL REQUIREMENTS QUESTIONS

Introduction

1. The aim of this document is to inform industry of the Enhanced Recovery Capability (ERC) project draft operational requirements and to enable industry engagement in the process of refining and expanding the requirements set, such that they are achievable and well specified.
2. Responses to the requirements questions below will enable the project team to develop a better Statement of Operational Requirements (SOR) document, which will form the basis for the Statement of Work (SOW) and will be an integral part of the Request for Proposals (RFP), which will be issued during the project's Definition phase.
3. ERC Project Schedule. The ERC project is approaching the end of the Options Analysis phase and will report progress to the Government and seek approval to enter the Definition phase starting in the fall of 2017. The information gleaned from the responses to this RFI will form an integral part of the Project Approval (PA) request.



Operational Requirements

4. The draft Operational Requirements are detailed in Appendix 1 to this Annex. Please review the document and comment as necessary, describing any recommended changes to the requirements and giving your rationale for the change.

Single vs Multiple Platforms

5. The ERC solution must winch/tow/lift/right a wide range of casualty vehicles across all terrain types including:
 - a. commercial pick-up trucks and light Standard Military Pattern (SMP) vehicles;
 - b. light, medium and heavy logistics vehicles with payloads up to 16.5 tonnes and their trailer with loads up to 72 tonnes (eg Leopard 2 Main Battle tank);
 - c. wheeled armoured vehicles such as the Tactical Armoured Patrol Vehicle (TAPV) at 20 tonnes and Light Armoured Vehicle Upgrade (LAVUP) also known as LAV 6.0 at 30 tonnes; and
 - d. laden intermodal shipping containers and mobile shelters up to the standard NATO load of 17 tonnes.
6. The ERC project preference is for a 'one solution fits all' heavy recovery system, but we do not exclude the option of acquiring more than one variant of the system in order to meet all of the mandatory requirements. For example, the weight of a rotator boom with 17 tonnes capacity could limit the towing capacity of the vehicle, so there could be a heavy tow variant that does not have a rotator boom. Another possible option is that the rotator boom could be limited to 10 tonnes capacity and two vehicles with rotator booms could be used to lift a 17 tonne load.

- a. Given the broad range of tasks for the ERC solution, do you believe a single variant is suitable or do you recommend more than one variant? Please explain your rationale including the estimated quantity of each type of platform.
- b. What is your opinion on the ability of a single variant to meet all of the mandatory requirements without compromise?

Axle Configuration

7. Across our allies, we see a range of recovery vehicles in use, with the largest recovery vehicles based on a 5 axle chassis fitted with single wheels, to give the required towing capacity and meet the all-terrain mobility requirements.

8. Please describe your recommended axle and wheel configuration.

Existing Products

9. Do you have a product (or products) that will meet all of the mandatory ERC requirements as set out in Appendix 1?
- a. Please describe your product(s) in detail.
 - b. Please describe any requirements that your product cannot meet and state if you believe that your product could be modified or developed to meet the requirements and in what timescale those changes could be made.

Defining the Mobility Requirements

10. UK Defence Standard 23-6 is the primary reference document to characterise the mobility requirements. Please describe any other recommended methods of characterising mobility.

Technical Evaluation Method

11. The ERC solution will be acquired through a competitive process. There are a number of different technical evaluation methods, such as a full operational trial, sub-system trials or a paper only evaluation. A combination of the afore-mentioned could also be used.
- a. Recognising that building sample vehicles to meet all of the mandatory requirements is expensive and that running operational and technical trials can take an extended period of time, what technical evaluation method would you recommend?
 - b. If you have been previously involved in a bidding process, where your recommended method was used, please outline the RFP and give details of the technical evaluation method.

ERC PRELIMINARY OPERATIONAL REQUIREMENTS

1. Introduction

1.1 Project Objective

The Enhanced Recovery Capability (ERC) project is a Canadian Army (CA) sponsored project that will replace the existing fleet of Canadian Armed Forces (CAF) heavy tow trucks and associated recovery equipment with an enhanced capability to match the new, heavier CAF wheeled vehicle fleets. The project deliverables are expected to include, but not be limited to, heavy tow trucks, trailers and other special equipment for lifting and towing. A number of armoured cab systems will be acquired that will provide protection to the crew when conducting operations in high threat areas.

1.2 Key Assumptions

- 1.2.1 The vehicle crew size will remain at a maximum of two.
- 1.2.2 The Armoured Combat Support Vehicle (ACSV) project will acquire an armoured combat recovery system to support wheeled armoured vehicles when the tactical situation does not allow ERC to be used.

1.3 Key Users

The following Level 1 organisations will be equipped with the ERC:

- 1.3.1 **Canadian Army (CA).** The Mission of the Canadian Army is to generate and maintain combat capable, multi-purpose Land Forces to meet Canada's defence objectives. *Land Operations 2021: The Force Employment Concept for Canada's Army of Tomorrow* is the Army's capstone document for guiding future land force generation and employment. This document prescribes an approach to future land operations which is characterized by the deliberate use of dispersion and aggregation undertaken by adaptive forces in order to create and sustain tactical advantage over adept, intelligent adversaries.¹ The Canadian Army's *Designing Canada's Army of Tomorrow* provides further guidance, articulating the considerations essential for shaping the development of Canada's future Army: "future land forces must stand ready to undertake operations along a continuum that encompasses offensive, defensive, and stability operations conducted along the entire spectrum of conflict [if we are to achieve] decisive control of territory and its inhabitants."² As such, the Canadian Army requires heavy recovery assets capable of supporting its wheeled fleets in order to remain combat ready and responsive to the various environments where it will be deployed. This equipment will enable the Army to support the sustainment of land operations throughout all missions assigned. The CA key users consist of:

- 1.3.1.1 Regular Force units consisting of full time soldiers. All Regular Force units will be equipped with the ERC. Although not under Army command, field medical units such as the Field Ambulances and Field Hospital are equipped by the Army and are therefore included within this definition.

¹ Canada. Department of National Defence. B-GL-310-001/AG-001. *Land Operations 2021: The Force Employment Concept for Canada's Army of Tomorrow*. (Kingston: Army Publishing Office dated 2007).

² Canada. Department of National Defence. B-GL-310-001/AF-001. *Toward Land Operations 2021: Studies in Support of the Army of Tomorrow, Force Employment Concept*, 2009. (Kingston: Army Publishing Office dated 2009).

- 1.3.1.2 Canadian Forces Bases that provide vehicles for training and support to training, where that training is enhanced by using the operational fleet. This is the concept of 'train as you fight'.
- 1.3.1.3 Training schools such as the Royal Canadian Electrical and Mechanical Engineers School (RCMES).
- 1.3.1.4 Reserve Force units. Reserve Force units consist of part time soldiers. It is expected that a number of Reserve Force units will be equipped with the ERC, but this is subject to confirmation.
- 1.3.2 Royal Canadian Air Force (RCAF). The RCAF will provide the Canadian Armed Forces with relevant, responsive, and effective airpower to meet the defense challenges of today and into the future. The strategic vision for the future Royal Canadian Air Force is an expeditionary, network-enabled, capability-based, results-focused Aerospace Force contributing effectively to security at home and abroad. Becoming an expeditionary force means having the capabilities to be responsive, deployable, supportable, and sustainable wherever the government sends the Royal Canadian Air Force, domestically and abroad. Maintenance support for RCAF ground based vehicles and equipment is provided by CA personnel in a similar manner to Army units. As such, the RCAF requires heavy tow trucks capable of supporting its land based wheeled vehicles and equipment (a requirement of the Royal Canadian Air Force Expeditionary Capability project).
- 1.3.3 Canadian Joint Operations Command (CJOC). The mission of Canadian Joint Operations Command is to anticipate, prepare for, and conduct operations – to defend Canada, assist in the defence of North America, and promote peace and security abroad. Canadian Joint Operations Command is responsible for commanding and supporting full-spectrum Canadian Armed Forces operations at home, on the continent of North America, and around the world. With its integrated command and control structure, Canadian Joint Operations Command directs operations from the earliest planning stages through to mission closeout and ensures that national strategic goals are achieved. Canadian Joint Operations Command's assessment of past operations showed that a lack of adequately capable heavy recovery assets will hamper the Canadian Armed Forces' ability to generate, deploy, and sustain its forces. Regardless of the type of deployment, this deficiency creates adverse effects during expeditionary operations, whether domestic, continental, or international. Such operations require the ability to project force, which in turn requires recovery assets capable of conducting recovery operations over extended lines of communication. CJOC units include Headquarters 1 Canadian Division, the Joint Operational Support Group and the Joint Signal Regiment.

1.4 Quantity of Platforms

Platform/Users	CA	RCAF	CJOC	Total
Enhanced Recovery Capability	120	6	4	130

Table 1.4 – Quantity Required by Level 1 Organisation

1.5 Capability Deficiency

- 1.5.1 Current recovery assets are the Heavy Logistics Vehicle Wheeled (HLVW) Wrecker and the Armoured Heavy Support Vehicle System (AHSVS) Wrecker.

- 1.5.1.1 The HLVW Wrecker does not have the capacity to support the recovery requirements of the new heavier and future fleets of wheeled vehicles and is nearing the end of its service life.
- 1.5.1.2 The AHSVS Wrecker is part of an orphan fleet of vehicles purchased for the Afghanistan mission that do not have a comprehensive logistic support package. There are only seven (7) AHSVS recovery vehicles and they have restrictions on use on public roads due to size and weight.

1.6 Project Constraints

Unit manpower establishments are not able to be increased.

1.7 Scope

- 1.7.1 The ERC project is a capability replacement project and is not intended to replace equipment on a one for one basis. This project will acquire a fleet of enhanced recovery systems that will:
 - 1.7.1.1 Provide a recovery system that will be used by most components of the Canadian Armed Forces (CAF), of which the Canadian Army (CA) is the largest user;
 - 1.7.1.2 Replace the Heavy Logistics Vehicle Wheeled (HLVW) wrecker fleet;
 - 1.7.1.3 Provide a system for the efficient extraction/recovery and righting of all CAF wheeled vehicles;
 - 1.7.1.4 Provide a heavy lift capability to cross load fully laden (16.5 tonne) 20 foot intermodal containers and shelters;
 - 1.7.1.5 Meet the strategic mobility needs of the CAF, match the tactical mobility of CAF logistic vehicles and have similar tactical mobility to CAF wheeled armoured vehicles (eg LAV 6.0 and TAPV);
 - 1.7.1.6 Provide add on armour or a replacement armoured cab for crew protection in high risk areas;
 - 1.7.1.7 Provide all necessary equipment to safely and efficiently conduct recovery tasks.

1.8 Primary Country of Operation

ERC equipment will be primarily used in Canada and must therefore comply with Canadian national and provincial regulations for all systems (such as automotive, safety and health at work, electrical and electronic equipment).

1.9 Standardisation

Compliance with Canadian Motor Vehicle Safety Standards (CMVSS) or equivalent is essential unless superseded by a military requirement contained in agreements such as STANAG / QSTAG / MIL-STD. In that case, the ERC technical authority shall ensure that the relevant standard is identified in the SOR. Compliance with STANAG / QSTAG / MIL-STD is essential only where specified. Where a Society of

Automotive Engineering (SAE) standard that is equivalent to a STANAG exists Canada will specify which standard takes precedence.

1.10 Emissions

The project is constrained by the “*Canadian Environmental Protection Act, 1999*” and “*Heavy-duty Vehicle and Engine Greenhouse Gas Emission Regulations*” in force in Canada at the time of procurement. Air conditioning refrigerants must be non-ozone depleting.

1.11 Languages

All equipment markings and publications shall be compliant with the Official Languages Act, and therefore will be produced in both official languages (English and French).

1.12 Single versus Multiple Variants

The preference is for a single vehicle platform that will meet all requirements, however this may prove challenging as the scope is wide, resulting in a less than optimal system. If more than one variant is proposed to accomplish the full range of missions and tasks, then it is essential that the ERC system variants be from the same family of vehicles, possessing the maximum commonality of parts and operation. This will ensure that any additional training, special tools and test equipment and spare parts are minimised.

1.13 Chassis and Recovery Equipment Maturity

The rolling chassis of the ERC vehicle shall be currently in service with an allied army. This will ensure that the chassis has a proven track record, which will reduce the need for Reliability, Availability, Maintainability and Durability (RAMD) testing, and provide operational and support flexibility.

1.14 Maintainability

- 1.14.1 Subject to confirmation by the Sustainment Business Case Analysis that will be conducted by Canada during the Definition Phase, it is expected that the standard Canadian Army levels and lines of maintenance will be used, as defined in Land Equipment Management System B-GL-314-001/AF-00. Domestic, non-operational maintenance support may use an ILS package, if this proves cost effective. Maintenance management shall be the responsibility of the appropriate DND Equipment Management Team (EMT).
- 1.14.2 The ERC will be designed and constructed so as to provide ease of maintenance with a minimum of special tools, test equipment and skills.

1.15 Integrated Logistic Support (ILS)

ERC equipment shall be capable of being operated and sustained by Canadian Armed Forces personnel and supported by Original Equipment Manufacturer (OEM) Field Service Representatives (FSR), for the duration of the 20 year expected life. ILS deliverables will include training and training materials, technical publications, special tooling and test equipment, and the initial provisioning of 2 years of spares.

1.16 Project Timeline

The project is approaching completion of the Options Analysis stage and is expected to move to the Definition stage of project activity in 2018. The Definition phase is expected to take 2 years, during which an RFP will be published.

2. System Operation

2.1 Missions and Scenarios

The CAF Force Planning Scenarios (FPS)³ support the missions articulated in Defence Policy and are prepared under the direction of the Vice Chief of the Defence Staff (VCDS) in order to provide guidance for operational planning (including capability planning). They are not intended to be exhaustive, but provide a range of plausible examples that provide guidance on the broad capabilities required. The relevant and most likely scenarios where ERC is going to be employed are listed below.

Force Planning Scenario #	Description	HSE Involvement
2	Disaster Relief in Canada	The CAF can be tasked to participate in missions that address disasters in Canada. Assuming that wheeled support vehicles would be used to provide humanitarian assistance, ERC is required throughout this scenario to support the sustainment ⁴ of CAF elements. There is an essential requirement for ERC in this scenario.
3	International Humanitarian Assistance	The CAF can be tasked to participate in missions that provide humanitarian assistance outside Canada. Assuming that wheeled support vehicles would be used to provide humanitarian assistance, ERC is required throughout this scenario to support the sustainment of CAF elements. There is an essential requirement for ERC in this scenario.
6	Peace Support Operations (Peacekeeping) (UN Charter Chapter 6)	The CAF can be tasked to conduct peacekeeping operations to create a secure and stable environment. These operations are becoming increasingly complex and can involve tasks that would otherwise fall outside of the traditional military sphere. ERC is required throughout this scenario to support the sustainment of CAF elements. There is an essential requirement for ERC in this scenario.
7	Aid of the Civil Power	The CAF can be tasked to assist the civil authorities to restore or maintain public order under the provisions of Part XI of the National Defence Act (NDA) or Assistance to Law Enforcement Agencies (ALEA) arrangement. ERC is required throughout this scenario to support the sustainment of CAF elements. There is an essential requirement for ERC in this scenario.
8	National Sovereignty/Interests Enforcement	The CAF can be tasked to deal with infringements of Canadian sovereignty by a foreign country. ERC is required throughout this scenario to support the sustainment of CAF elements. There is an essential requirement for ERC in this scenario.
9	Peace Support Operations (Peace Enforcement, UN Charter Chapter 7)	With a coalition of like-minded nations, Canada can be asked to participate in peace support operations designed to enforce stability. CAF elements, as part of a multinational

³ Each scenario provides detailed information on background, situation, physical environment, military environment, and civil environment and contains appropriate assumptions, notes and references. The military environment is broken down into appropriate areas such as threat, mission, mission success criteria, taskings (partial list), own forces, coalition and theatre situation, C4I arrangements, deployment information, and sustainment information.

⁴ Sustainment covers all activities related to the provision of personnel and materiel as well as the necessary links to military engineering support. The services include supply, transportation, finance, maintenance, personnel support, health services support, financial, religious support and food services.

Force Planning Scenario #	Description	HSE Involvement
		force, could face antagonists armed with current generation equipment covering the full range of combat capability. ERC is required throughout this scenario to support the sustainment of CAF elements. There is an essential requirement for ERC in this scenario.
9a	Failed State	With a coalition of like-minded nations, Canada can be asked to participate in a mission that restores government authority in a failed state, establishes and maintains a peaceful and secure environment, supports humanitarian operations by aid agencies, and supports disarmament, demobilization and reintegration. The CAF can expect to be engaged in full spectrum operations. ERC is required throughout this scenario to support the sustainment of CAF elements. There is an essential requirement for ERC in this scenario.
10	Defence of North America	The CAF can be tasked to participate in major combat operations against an invasion of North America by an overseas power. All available CAF assets shall be used. ERC is required throughout this scenario to support the sustainment of CAF elements. There is an essential requirement for ERC in this scenario.
11	Collective Defence	The CAF can be tasked to participate in major combat operations to defend an allied nation. In this scenario Canada will be mobilised. Military tasks include the defence of territory not yet occupied by the invading nation and the ejection of enemy from invaded territory. ERC is required throughout this scenario to support the sustainment of CAF elements. There is an essential requirement for ERC in this scenario.

Table 2.1 – ERC Missions and Scenarios

2.2 Operating Environment

2.2.1 The ERC solution will experience rugged military usage in all types of environments. The system may be subject to rough handling by technicians who are fatigued, stressed and under fire. The ERC System will operate wherever and whenever soldiers deploy.

2.2.2 Future Security Environment. The future security environment is expected to remain volatile and unpredictable, with a host of threats and challenges emanating from shifts in global power, transnational terrorism and crime, failed and fragile states, regional conflicts, the proliferation of advanced technology with military applications and increasingly severe weather events. The character of operations will not always be easy to categorize and will likely morph as operations develop. Individual operations may embody characteristics from one or more of the following five traditional themes:

2.2.2.1 Major Combat, characterized by frequent, widespread, and intense combat with adversaries employing conventional tactics.

2.2.2.2 Counter-insurgency operations, characterized by insurgent-based adversaries, where the political nature of the crisis and the need to address multiple facets of the environment render the military in an overall conditions setting and supporting role.

- 2.2.2.3 Peace support operations, including conflict prevention, peacemaking, peace enforcement, peacekeeping, and peace building to restore or maintain peace.
- 2.2.2.4 Limited intervention, with limited objectives and scope.
- 2.2.2.5 Domestic operations, where the military conducts operations primarily in a supporting role to civilian authorities.
- 2.2.3 Geographic Environment.
 - 2.2.3.1 Army units will operate in both rural and urban environments, often simultaneously, in virtually all terrain types, including desert, mountain, wooded, savannah, and arctic.
 - 2.2.3.2 The ERC solution must have excellent all-terrain capability in order to be effective. These requirements include operating conditions of highways, secondary roads, including unpaved and severe washboard surfaces, vehicle tracks and severe cross-country conditions including, but not limited to extreme slopes, rocky ground, ploughed fields, trails, cut lines, sand, mud, snow, ice and fording. Under such conditions, the ERC solution shall be capable of recovering their maximum gross loads, including all attachments and equipment, while maintaining the necessary stability, structural integrity and operational capability. These conditions must be met while carrying out their recovery functions such as, but not limited to, heavy lift, direct tow, support tow, high and low speed towing and dragging.

2.3 Threats

- 2.3.1 The CAF, acting as part of an international coalition conducting both combat and non-combat operations through the entire spectrum of conflict could encounter a sizable range of modern, technically sophisticated weapons and vehicles which will be augmented with legacy military or commercial optical and thermal sensors.
- 2.3.2 ERC will be used in the support role and will normally operate out of direct combat areas; however the asymmetrical environment and dispersal of forces over larger areas have shown that determining the threat in a particular geographic area is difficult. As such it is likely that the ERC solution will come close to, or be fired upon by hostile forces. Adaptive Dispersed Operations is considered to be the future operating environment and there will likely be risk of the ERC crew coming under fire from heavy weapons, with, the most likely threats being ballistic projectile, blast waves and chemical energy delivered by:
 - 2.3.2.1 Mines;
 - 2.3.2.2 Improvised Explosive Devices;
 - 2.3.2.3 Small arms fire; and
 - 2.3.2.4 Mortar and artillery fire.

2.4 Concept of Operations

- 2.4.1 The Chief of Defence Staff Directive - CAF Force Posture and Readiness represents the core output of the Canadian Armed Forces – its capacity to answer the demands of the Government of Canada. It defines force requirements, readiness and capabilities consistent with these missions. This directive defines 'readiness' as the preparedness to respond to government direction, expressed in terms of two components: the capability to execute a military task and the time to deploy the capability to perform a specified task. Further, it specifically directs the readiness for each project stakeholder for all of these assigned missions; each of which have corresponding responsiveness levels. Additionally it directs that stakeholders must be capable of full spectrum operations in any environment up to and including combat. In order to deliver these specific operational outputs at assigned responsiveness levels, the Canadian Armed Forces must possess its own operationally ready, integral heavy wheeled recovery equipment that must be capable of operations in combat conditions. This is especially true in times of crisis or conflict where the expedience of recovery operations is critical, and therefore the Canadian Armed Forces cannot depend on the availability of the necessary equipment from alternate sources such as local providers or host nation contractors. Readiness to complete assigned missions is the driving factor behind the Canadian Armed Forces requiring control of and access to dedicated fleets of heavy wheeled recovery equipment with the right capabilities for missions at home and abroad.
- 2.4.2 The ERC capability will be used by deployable and non-deployable units in support of all force planning scenarios listed in the Spectrum of Conflict. It may operate independently or operate in mixed convoys of logistic and fighting vehicles. ERC will face the same high threat as the fighting vehicles such as TAPV and LAV UP. ERC must be capable of following those vehicles over all terrain conditions to provide support.

2.5 Key Role

ERC will provide recovery support to deployable units and training units, including, but not limited to Army units, Air Force units; training units, Reserve Force units and field deployable medical units.

2.6 Key Tasks

- 2.6.1 Keys tasks for the ERC equipment pertain to actions on all CAF wheeled vehicle fleets:
- 2.6.1.1 Battlefield Recovery:
 - Suspend tow.
 - Support tow.
 - Direct tow.
 - 2.6.1.2 Back-loading:
 - Suspend tow.
 - Support tow.
 - Direct tow.
 - 2.6.1.3 Extrication & Righting:
 - Winching.

- Heavy lift of payloads such as intermodal shipping containers.
- Righting overturned vehicles.

2.6.1.4 Route Clearance & Support to Obstacle Crossing:

- Suspend tow.
- Support tow.
- Direct tow.
- Winching.
- Heavy lift.

2.7 Lifecycle

Average Annual usage: 5,000 km.
Lifetime usage: 100,000 km.
Life: 20 yrs.

2.8 Daily Mission Profile

The table below outlines the daily mission profile that encapsulates one day of activity during a mission.

Ser	Activity	Unit of Measure	Qty	Indicated Speeds
1	Time	hours	24	
2	Duration	km	200	
3	Idling time	hours	2	
4	Paved road	% of distance	20	100 km/h
5	Secondary road	% of distance	50	45 km/h
6	Trails	% of distance	15	15 km/h
7	Cross-country	% of distance	15	3-5 km/h
8	Night driving	% of time	50	
9	Reverse gear	times per mission	10	
10	Average speed	km/h	50	
11	Max speed	km/h	110	
12	Fording	times per ten missions	2	
13	Casualty towing	% of time	30	
14	Shutdown / start	times per mission	4	
15	Main winch pull	times per mission	1	
16	Heavy vertical lifts	times per mission	1	

Table 2.8 Daily Mission Profile

3. High Level Mandatory Requirements

3.1 Summary.

- 3.1.1 The ERC solution must meet a number of high level requirements to successfully execute the missions and tasks assigned to it. It is understood that the complexity of the high level requirements may force the fleet of recovery systems to be split in terms of

capabilities. The ERC must be a standard military pattern (SMP), improved medium mobility, recovery system with the capacity to recover all CAF wheeled vehicles. The cab must be capable of accepting add on armour, or being replaced by an armoured cab that will provide protection to the crew.

- 3.1.2 It is essential that the ERC system be able to complete recovery tasks efficiently and safely, while operating at maximum capacities for extended periods of time, across a wide range of geographic terrain and climatic conditions, without any degradation to the systems operational capabilities. The following are the high level mandatory requirements:

3.2 Extraction

Ability to extricate all CAF wheeled vehicles from any mobility kill situation or when mired.

3.3 Lifting / Controlled Righting

ERC shall have the ability to lift, cross load and conduct controlled righting of fully laden (16.5 tonne) 20-ft intermodal containers, shelters and to conduct controlled righting all Canadian Armed Forces wheeled vehicles.

3.4 Towing

Ability to tow all Canadian Armed Forces wheeled vehicles across all terrain types at the required speed.

3.5 Back-loading

The ability to back-load all Canadian Armed Forces wheeled vehicles from a back-loading point to a maintenance facility.

3.6 Protection.

3.6.1 Ballistic and Blast.

The ERC solution will have a cab capable of accepting add on armour, or of complete replacement with an armoured cab, to protect operators from ballistic and blast threats in accordance with NATO STANAG 4569 level 3 and 3A/3B.

3.6.2 Chemical, Biological and Radiological.

ERC solution shall be painted externally with Chemical Agent Resistant Coating (CARC) paint and substrates in accordance with STANAG 4360 or STANAG 4477 and DAOD 8006-3.

3.7 Mobility

3.7.1 Transportability.

The ERC solution will be capable of being transported by current and planned trucks and trailers and strategic air lift, specifically a CC-177 Globemaster. The equipment must be capable of rail and sea transportation. The equipment must also be transportable by SMP and commercial low bed trucks without any modification.

3.7.2 Tactical Mobility.

The ERC solution must be able to negotiate all types of roads from highway to austere roads and tracks, and to operate off-road and cross-country. The vehicles and equipment must have the ability to move tactically across all terrain at a speed that is as near as is achievable to the vehicles that it supports. ERC shall have the ability to negotiate damaged roads and tracks, to leave them to seek cover, to reach hides and to negotiate ferry crossings with military engineering assistance, as per elements of the UK-Defence Standard 23-6 – Improved Medium Mobility unless otherwise stated in this SOR.

4. Requirements Tables

4.1 Introduction

The following system requirements tables identify the minimum system requirements and must be read together as one requirements set. Requirements have been listed by sub-system for ease of use only.

4.2 Automotive and Chassis System Requirements

The ERC solution must meet the following essential and, at the supplier's discretion the desirable, automotive and chassis system requirements:

Ser	Criteria	Requirement	Notes
1	Cruising Speed.	100 m/h	Capable of maintaining the maximum average highway speed in Canada, 100 km/h on a flat paved road conducting direct flat towing.
2	Maximum Speed	110 km/h	Capable of a maximum speed of 110 km/h.
3	Slow Speed	3 km/h	Capable of following dismounted troops at a maintained slow speed of 3 km/h.
4	Speed on grade	90 km/h on 2% grade.	Able to maintain 90 km/h on a paved 2% grade for a distance of not less than 1500 m.
5	Range	Essential: 500 km Desirable: 600 km	A fully laden ERC variant, towing a casualty wheeled vehicle at the variant's maximum capacity, travelling over paved roads:
6	Service Brakes	60% grade	The vehicle service brake system shall stop, hold, and control the fully laden vehicle when ascending and descending 60% grades, and further meet the service brake system performance required by the applicable Canadian Standards
7	Braking system	Power assisted with ABS	Brakes shall be power assisted with an anti-lock braking system (ABS).
8	Parking Brake	60% grade	The parking brake shall hold the vehicle at maximum rated payload, less towed load, on a 60% grade facing up or down the grade.
9	Steering	Power assisted	Steering shall be power assisted.
10	Turning circle	18 m	A turning radius no greater than 18 m (curb to curb).
11	Ground Clearance	350 mm	The ground clearance shall not less than 350 mm.
12	Angle of Approach	31 degrees	The angle of approach shall not be less than 31 degrees.
13	Angle of Departure	36 degrees	The angle of departure shall not be less than 36 degrees.
14	Ramp Break-Over	24 degrees	The ramp break-over angle shall not be less than

Ser	Criteria	Requirement	Notes
	Angle		24 degrees.
15	Transmission	Automatic or automated	Shall have an automatic or automated transmission.
16	Driveline Configuration	All-wheel drive with inter-axle lock	An all-wheel drivetrain with inter-axle locks capability is essential.
17	Axle differential locks	Each axle locks independently of others	Each axle must be equipped with an independent differential lock system.
18	Traction Control	Desirable: Traction control	A traction control system that does not reduce cross-country mobility is desirable.
19	Suspension System	Able to absorb impacts to avoid detrimental effects on crew, equipment or payload.	When fully laden and towing at maximum capacity must be equipped with a suspension system of sufficient capacity to absorb the high impact loading experienced when traveling over rough terrain. High frequency vibrations and noise must be attenuated by the suspension system to minimize the detrimental effects on personnel, equipment and payload.
20	Wheels and tires	Permit use of wheel chains and use military pattern tires with run flat inserts	Wheels must have sufficient clearance within the wheel wells to permit the use of tire chains. Must accommodate military pattern tires and be capable of accepting run flat inserts.
21	Wheel rim type	Not locking ring (split rim) type	It is essential that the rim assembly is not of the locking ring wheel (split rim) configuration;
22	Wheel and tire interchangeability	All wheels and tires interchangeable	Wheels and tires must be interchangeable from one side to the other and front to rear
23	Spare tire and wheel	One, full size	One full size spare tire and wheel assembly.
24	Spare Wheel Carrier	Provided to allow one person to dismount or mount the wheel/tire on the right side or rear of vehicle	A spare wheel/tire assembly carrier shall be provided and located so that the wheel is dismounted or mounted from the right hand side or rear of the vehicle. The spare wheel dismounting and mounting process must be a one-person operation and not interfere with other system components.
25	Tire pressure adjustment	Desirable: Controlled from inside the cab when in motion	If tire pressure must be varied to meet the mobility requirement, it is desirable that adjustments can be made from within the cab with the vehicle in motion.
26	Gradient climb/descend	60% grade	Climb and descend, with intermediate stops, a 60% slope in a controlled manner, at full payload.
27	Side Slope	30% side slope	Able to traverse and operate right and left on a 30% side slope, with intermediate stops, in a controlled manner, at full payload.
28	Fording	Essential: 750 mm Desirable: 1500 mm	Capable of shallow fording a hard bottom water obstacle to a depth of 750 mm, without preparation or the use of a waterproofing kit. Capable of deep fording a hard bottom water obstacle to a depth of 1500 mm, preferably without the use of a waterproofing kit. If preparation is required, it must take a maximum of 15 minutes, using only on-board equipment.
29	Exterior	No damage from light	Capable of being driven through light vegetation

Ser	Criteria	Requirement	Notes
	Components Vulnerability	vegetation	and of being backed into wood lines of light vegetation without damage to any exterior component. Light vegetation is defined as small trees/brush with a stem diameter up to 25 mm 1.5 m above ground level or class 1 in accordance with the NATO Reference Mobility Model (Reference F).
30	Fuel	Compliant with NATO STANAG 4362	Capable of operating on NATO standard fuels as per NATO STANAG 4362.
31	Fueling	20 litre fuel container, bulk refuelling vehicles and commercial pattern fuel stations	The vehicle design must permit refueling at the full flow rate from the in-service 20 litre fuel container, bulk refueling vehicles and commercial pattern fuel pumps.
32	Fuel system leak prevention	No leaks during operation	The fuel system shall be sealed to prevent leakage of fuel due to environmental or barometric pressure differentials, tilting during normal operation, or acceleration and deceleration.
33	Idle control	Automatic high idle device	ERC shall be equipped with an engine high-idle device to allow the engine to operate at increased revolutions per minute (RPM) for extended periods. The idle control shall be integrated into the recovery system remote control device and manual controls, such that the operator does not need to return to the vehicle cab to engage or disengage the device. The device shall control the engine RPM to provide sufficient operating system pressures and electrical power to operate the recovery equipment.
34	Electrical system	NATO STANAG 2601	The electrical system shall be in accordance with STANAG 2601.
35	Voltage and ground	24v DC nominal, negative ground	The electrical system shall operate on nominal 24 volts DC with negative ground.
36	Vehicle battery location	Easily accessible from ground level	Vehicle battery location shall be easily accessible from ground level for maintenance and replacement
37	Master electrical switch	Padlock protected exterior master switch	To interrupt electrical power between the vehicle and the batteries, ERC vehicles shall be equipped with an exterior, covered, padlock protected, inconspicuously located master electrical switch.
38	Slave receptacle	NATO STANAG 4074 compliant	ERC vehicles shall have a slave receptacle with cover in accordance with STANAG 4074.
39	110 v outlet	Exterior, weather protected 110v, 60 Hz, 15 Amp outlet	It is essential that the ERC have an exterior, weather protected 110v 60Hz 15 Amp outlet;
40	Transportability	MIL-STD 209	Appropriate provisions (tie-down and lifting points for example) for transport by air, sea, rail, and road in accordance with MIL-STD 209. Transportable by commercial pattern and in-service military prime movers.
41	Emergency towing	Meet NATO STANAG	ERC shall be capable of being towed by another

Ser	Criteria	Requirement	Notes
		4478	ERC or other suitable vehicle and must meet the requirements of NATO STANAG 4478 in respect to towing eyes fitted to ERC vehicles.
42	License Plate Mounting	Front and rear	Provision for mounting a front and rear license plate shall be provided. The mount shall allow the operator to hide the license plate from view using only the tools available on the vehicle.
43	Text language	French and English	All text is to be bilingual in both official languages, French and English.
44	Markings	NATO STANAG 4050	Markings are to be compliant with NATO STANAG 4050 Symbols Designating Function of Controls in Military Vehicles. Where no STANAG 4050 symbol exists, international symbols are to be used. Where a symbol does not exist, bilingual text is to be used.
45	Units of measure	Metric	All instruments, decals and data plates are to be marked in metric units.
46	Air transportability	Transportable by CC-177	Must be transportable by CC-177 with no more than 60 minutes preparation time using common tools. Must be able to be loaded and unloaded either backwards or forwards into and out of a CC-177.
47	Rail and sea transportability	Transportable by rail and sea	Must be transportable by rail and sea with no more than 60 minutes preparation time using common tools. Must be able to be loaded and unloaded both backwards and forwards into and out of rail cars and ships.
48	Cab Doors	Driver side and passenger side doors	Must have a driver and passenger's side doors. The passenger's door shall be lockable from the inside only. The driver's door shall have a locking mechanism that can only be operated from the inside of the cab and also be equipped with a mechanism that allows the driver's door to be locked from the outside with a standard padlock. This external mechanism shall not interfere in any way with vehicle ingress or egress, nor shall it be such that it will catch on items of clothing, camouflage nets and other ancillary equipment
49	Emergency egress – armoured cab	Each door on armoured cab	To facilitate the emergency egress of personnel from the armoured cab, each door is to be provided with an attachment point to accommodate a Shackle /D-ring with Clevis pin. The design of the attachment point must adequately account for the weight of the armoured cab door with the vehicle resting at a 30 degree side angle. It is essential that this attachment point in no way degrade or compromise the protection characteristics of the cab.
50	Emergency Escape from cab	Allow crew to exit the cab	Shall have suitable emergency escape from the cab when unarmoured and armoured to allow crew to exit the cab. Emergency escape point(s)

Ser	Criteria	Requirement	Notes
			shall be accessible from the inside and outside of the cab regardless of the vehicle orientation. It is essential that the Emergency escape point(s) be capable of being opened from the inside and outside of the vehicle, without the usage of any tools, when the vehicle is in use and lockable from inside the cab when not in use.
51	Armoured cab roof capacity	500 kg	The roof of the armoured cab may in the future be used to mount a remote weapon station. The roof shall therefore be capable of supporting a point load of a minimum of 500 kg.
52	Seats	Minimise transfer of shock and vibration	It is essential that cab seats be an air ride, hydraulic or similar seat that minimizes the transfer of shock and vibration.
53	Seat covering	Water resistant, rip-stop and durable.	Seat coverings shall be water resistant, rip-stop and durable.
54	Seat Belts	Armoured cab shall have 5 point harness. Non-armoured cab may have shoulder and lap configuration	The armoured cab shall have 5 Point seat belts. The non-armoured cab may be fitted with a standard shoulder lap belt configuration.
55	External Rear View Mirrors	One on each side	Two external, 'west coast' type, rear view mirrors, with replaceable, interchangeable heads, shall be provided. The mirrors shall be located on each side of the ERC such that an unrestricted view to the rear of the ERC is provided. It is essential that the mirror have a convex mirror mounted on the bottom section. The mirror support(s) will be capable of easily folding rearwards against the vehicle, without the use of tools. Both mirror heads and supports shall be vibration proof. It is essential that the mirrors be heated.
56	Rear observation system	Essential: Rear camera with 170 degrees field of view in all light conditions Essential: variable field of view controlled from the cab Desirable: Multiple cameras to observe reversing, operation of the lift tow system and operation of the recovery boom. Desirable: provide a forward view in all light levels	A camera system shall be incorporated into the vehicle allowing the driver and passenger a minimum of a 170 degree field of view behind the vehicle in all light conditions. It is essential that the camera system be controlled from the cab allowing the narrowing of field of view and be equipped with a zoom function to aid the crew in the positioning of the vehicle for hook ups. It is desirable that the camera system be comprised of more than one camera with the cameras being placed to observe reversing; the operation of the lift tow system; and use of the recovery boom. It is desirable that the camera system also provide a forward view that assists the driver in low light conditions.

Ser	Criteria	Requirement	Notes
57	Sun Visors	Provide protection from glare through front and side windows for driver and passenger	Shall be provided to prevent glare from front and side windows for both driver and passenger.
58	Windshield Wipers and Washers	Essential: Separate wipers for driver's and passenger's side of the windshield, with interchangeable parts. Essential: Windshield washer system	Separate wipers shall be provided for the driver and the passenger. The wiper components shall be interchangeable. A device shall be provided to wash the windshield during the operation of the vehicle.
59	Steering Column	Desirable: Adjustable	It is desirable that the steering column be adjustable front and back to accommodate the range of drivers and to facilitate ingress and egress.
60	Maps and Documentation Storage	Two storage areas, accessible when wearing seat belts	A minimum combination of two storage areas for maps and papers shall be provided. These can be comprised of a glove compartment, door pockets or other suitable enclosures easily accessible within the cab when the driver or passengers are restrained in their respective seats
61	Cab windows	Essential: Largest size of windshield. Essential: Non-armoured cab shall have fully opening door windows. Desirable: Windows mounted such as to reduce glare	The windshield shall be the largest size practical consistent with vehicle design and protection level required. The non-armoured cab shall have door windows capable of being opened fully. It is desirable that windows be mounted in such a manner as to reduce glare.
62	Map Reading Light	One map reading light	A map reading light, fitted with a blue lens, or spotlight type dome lights or task lights shall be provided. It shall be capable of being used either by the driver or passenger.
63	Instruments and Controls	Arranged for left hand drive	The vehicle driver's position, instruments and controls shall be arranged for left hand drive.
64	Switches	Not interfere with movement and be accessible and easily operable by the driver while wearing a seat belt	Switches shall not interfere with the cab occupants' movements and must be readily accessible to and easily operable by the driver when seated and wearing his/her seat belt.
65	Gauges and Indicators	Metric units and fitted as necessary for operation and to meet regulations	All appropriate metric gauges and indicators or appropriate devices shall be provided to ensure the safe and efficient operation of the vehicle and where mandated by regulatory requirements,
66	SMP Light Switch	SMP light switch	A multi-position SMP light switch, for vehicle lights, with lockout to prevent white light activation when in blackout conditions shall be used.

Ser	Criteria	Requirement	Notes
67	Blackout Lighting	Comply with STANAG 4381	Gauges and indicators or appropriate devices shall be visible to the operator and be capable of being dimmed. The driver shall be able to select blackout lighting and all sources of internal light, except the map reading light, shall be subject to immediate blackout, less yellow and red warning lights which shall be visible but dimmed.
68	Cab 12 Volt Power Outlet	Two	Two 12 Volt outlets shall be provided in the cab to facilitate recharging of laptops and powering of various 12 volt minor equipment.
69	Cab Turret Ring	Turret Ring	The cab shall have a roof opening with a turret ring, or similar device, with a mounting able to accept the CAF C6 or C9 machine gun. This mounting must allow a crew member to engage targets with the machine gun over 360 degrees of rotation.
70	EMC/EMI	Applicable sections of MIL STD 461 D and MIL STD 462	The ERC shall have minimal electromagnetic emissions / susceptibility and comply with the applicable sections of MIL STD 461 D and MIL STD 462.
71	Amber Warning Lights	Dual amber strobe warning lights, visible from 360 degrees	It is essential to have dual amber warning lights that are visible from 360 degrees around the vehicle. A switch, with indicator lamp, shall be provided to allow the driver to operate the amber strobe lights.
72	Work Lights	<p>Essential: Sufficient exterior, adjustable lights.</p> <p>Desirable: All lights have independent control, adjustment of intensity and provide both white and red light.</p> <p>Desirable: Two portable, self-contained work lights.</p>	<p>It is essential that the recovery systems have sufficient exterior work lights to illuminate all stowage bins, controls and information panels/gauges;</p> <p>It is essential that exterior work lights are adjustable in direction to illuminate the entire radius of the rotator boom at all elevations and extensions;</p> <p>It is essential that work lights are adjustable to illuminate to the rear of the recovery system to a minimum range of 15 m and 135 degrees each side of centre;</p> <p>It is desirable that all work lights have independent controls and are adjustable in intensity and provide white light or red light;</p> <p>It is desirable to have two portable self-contained work lights for use when conducting hook-ups, heavy lifts, and extractions.</p>
73	Portable light bar	Portable lights bar	It is essential to have a light bar that can be affixed to the rear of a casualty vehicle to provide tail, brake and turn signals for non-tactical use. The light bar lights shall function from the same switches as the ERC vehicle.
74	Hydraulic system	Slave hydraulics	Shall be capable of connecting to other CAF wheeled vehicles to provide slave hydraulics.

Ser	Criteria	Requirement	Notes
			The hydraulic system of the ERC shall not be adversely affected by the slaved vehicle system. The hydraulic system must be able to accept hydraulic fluid from a slaved vehicle without overfilling the reservoir or shall have a slave hydraulic system that is independent of the main ERC hydraulics.

Table 4.2 Automotive and Chassis System Requirements

4.3 Winch System Requirements

The ERC solution must meet the following essential and, at the supplier's discretion the desirable, winch system requirements:

Ser	Criteria	Requirement	Notes
1	Main drag winch single line pull	Essential: 25,000 kg Desirable: 30,000 kg	The main drag winch shall have a minimum of 25,000 kg single line pulling capacity and 30,000 kg main line capacity is desirable.
2	Winch system pull	50,000 kg	Capable of a pull of 50,000 kg using 2:1 with the winch rope anchored back to the vehicle.
3	Main drag winch force and velocity	Constant	The pulling force and rope speed must remain constant regardless of the length of winch rope deployed.
4	Main drag winch speed	Variable between zero and a minimum of 25 m per minute	Able to winch in and out at a variable speed between zero and a minimum of 25 m per minute. Up to 50 m per minute is desirable.
5	Main drag winch rope length	Essential: 100 m Desirable: 150 m	It is essential that the single line main winch rope have a usable length of at least 100 m and a desirable usable length of at least 150 m.
6	Auxiliary winch	Able to deploy main winch rope	It is essential that the ERC come equipped with a single line pulling capacity auxiliary winch to aid in the deployment of the main drag winch.
7	Auxiliary winch speed	Essential: Variable between zero and a minimum of 25 m per minute. Desirable: up to 50 m per minute.	Able to winch in and out at a variable speed between zero and 25 m per minute. With a desirable no load speed of up to 50 m per minute.
8	Ground spades	Maximum pull.	Shall have a ground spade system capable of stabilising the vehicle at maximum pull.
9	Control	As per LCRS Table A-3 below.	Control of winches and ground anchor to be common with LCRS in Table A-3

Table 4.3 Winch System Requirements

4.4 Lifting / Controlled Righting System (LCRS) Requirements

The ERC solution must meet the following essential and, at the supplier's discretion the desirable, lifting / controlled righting system requirements:

Ser	Criteria	Requirement	Notes
1	Lifting	17,000 kg	Capable of lifting and moving a 17,000 kg, 20 foot intermodal container from one side of the ERC to the opposite side without lifting it over the cab or body of the ERC, and placing the container on to all ISO capable CAF vehicle platforms.

Ser	Criteria	Requirement	Notes
2	Controlled righting	All CAF wheeled vehicles	It is essential that the ERC lifting system be capable of righting the heaviest wheeled vehicle in the CAF fleet when overturned on its side, back to its wheels in a controlled manner.
3	Rotation	360 degrees	Able to rotate continuously through 360 degrees without stops.
4	Hoist line reach	<i>(Please respond with your suggested value) m</i>	Shall have a hoist line reach of no less than <i>(Please respond with your suggested value)</i> m from the boom sheave to the boom lifting hook when fully paid out.
5	Hoist line speed	At least equal to main drag winch	Shall have a hoist line speed that is at least equal to the main pull winch at maximum payload
6	Boom extension	9 m	The boom shall extend not less than 9 m from the centre of rotation.
7	Boom stored position	Within length and width of vehicle	Boom in stowed position must not extend beyond the front or rear of the vehicle bumpers, nor protrude beyond the sides of the vehicle.
8	Lifting height	<i>(Please respond with your suggested value)</i>	Lifting height, hook bearing point to ground, with the boom at maximum extension and elevation position with boom to ground support (outriggers) in place (fully extended) shall be not be less than <i>(Please respond with your suggested value)</i> m.
9	Lifting capacities without using outriggers	<i>(Please respond with your suggested value)</i> kg at <i>(Please respond with your suggested value)</i> m	The minimum lifting capacity, without the use of outriggers, shall be <i>(Please respond with your suggested value)</i> kg at <i>(Please respond with your suggested value)</i> m.
10	Lifting capacities with outriggers	17,000 kg at <i>(Please respond with your suggested value)</i> m	The minimum lifting capacity, with the use of outriggers, shall be 17,000 kg at <i>(Please respond with your suggested value)</i> m.
11	Outrigger system positions	Multiple positions	Shall operate with the outriggers and ground spades in multiple positions from stowed to full extension. It is understood that capacities will be varied based on the stabilizer positions.
12	Remote control	Full control up to 15 m	Shall have a remote control capable of operating all functions at no less than 15 m away from the vehicle. The remote control system shall allow wireless operation and must not interfere with the vehicle or communication systems. The remote control system shall also operate without RF transmissions. Any RF emissions shall be within frequency bands allocated for such use within Canada.

Ser	Criteria	Requirement	Notes
13	Manual control	Full control from both sides	Capable of manual operation of all control functions and be located on both sides of the vehicle, where the operator can safely manipulate the controls with clear line of sight of the boom.
14	Overload alert	Visible and audible warning	Able to alert the operator to an overload condition that would cause the vehicle to become unstable and potentially tip over.
15	Overload protection	Not allow an overload	Shall stop the system from exceeding any capacity that would cause an overload condition.

Table 4.4 Lifting / Controlled Righting System (LCRS) Requirements

4.5 Towing System Requirements

The ERC solution must meet the following essential and, at the supplier's discretion the desirable, towing system requirements:

Ser	Criteria	Requirement	Notes
1	Towing	All CAF wheeled vehicles	Ability to tow all CAF wheeled vehicles across all terrain types.
2	Trailer towing pintle	NATO STANAG 4101 and QSTAG 264 complaint pintle, able to be installed at the front and rear of the vehicle	The towing system shall connect to NATO STANAG 4010 towing lunettes.
3	Electrical Receptacle	NATO STANAG 4007 compliant	A receptacle for an SMP trailer electrical connector shall be installed in accordance with STANAG 4007.
4	Support tow	Support tow of all CAF wheeled vehicles	Must be equipped with a lift tow system capable of support tow of all CAF wheeled vehicles.
5	Suspend tow	Desirable: Suspend tow of all CAF wheeled vehicles	It is desirable that the lift tow system is able to suspend tow all CAF wheeled vehicles.
6	Lift tow system commonality	Common lift tow system	If the solution requires multiple variants, the lift tow system shall be common to all ERC variants.
7	Connection to casualty vehicles	All CAF wheeled vehicles and NATO STANAG 4478 recovery eyes/lugs	Must allow connection to all CAF wheeled vehicles and all NATO STANAG 4478 recovery eyes/lugs.
8	Glad-hands	Glad-hands and adaptors to fit all CAF wheeled vehicles	Glad-hands and adaptors that conform to all CAF vehicles shall be provided at the rear and at the front of the vehicle.
9	Lift tow system extension	Adjust to fit all CAF wheeled vehicles	The lift tow system must be extendable to allow casualty vehicles to be towed as close as possible to the rear of the ERC, without fouling during tight turns or articulating over terrain.
10	Lift tow system minimum capacity – retracted	15,000 kg at <i>(Please respond with your suggested value)</i> m	Able to lift tow a minimum of 15,000 kg at <i>(Please respond with your suggested value)</i> m.
11	Lift tow system minimum capacity – extended	8,000 kg at <i>(Please respond with your suggested value)</i> m	Able to lift tow a minimum of 8000 kg at <i>(Please respond with your suggested value)</i> m.

Ser	Criteria	Requirement	Notes
12	Lift tow system	Float capability	Must have a means to allow the recovery system to "float" during direct tow operations to minimize stresses on the recovery system and casualty.
13	Monitor lift tow system and casualty.	Driver viewing aid	The lift system and casualty vehicle must be observable by the ERC driver from the cab, preferably through a camera system.
14	Remote control	As per Lifting / Controlled Righting system	The lift system must be controlled from the same remote control as the Lifting / Controlled Righting system detailed above.
15	Manual control	As per Lifting / Controlled Righting system	The lift system must be capable of manual operation from the same location as the Lifting / Controlled Righting system detailed above.

Table 4.5 Towing System Requirements

4.6 ILS and Maintainability

The ERC solution must meet the following essential and, at the supplier's discretion the desirable, ILS and maintainability requirements:

Ser	Criteria	Requirement	Notes
1	Built in test and Self Diagnosis	Essential: Able to locate and identify point of failure. Desirable: Identify cause of failure Desirable: Prognostics	The ERC shall be designed and constructed as to provide diagnostics data to enable maintenance personnel to locate and identify the point of failure. It is also desirable that the cause of failure also be recorded when it is not the same as the point of failure. It is desirable that prognostics features be built in so that preventive maintenance can be conducted in a timely manner, before failure occurs.
2	Technical Manuals	IETM Class 5	Class 5 Interactive Electronic Technical Manual (IETM) shall be provided.
3	Technical manuals and documentation	Electronic format and in both official languages	Manuals and other documentation shall be available electronically in both official languages and written in appropriate CAF terminology.
4	Training	User training, training aids and training material	The OEM shall deliver the future ERC users with the required training to operate and maintain the vehicles and equipment. This shall include provision of training aids and study material.
5	Training delivery	Initial Cadre Training	The OEM shall deliver Initial Cadre Training (ICT) for the operators and maintainers.
6	Recovery of ERC	ERC shall recover ERC	ERC shall be capable of recovering ERC.
7	Towing points	Compliant with NATO STANAG 4478 and QSTAG 264	The ERC must comply with STANAG 4478- Emergency Towing and Recovery Facilities on Tactical Land Vehicles. Two towing points at the front and two at the rear of the vehicle conforming to the requirements of QSTAG 264 (Reference U) shall be provided.

Ser	Criteria	Requirement	Notes
8	Flat tow of ERC	Flat tow 80 km at 50 km/h with no more than 30 minutes of preparation time	The ERC shall be capable of being flat towed not less than 80 km at 50 km/h with no more than 30 minutes of preparation time.
9	Support tow of ERC	Support tow 80 km at 50 km/h, with no more than 30 minutes of preparation time	The ERC shall be capable of being support towed, not less than 80 km at 50 km/h, with no more than 30 minutes of preparation.
10	Lifting and Tie-Down Points	Lifting and tie-down points compliant with QSTAG 328	Suitable tie-down points shall be provided so that the ERC, with all ancillary equipment, may be lifted or tied down for transport by rail, air or sea. The lifting and tie-down points shall meet the strength requirements of QSTAG 328

Table 4.6 ILS and Maintainability Requirements

4.7 Geographic, Environmental and Climatic Operating Conditions

The ERC solution must meet the following essential and, at the supplier's discretion the desirable, geographic, environment and climatic conditions:

Ser	Criteria	Requirement	Notes
1	Climatic conditions	STANAG 2895 A1 to C2	Performance requirements shall be met in climates detailed in STANAG 2895, (conditions A1 (49°C) through C2 (to minus 46°C) inclusive (hot, dry, to cold)). Under such conditions, ERC shall support the maximum gross loads, including attachments and supporting equipment, while maintaining its stability, structural integrity, and operational capability.
2	Cold start	Minus 46°C without external assistance	Cold start capability down to minus 46°C without external-to-vehicle assistance.
3	Cab heating and ventilation	Defrost in maximum of 10 minutes	The cab heating and ventilation system shall include a windshield defrost system and air vents which direct air towards the operator's feet and upper torso. The system must defrost the front and side windows in a maximum of 10 minutes after start-up at STANAG 2895 C2 condition.
4	Functional systems	No loss of capability	Functional systems such as electrical, electronic, mechanical, pneumatic, and hydraulic controls and systems must operate without loss of capability under the above stated climatic and performance conditions.
5	Control surfaces	Weather resistant to meet operating conditions	Control surfaces must be weather resistant as they may be subject to environmental effects like rain and snow.
6	Battery charging system	Compensate for climatic conditions	The battery charging system shall compensate for the effects of extreme hot and cold temperatures on vehicle batteries in order to maintain battery function and life.
7	Environmental impact	Minimised negative impact. Policy and legislation followed	The acquisition of the ERC solution shall have minimal negative impacts to the environment. CAF policy and relevant environmental legislation shall be followed.
8	Construction materials	No environmentally damaging materials (excluding CARC paint)	Environmentally damaging materials (excluding CARC paint), shall not be used in the construction of ERC.

Table 4.7 Geographic, Environment and Climatic Conditions

4.8 Cab and Human Factors Requirements

The ERC solution must incorporate the following essential and, at the supplier's discretion the desirable, cab and human factors requirements:

Ser	Criteria	Requirement	Notes
1	Cab seating	Essential: Driver plus one passenger Desirable: Driver plus two passengers	Must have seating for the driver and one passenger dressed in current combat clothing and wearing fighting order. Desirable to have seating for the driver and two passengers.
2	Personal equipment stowage	Essential: Personal equipment stowage for driver and one passenger. Desirable: Personal equipment stowage for driver and two passengers	Must have protected stowage inside the cab for the driver's and one passenger's personal equipment. Desirable to have protected stowage inside the cab for the driver's and two passengers' personal equipment.
3	Ergonomics	Comfortable operation by all CAF personnel in the range from 5 th percentile female to 95 th percentile male	The vehicle design must be such that the range of CAF personnel from the 5th percentile female through to the 95th percentile male, must be able to do the following: Carry out all the actions required to drive and operate the vehicle and equipment safely, in all climatic and weather conditions, e.g. driver's inspections and fluid maintenance, access stowage compartments, conducting winching etc; Ride comfortably as driver or passenger up to eight hours; Enter and exit the vehicle easily; and Operate the communication equipment while the vehicle is stationary and on the move.
4	Heating	Essential: 15°C Desirable: 20°C at C2	The crew compartment heating system must be of a sufficient capacity to raise the cab temperature to 15°C (20°C desirable) during operation in climatic condition STANAG 2895 C2, with the engine at normal operating temperature, within 5 minutes.
5	Air Conditioning	Essential: 25°C Desirable: 20°C at A1	Cab air-conditioning shall be of a sufficient capacity to lower the cab temperature to 25°C (20°C desirable) during operation in climatic condition STANAG 2895 A1.
6	Ventilation	Adequate fresh air flow	Forced air ventilation must be adequate and provide the driver fresh air directed at the torso. The forced air distribution system shall include a windshield defrost system and air vents allowing direction of air towards the driver's and passenger's feet and toward their upper torsos.

Ser	Criteria	Requirement	Notes
7	Outward Vision	Unobstructed view to front and sides	The basic vehicle configuration must provide the driver with an unobstructed view to both the front and the sides.
8	Interior Noise	Must not exceed MIL STD 1474B	The eight-hour equivalent noise level measured at the driver's ears must not exceed MIL STD 1474B, (Reference M).
9	Vibration levels	Within Mil Std 810E	Vibration levels must not result in excessive fatigue or motion sickness or in any physical injury to crew members, and must not damage any system assemblies or components. Vibration levels must be within MIL STD 810E Method 514.4 Category 8, Vibration for the Ground Mobile Environment, Reference J.

Table 4.8 Cab and Human Factors Requirements

4.9 Common Equipment

The ERC solution must incorporate the following essential and, at the supplier's discretion the desirable, common equipment and stowage requirements:

Ser	Criteria	Requirement	Notes
1	Personal Weapons	Stowage location for one C-7 per driver and crew member	Must have accessible space in the cab to safely stow as many C-7 rifles, as there are driver/passenger(s), in appropriate brackets. The vehicle occupants must be able to rapidly remove the C-7 rifles from the stowage brackets without interference from the cab interior components.
2	Personal kit	Stowage in the cab for two CAF fully packed rucksacks	Stowage in the cab for two CAF fully packed rucksacks
3	CRBN Decontamination Kit	Suitable stowage space	Must provide space inside or in an easily accessible, protected and securable exterior location for a standard cab decontamination kit.
4	Fire Extinguisher	One fire extinguisher	Space must be provided for a fire extinguisher of sufficient size to extinguish typical electrical or fuel fires. The fire extinguisher must be affixed to the vehicle using an appropriate mounting bracket in an easily accessible location.
5	First Aid Kit	One First Aid Kit with stowage location	Must have one standard first aid kit, as approved by the CAF, stowed in an easily accessible location.
6	Wheel Changing Tools	All necessary tools	All the necessary tools required to safely change a wheel and replace the damaged wheel in the spare carrier, shall be carried in an easily accessible and lockable location.
7	Wheel Chains	Wheel chains for each wheel and storage location	Wheel chains for each wheel with a storage location shall be provided.
8	Vehicle Tools	All necessary tools	All the necessary tools required to conduct driver maintenance shall be carried in a lockable and easily accessible location.

Ser	Criteria	Requirement	Notes
9	Crew tools	All necessary tools	The following equipment shall be provided with a stowage position on the vehicle: one pick, one axe and one shovel; one jerry can; environmental spill kit; one portable Oxy-Acetylene torch kit and/or Exothermic Cutting kit; assorted recovery ancillary equipment, blocks and tackle; camouflage net(s) and support poles; one LAV 6.0 or TAPV A-Frame tow bar,
10	External stowage locations	Suitable external stowage for the equipment listed	Stowage location for: one fully equipped vehicle technician's tool kit as per check list; 24 hours of rations and water and first line ammunition.
11	External stowage	Necessary stowage locations and design	External stowage locations must have capacity to secure all equipment to be carried on the vehicle. The containers must be securable by padlock. External stowage items must be secured to the vehicle. External stowage container doors, openings or locking mechanisms must be located where they will remain functional during normal operation of the vehicle.

Table 4.9 Common Equipment and Stowage Requirements

4.10 Communications and Navigation Equipment

The ERC solution shall be capable of being fitted with the CAF Tactical Command, Control and Communications System (TCCCS) and Land Command Support System (LCSS), which is an integrated suite of communications systems that can also be capable of automatically sending, receiving and displaying a common operating picture (COP) or situational awareness view of friendly forces. ERC must incorporate the following essential and, at the supplier's discretion the desirable, communications equipment requirements:

Ser	Criteria	Requirement	Notes
1	VHF radio ready	One VHF radio installation	ERC vehicles shall be provided with all necessary space claim, cables, brackets, installation kits, application kits, antenna mounts and electrical power, ready to accept the VHF radio.
2	Operator access	Accessible for all operator functions	All communications equipment, once installed, must be accessible for operator tasks for example access to the front panel for operation of switches.
3	User data Terminal space claim	Required space available	Sufficient space shall be made available for the installation of a TCCS/LCSS User/Vehicle Data Terminal including the in-service GPS terminal (PLGR)

Table 4.10 Communications and Navigation Equipment Requirements

GLOSSARY OF TERMS AND ACRONYMS

1. Terms

The following table lists the terms used in this project and their definition.

Ser	Term	Definition
1	Curb Weight (CW)	The vehicle weight in the drive-away condition, filled to at least 90% capacity by weight with fuel (non-flammable liquid may be substituted), lubricants and coolants and with all standard equipment but without luggage or passengers (SAE J980)
2	Gross Axle Weight Rating (GAWR)	The value specified by the manufacturer as the load carrying capacity of a single axle system, as measured at the tire-roadway interface. (SAE J1451)
3	Gross Combination Test Weight (GCTW)	Unloaded vehicle and trailer(s) weight plus payload to reach maximum combined test weight. (SAE J1376)
4	Gross Vehicle Weight (GVW)	The manufacturer's gross weight rating consisting of the curb weight plus payload (SAE J1145) Gross Vehicle Weight Rating (GVWR) – The value specified by the manufacturer as the loaded weight. (SAE J1451)
5	Initial Operational Capability (IOC).	The first attainment of the minimum ability to effectively employ a new or improved capability, and for which adequate infrastructure, training, staffing, and support are in place, both for the new capability and for the organization employing it. IOC is unique to each project and is identified, generally at a high level, in the project Statement of Operational Requirement (SOR). The sponsor sets the more detailed, quantifiable IOC requirements as the project evolves.
6	Full Operational Capability (FOC).	The full attainment of the ability to effectively employ a new or improved capability, and for which adequate infrastructure, training, staffing, and support are in place, both for the new capability and for the organization employing it. FOC is unique to each project and is identified in the project Statement of Operational Requirement (SOR). The sponsor sets the more detailed, quantifiable FOC requirements as the project evolves.
7	Loaded Vehicle Weight (LVW)	The manufacturer's estimated weight of the vehicle in operating condition with all the standard equipment, the weight of the fuel at nominal tank capacity, the weight of every item of optional equipment which weighs over 3lbs (1.4kg) and which is installed on more than 33% of an engine displacement class, plus 300 lbs (136 kg). (SAE J171)
8	Recovery	The process of extricating a vehicle or equipment casualty from the place where it becomes disabled or defective and moving it to the first place where the crew can continue with their task, where repairs can be effected or from where the vehicle or equipment casualty can be backloaded.
9	Recovery System	The vehicle chassis and all related components, and the recovery components (boom, lift tow and winches), with all the related tools, adaptors and fixtures that meet the capability requirements of the ERC system.
10	Suspend Tow	A method of recovery, where the recovery vehicle suspends the front or back end of a casualty vehicle below a recovery beam in order that the front or rear axle(s) of the casualty vehicle are clear of the ground.

Ser	Term	Definition
11	Support Tow	A method of recovery where the recovery vehicle supports the casualty vehicle by attaching to its towing eyes or by lifting from under the front or rear of the chassis, where the casualty vehicle is supported above the recovery beam in order that the front or rear axle(s) are clear of the ground.
12	Tactical Land Vehicle	A military vehicle, whether designed primarily for military use or adapted from a commercial vehicle, which has specialised military characteristics to fit it for use by forces in the field in direct connection with, or in support of, combat operations or the training of troops for such operations.
13	Project Management Plan	The Respondent will have to prepare, deliver, update and maintain a PMP. The PMP shall separately address the management and engineering efforts required for the Work under the future Contract. The Respondent PMP shall provide the DND Technical Authority with a plan that sets out the Contractor's project management organization and procedures as they apply to the Contract. The PMP shall also summarize the Contractor's policies, procedures and conventions for project scheduling, planning, organizing, directing, executing, monitoring, and controlling for all Work required under the future Contract. The Contractor shall define within the PMP a Risk Management (RM) Program by describing the procedures and methods to be used in identifying, analyzing, reporting, tracking and evaluating risk, and also describe the processes to be used in the early identification of potential problem areas and the procedures for problem reduction and resolution.
14	Project Master Schedule	The Respondent shall prepare and deliver a Project Master Schedule (PMS). All project activities shall be contained in a single MS Project (or equivalent) file organised such that the work flow is intuitive, tasks are detailed to the work package level, tasks that have any interdependencies are linked and the critical path links all important activities. DND shall review the PMS delivered by the Contractor and provide any comments prior to finalization. The DND accepted PMS will then be baselined and configuration managed by the Contractor. Any changes to the PMS after baselining will require review and approval by both the Contractor and the DND Technical Authority. The Contractor shall implement and maintain the PMS as accepted by DND for the duration of the Contract and shall update the schedule for inclusion in progress review meetings.

2. Acronyms

Ser	Acronym	In Full
1	ADM(Mat)	Assistant Deputy Minister (Material)
2	ABS	Antilock Braking System
3	APS	Armour Protection System
4	CAD	Canadian Air Division
5	CAF	Canadian Armed Forces
6	CANSOFCOM	Canadian Special Operations Forces Command
7	CCA	Commander Canadian Army
8	CFDS	Canada First Defence Strategy
9	CFSS	Canada Forces Supply System
10	CJOC	Canadian Joint Operations Command
11	CMVSS	Canadian Motor Vehicle Safety Standards
12	CW	Curb Weight
13	DGLEPM	Director General Land Equipment Program Management
14	DLR	Director Land Requirements
15	DND	Department of National Defence
16	ERC	Enhanced Recovery Capability
17	FOC	Full Operational Capability
18	FSR	Field Service Representative
19	GAWR	Gross Axle Weight Rating
20	GCTW	Gross Combined Test Weight
21	GPMG	General Purpose Machine Gun
22	GVW	Gross Vehicle Weight
23	GVWR	Gross Vehicle Weight Rating
24	HLVW	Heavy Logistics Vehicle Wheeled
25	HSE	Heavy Support Equipment
26	ILS	Integrated Logistics Support
27	IOC	Initial Operational Capability
28	LCRS	Lifting Controlled Righting System
29	LCSS	Land Command Support System
30	LVW	Loaded Vehicle Weight

Ser	Acronym	In Full
31	MND	Minister of National Defence
32	MSVS	Medium Support Vehicle System
33	NATO	North Atlantic Treaty Organization
34	OEM	Original Equipment Manufacturer
35	PCRA	Project Complexity and Risk Assessment
36	PLGR	Precision Lightweight GPS Receiver
37	PSPC	Public Services and Procurement Canada
38	RCAF	Royal Canadian Air Force
39	RFP	Request For Proposals
40	SEV	Special Equipment Vehicle
41	SMP	Standard Military Pattern
42	SOR	Statement of Requirements
43	STANAG	Standardization Agreement (NATO)
44	VCDS	Vice Chief of the Defence Staff

SUSTAINMENT REQUIREMENTS QUESTIONS

Please see Appendix 1 to Annex B prior to answering the following questions.

#	Category	Ref (Appendix 1 to Annex B)	Question	Response
1.	Availability (Repairability/ Maintainability)	1.6	Does your proposed solution have a Logistics Support Analysis Record (LSAR) completed? If so, what type of historical data is it based on?	
2.	Availability (Repairability/ Maintainability)	2.2.a.(1)	Considering the metrics listed in para 2.2.a.(1), do you recommend other performance metrics that will allow for a more incentivized sustainment model?	
3.	Availability (Repairability/ Maintainability)	2.2.a.(1)	What targets are achievable by your solution in terms of: (a) VOR – Vehicle Off Road Rate or the reverse, which is Availability Rate; (b) MTBCF – Mean Time Between Critical Failure (based on kilometers or time and can be down to sub-system/component level); (c) MTTDSP – Mean Time to Deliver Spare Parts (both in terms of getting parts to the supply depots and for the depots to get them to the technicians).	
4.	Deployability	2.2.c.(2)	Describe the armour concept available for your fleet with respect to protection level, weight, installation procedure, impact on payload, management solution etc.	
5.	ILS Services	2.2.d	Are you able to provide all the ILS Services described in paragraph 2.2.d?	
6.	ILS Services	2.2.d.(2).(b)	Does your solution provide Canada sufficient IP rights to ensure it is able to sustain the fleet in a competitive basis throughout its life in terms of the sub-paragraphs listed in paragraph 2.2.d.(2).(b)?	
7.	ILS Services	2.2.d.(2).(b)	If not, how about under certain circumstances such as default by the contractor or when the	

#	Category	Ref (Appendix 1 to Annex B)	Question	Response
			contractor ceases to do business or, for any other reason, is unable or unwilling to support Canada to meet its sustainment requirements?	
8.	ILS Services	2.2.d.(2).(b)	Are there components or sub-systems, such as Commercial Off-The-Shelf (COTS), that should be excluded from the application of the requirement in the Questions 6 and 7? If so, please provide a list with your response to give Canada an idea of what should be excluded.	
9.	ILS Services	2.2.d 2.2.e 2.2.f	Of the ILS services described in Annex A, which can be provided in Canada in order to provide Economic Benefit to Canada.	
10.	STTE	2.2.e	What is the special tooling and test equipment required for your solution based on the extent in which CAF technicians are expected to service the fleet (paragraph 2.2.c.(1))?	
11.	Spare Parts	2.2.f	Is your solution capable of providing all of the spare parts requirements outlined in paragraph 2.2.f?	

SUSTAINMENT REQUIREMENTS

This document will firstly explain how the Canadian Armed Forces (CAF) typically sustains its fleets in terms of supply, maintenance and central management of the equipment. The second portion will address the sustainment requirements specific for the Enhanced Recovery Capability (ERC) project.

1. Canadian Armed Forces (CAF) Sustainment Concept

- 1.1 Supply Chain - The CAF has two main supply depots (Edmonton and Montreal) within Canada in which materiel from suppliers arrive and are catalogued. From each of those locations, materiel is shipped to all CAF supply locations. In terms of spare parts, there is typically a stock level assigned to each location based on the dependant unit's fleet types, fleet size and training frequency, as well as the type of maintenance that can be performed at that specific unit. These stock levels are called Scaling. One of the supply depots is normally assigned for a significant portion of materiel being shipped to international operations;
- 1.2 1st Line Units/2nd Line Units – In terms of sustainment/maintenance of equipment, 1st line units have maintenance platoons that are responsible for diagnosing and executing low to medium level repairs such as, component replacement, brake repairs and suspension repairs. The scaling of spare parts would be contained in this stock location, would be suited to the types of repairs completed by the technicians in this workshop. 2nd line units have maintenance companies that are larger than maintenance platoons. They are responsible for higher level repairs, such as engine and transmission replacement. Repair and overhaul of higher level sub-systems is typically completed by the fleet Original Equipment Manufacturer (OEM) or potentially the sub-system OEM. The clear divide on the types of repairs done by each of the respective levels, is different for each fleet and is determined through a Logistics Support Analysis (LSA). Depending on Canada's procurement and sustainment strategy, the Equipment Management Team (EMT) or Project Management Office (PMO) may require the contractor to prepare the LSA. The LSA is subject to approval/acceptance by PMO/EMT in accordance with the applicable contract;
- 1.3 Difference between PMO and EMT – The difference between the two organizations is based on timing. The planning, procurement and integration of new fleets into the CAF is the responsibility of the PMO. As the fleet integration reaches steady state, the responsibility of the management of the fleet transfers to the EMT for the remaining life of the fleet. The PMO for this specific fleet will have a gradual closure as the transition to the EMT occurs;
- 1.4 Defence Resource Management Information System (DRMIS) – This is the CAF's Enterprise Resource Planning (ERP) tool based on a SAP platform. It is used to manage all equipment preventative maintenance schedules, record all corrective maintenance activities and manage spare parts. This system is continuously being improved to record performance metrics in terms of availability of CAF fleets and their respective sub-systems and components as well as performance metrics in terms of the entire CAF maintenance processes in order to have continuous improvement throughout;
- 1.5 Preventative Maintenance – Typically completed by the operators, however larger more in depth inspections are completed by CAF technicians. The frequency and specific aspects of these more-in-depth inspections will reflect the LSA results;
- 1.6 Corrective Maintenance – As indicated in paragraph 1.2, the divide of responsibilities at each level in terms of corrective maintenance is determined by the LSA. The responsibilities/training given to CAF technicians must be to the same level as OEM certified technicians in order to enable servicing of the fleet in deployed operations by CAF technicians. The ability to diagnose and repair the majority of faults on the fleets as far forward as possible is critical to sustaining the highest level of availability for the fleets and therefore, critical to mission success. Appreciating this requirement, the LSA must be sufficiently detailed to achieve this.

- 1.7 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 fleet upon initial delivery. The delivery of this training typically falls into two categories; Training that covers a specific quantity of operators and identified operator-trainers, or continual training provided by the OEM on a set schedule. The first option puts the responsibility for long term competency upkeep on the CAF, where for the second option this responsibility is with the OEM.
 - 1.8 Technician Training – Very similar to the operator concept for training with respect to training up front. The main difference is that the long term training regime will see a Center of Excellence (CoE) be established so that the training delivery can be standardized as well as the training publications. Depending on the platform, specialist training may be established, where the fleet is trained as a separate course versus integrating the training into the standard institutional system; and
 - 1.9 Operator/Technician on CAF Recovery Platforms - There is a combined operator/technician employment structure for recovery platforms within the CAF. Therefore, the operators of recovery platforms are technicians and complete the preventative and corrective maintenance on it.
2. ERC Sustainment Requirements
 - 2.1 Sustainment Objective - Develop the optimized in-service support (ISS) solution to sustain the availability of the ERC fleets in a timely manner which match the fleet employment concept of the Canadian Army (CA);
 - 2.2 Canadian Armed Forces (CAF) System Level Operational Requirements
 - a. Availability (Reliability & Maintainability)
 - (1) There are specific metrics that relate to the availability of the fleet, which will be critical to the performance of the sustainment concept:
 - (a) VOR – Vehicle Off Road Rate or the reverse, which is Availability Rate;
 - (b) MTBCF – Mean Time Between Critical Failure (based on kilometers or time and can be down to sub-system/component level);
 - (c) MTTR – Mean Time to Repair (specific faults);
 - (d) MTTDSP – Mean Time to Deliver Spare Parts (both in terms of getting parts to the supply depots and for the depots to get them to the technicians).
 - (2) These will be contract requirements that will take feedback from industry into consideration when setting these metrics.
 - (3) Regardless of solution, the performance metrics associated with the ERC fleet will need to be recorded and analysed within DRMIS. If the solution will have an integrated Health and Usage Monitoring System (HUMS), transfer of data or integration into DRMIS will be necessary.
 - b. Training/Safety - Based on the complexity of the sub-systems that will be incorporated into this fleet, steady-state training may be required under the service contract for this fleet. This fleet may have a specialist course associated with it, thus flexibility may need to be incorporated into the contract in terms of being able to amend the training following the initial cadre training and be flexible in delivery times to match potential annual operator/technician courses;
 - c. Deployability

- (1) Technician Competency - CAF technicians will need to carry out all maintenance functions on this vehicle fleet, comparable to the OEM certified technicians. This will allow for them to effect repairs as far forward as possible in a theatre of operations; and
- (2) Armouring - Considering the limited time and level of effort that is typically required for preparing fleets for deployment into a theatre of operations, it is desired that the installation and removal of armour be performed by CAF personnel and be carried out under a simple and expeditious process.

d. Integrated Logistics Support (ILS) Services

- (1) Engineering (Modification/Continual Improvement - System/Sub-system/Component Reliability assessments/Failure analysis) - Building technical competency on the fleet amongst CAF technicians and using CAF senior technicians to assess failure trends and recommend modifications is an integral capability of the CAF. Understanding this, the strategy in terms of both training and collaboration between the contractor(s) and the CA, is critical to continuously improving availability of the fleet;

(2) Intellectual Property (IP) - Technical Data Package (TDP)/Publications Management

- (a) Communication - Access to Technical Publications and OEM updates/modifications is critical for the effective management of any fleet. The communication link between the PMO/EMT and the OEM is essential in terms of timely communications with the field force in order to address technical issues. The sustainment solution may result in a requirement to have an OEM representative imbedded in the EMT in order to facilitate effective communication.

(b) IP rights

- (i) Canada/CAF must have sufficient IP rights to ensure it is able to sustain the fleet on a competitive basis throughout its life in terms of:

- i. Acquisition of spare components and sub-systems;
- ii. Provision of Repair & Overhaul (R&O) Services;
- iii. Contracted manufacturing of spare components and sub-systems, if the situation exists where acquisition is not possible.

- (ii) To achieve this, it is expected that Canada's licences include, but are not limited to:

- i. the right to disclose the foreground and background information to third parties bidding on or negotiating contracts with Canada and to sublicense or otherwise authorize the use of that information by any contractor engaged by Canada solely for the purpose of carrying out such contracts;
- ii. the right to disclose the foreground and background information to other governments for information purposes;
- iii. the right to reproduce, modify, improve, develop or translate the foreground and background information or have it done by a person hired by Canada. Canada, or a person designated by Canada, will own the IP rights associated with the reproduction, modification, improvement, development or translation;

- iv. without restricting the scope of any license or other right in the background Information that Canada may otherwise hold, the right, in relation to any custom-designed or custom-manufactured part of the work, to exercise such of the IP rights in the background information as may be required for the following purposes:
 - a. for the use, operation, maintenance, repair or overhaul of the custom-designed or custom-manufactured parts of the work;
 - b. in the manufacturing of spare parts for maintenance, repair or overhaul of any custom-designed or custom-manufactured part of the work by Canada, if those parts are not available on reasonable commercial terms to enable timely maintenance, repair or overhaul;
 - c. for software that is custom designed for Canada, the right to use any source code the contractor must deliver to Canada under contract.
- (c) Provision of Technical Publications – It is expected that the OEM provide the following technical publications and updates when required:
 - (i) Operator Manual;
 - (ii) Preventative & Corrective Maintenance Manuals;
 - (iii) Technical Drawings;
 - (iv) Parts lists based on LSA (built into an electronic maintenance manual); and
 - (v) Commercial part numbering listing (as procured by OEM).
- (3) Configuration Management – It is expected that the OEM implement a Configuration Management program that includes but not limited to:
 - (a) Configuration Management Plan;
 - (b) Configuration Control System;
 - (c) Change Control Process;
 - (d) Engineering Change Control;
 - (e) TDP changes; and
 - (f) Configuration Status Accounting.
- (4) Obsolescence Management – The intent of this service is to ensure that the potential impacts of obsolescence in terms of equipment support, effectiveness and support costs are mitigated by a combination of reactive and proactive management activities completed by the OEM. It is expected that the OEM provides an Obsolescence Management Plan which includes but not limited to:
 - (a) High Risk Components/Sub-systems; and
 - (b) Obsolescence Management Issues Report (as required).
- (5) Field Service Representatives (FSR)
 - (a) Concept - Technical proficiency and skills of CAF technicians are essential for this fleet, due to the decentralized employment of this fleet and the criticality of the capability. The use of FSRs will focus primarily on training CAF technicians, however they must have the ability to carry out maintenance tasks, technical investigations etc, in order to sustain the fleet at the predetermined availability. OEM certified mechanics are deemed to be the best option to teach CAF technicians; and

- (b) Initial Technician Training – FSRs need to be highly experienced, OEM certified mechanics and be suited as technician trainers. During the break in period between initial delivery and steady state annual training (to be determined, TBD), FSRs could be employed across Canada at the major base hubs to train a predetermined number of operators/technicians.
 - (6) R&O – Sub-system or component repairs that go beyond the capability of CAF technicians is contained within R&O. This may need to be separated based on IP rights between OEM and sub-OEMs. The contract development for this service will be dependent on IP rights ownership intricacies of the solution; and
- e. Special Tooling and Test Equipment (STTE) – The OEM will be expected to identify and provide all STTE required to service, diagnose and repair the fleet as determined by the LSA/maintenance plan.
- f. Spare Parts
 - (1) Initial Provisioning – The OEM will be expected to recommend an initial scaling of spare components and sub-systems, in sufficient quantities, in order to support the determined availability of the fleet. The scaling of spare components and sub-systems will be based on the LSA.
 - (2) Scaling of Spares (based on LSA) – An initial fleet wide scaling based on the distribution of the fleet across Canada will be established through a combined effort with the PMO and OEM. The LSA will be the tool used to properly develop this in order to factor in all the repair tasks expected of CAF technicians. The flexibility to continuously modify this scaling throughout the life of the fleet is essential, based on usage data recorded in DRMIS.
 - (3) Spare Parts Replenishment (Initial Provisioning) – It is expected that the spare parts holdings within the CAF will be sustained by the OEM during the initial provisioning period, based on the scaling agreed upon between the PMO and OEM.
 - (4) Remaining Life Spare Parts Replenishment – The initial provisioning period will allow sufficient data to be recorded within DRMIS 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.

PROJECT VALUE PROPOSITION QUESTIONS

Canada will publish this Annex on buyandsell.gc.ca, through a solicitation amendment, by April 28, 2017.

COSTING QUESTIONS

Intent

The purpose of the Enhanced Recovery Capability (ERC) costing annex is to request indicative costing information from suppliers in order to allow Canada to prepare its documents for the Project Approval. Respondents are asked to provide Rough Order of Magnitude (ROM) pricing for as many questions and activities as possible in this annex. 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.

A. ERC systems and ILS deliverables

Provide a ROM cost break down based on the following aspects related to the procurement of the ERC solution and key deliverables to ensure Full Operational Capability (FOC) is reached.

1. Unit price for a forecasted quantity 130 of ERC systems (*Reference; Appendix 1 to Annex A, Para 1.4.*):
 - 1.1. Variant #1.
 - 1.2. Variant #2 (if applicable).
 - 1.3. Any economy of scale for a certain quantity procured?
2. Unit price for a forecasted quantity of 50 of armoured cab or Kit (*Reference; Appendix 1 to Annex A, Para 3.1.*):
 - 2.1. Any economy of scale for a certain quantity procured?
3. Project cost for activities and reports associated with delivery of equipment. The intent is that the respondent will be responsible for configuration audits, first article inspections and quality control activities in terms of the delivery of ERC solution. The required Contract Data Requirements List (CDRL) is such as and not limited to:
 - 3.1. Project Master Plan.
 - 3.2. Project Master Schedule.
 - 3.3. Conduct Functional Configuration Audit.
 - 3.4. Conduct First Article Inspection.
 - 3.5. Quality Control Inspection Reports.
 - 3.6. Supplementary Provisioning Technical Data.
 - 3.7. Logistic Support Analysis (LSA), such as but not limited to:
 - 3.7.1. Logistic Support Analysis Record (LSAR).
 - 3.7.2. Recommended Spares Parts List (RSPL).
 - 3.7.3. Maintenance Plan.
 - 3.7.4. Equipment Issue Scale (EIS) List.
4. Publications (*Reference; Appendix 1 to Annex B, Para 2.2.d.(2).(c).*):
 - 4.1. Technical Manual.
 - 4.1.1. Amount for French translation (if possible).
 - 4.2. Operator manual.
 - 4.2.1. Amount for French translation (if possible).
 - 4.3. Level 3 Technical Drawings (Technical Data Package - TDP).
5. Training based on recommendation from response. (*References; Appendix 1 to Annex B, Para 1.17., Appendix 1 to Annex B, Para 1.18. and Appendix 1 to Annex B, Para 2.2.d.(5).(b).*):
 - 5.1. Initial Cadre Training (ICT) – Course.
 - 5.2. ICT Courseware (Operator and Technician).
 - 5.2.1. Amount for French translation (if possible).
6. Spares Parts (*Reference; Appendix 1 to Annex B, Para 2.2.f.*):
 - 6.1. Initial Provisioning of spares for 2 years of support based on quantity 130 of ERC systems.
 - 6.1.1. Respondent can provide the total cost or a breakdown of spares per vehicle and cost.
7. Special Tool and Test Equipment (STTE) for the preventive and corrective maintenance the ERC vehicle (*Reference; Appendix 1 to Annex B, Para 2.2.e.*):
 - 7.1. ROM link to the STTE list, price required for major STTE requirement.

8. Fielding support (*Reference; Appendix 1 to Annex B, Para 2.2.d.(5).*), respondent can provide the total cost or a breakdown by activities or unit prices:
 - 8.1. Preventive and corrective maintenance.
 - 8.2. Pre-delivery inspection.
9. Equipment Issue Scale (EIS):
 - 9.1. ROM link to the EIS list and the following specific items (*Reference; Appendix 1 to Annex A, Para 4.9, Serial 9.*):
 - 9.1.1. Articulating Towbar kit, 1 per vehicle.
 - 9.1.2. Exothermic cutting torch, 1 per vehicle.
 - 9.1.3. Camouflage netting, 1 per vehicle.
10. Licence to IP rights specified (if applicable) (*Reference; Appendix 1 to Annex B, Para 2.2. d.(2).*):
 - 10.1. Fees.
 - 10.2. Royalties payment.
11. Any other key CDRLs or Data Identification Data (DID) and/or deliverables required to deliver ERC vehicles.

B. Sustainment Requirements

Provide an annual rough cost break down based on the following aspects related to sustainment of the vehicles after the project closeout (vehicles in service):

1. Integrated Logistic Support (ILS) Services:
 - 1.1. Engineering (per year), such as but not limited:
 - 1.1.1. Engineering Change Proposal (ECP) management (Modification) (*Reference; Annex B, Para 2.2. d.(3).*):
 - 1.2. Configuration Management (CM) (*Reference; Appendix 1 to Annex B, Para 2.2. d.(3).*).
 - 1.3. Obsolescence Management (OM) (*Reference; Appendix 1 to Annex B, Para 2.2. d.(4).*).
 - 1.4. Field Service Representative (FSR) (*Reference; Appendix 1 to Annex B, Para 2.2.d.(5).*):
 - 1.4.1. Training.
 - 1.4.2. Ongoing technician/operator training, annual cyclic training for new technician/operators, potential regional FSRs (estimated amount per FSR/year).
 - 1.5. Technical publication management (*Reference; Appendix 1 to Annex B, Para 2.2.d.(2).(c).*):
 - 1.5.1. Sustainment (upgrade and review)
 - 1.6. Repair and Overhaul (R&O) (forecasted annual costs) (*Reference; Appendix 1 to Annex B, Para 2.2.d.(6).*):
 - 1.6.1. Sub-systems or component repair.
 - 1.7. Spare Parts (*Reference; Appendix 1 to Annex B, Para 2.2.f.*):
 - 1.7.1. Spare Parts Replenishment. (Consumables and Non-repairable parts)
2. Contractor support within Equipment Management Team (EMT) (Embedded FSR representing the contractor) annual cost estimate for activities such as but not limited (*Reference; Appendix 1 to Annex B, Para 2.2. d.(2).(a).*):
 - 2.1. Technical support.
 - 2.2. Engineering support.
 - 2.3. Supply management support.
3. Licence to IP rights (if applicable) (*Reference; Appendix 1 to Annex B, Para 2.2. d.(2).*):
 - 3.1. Annual fees or
 - 3.2. Royalties payment.

C. General

1. If leasing of ERC platform is achievable, please provide detailed annual cost based on the same questions listed under the sections titled "ERC vehicles and ILS deliverables" and "Sustainment Requirements".

2. For this type of equipment, Canada normally pays upon equipment delivery. This method of payment is not expected to change after contract award. Do you have any comments with regards to this method of payment?

INDUSTRY DAY AND ONE-ON-ONE SESSION REGISTRATION FORM

Registration Deadline: April 26, 2017 at 2:00 PM, Eastern Daylight Saving Time

ERC E-mail Address: tpsgc.padgamdCRA-apdmpbERC.pwgsc@tpsgc-pwgsc.gc.ca

SECTION A: CORPORATE INFORMATION
(Please include legal corporate name, corporate address, as well as a telephone number and e-mail address for any future correspondence)
Name of Business:
Business Address:
Point of Contact Name:
Point of Contact Job title:
Telephone Number of the Contact:
E-mail Address of the Contact*: _____
* This e-mail address will be used by Contracting Authority to send confirmation of registration. You may provide a supplementary e-mail address who would also receive the confirmation and correspondence related to the Industry Day and one-on-one session.

(Please respond to the following questions)

1. What is your primary business line?

2. What type of goods and/or service does your company specialize in?

3. Is your company a manufacturer of a potential ERC system¹? ☐ Yes ☐ No;

If yes, what vehicle(s)?

4. What size would you estimate your company to be? ☐ Small ☐ Medium ☐ Large

Small – fewer than 100 employees; Medium – between 100 and 500 employees; Large – more than 500 employees

¹ For the purpose of this question a potential ERC system is a wheeled system that can tow a vehicle weighing 20 tonnes or more. This definition is only provided to allow interested suppliers and Canada to quickly determine the set-aside applicability described in the RFI section titled “Industry Day and One-on-one Sessions” (see RFI, Part 2 of 2, Section 6.0). For the complete ERC preliminary operational requirements see Annex A.

SECTION B: INDUSTRY DAY AND ONE-ON-ONE SESSION ATTENDANCE

(Please provide the requested information including the purpose/objective of the one-on-one session)

Our purpose/objective for the one-on-one meeting is to:

Name and title of each representatives from your company who will be attending the Industry Day and/or one-on-one session (please see the RFI, Part 2 of 2, Section 6.0 for limitations):

Industry Day: ☐ Yes ☐ No

- 1.
- 2.

(you may add more rows)

One-on-one session: ☐ Yes ☐ No

- 1.
- 2.

(you may add more rows)

LOGISTIC NOTES

The following applies to both Industry Day and One-on-one sessions:

- Supplier representatives will be required to attend onsite. Videoconference and teleconference will not be available.
- Please arrive 15 minutes early to register and/or obtain your visitor passes at the reception area.

The following applies to One-on-one sessions only:

- Please email the presentation documents in advance or bring them on a USB.
- The Government of Canada will provide a computer and display device for the meeting room for displaying presentation material, should any participants require it.
- Canada will not provide Internet access.

SECTION C: CERTIFICATION

By signing this document, the individual below represents that he/she has full authority to bind the Supplier and that the Supplier and its representatives agree to be bound by all the terms and conditions contained in the Request for Information document.

Name and Signature:

Telephone:

E-mail: