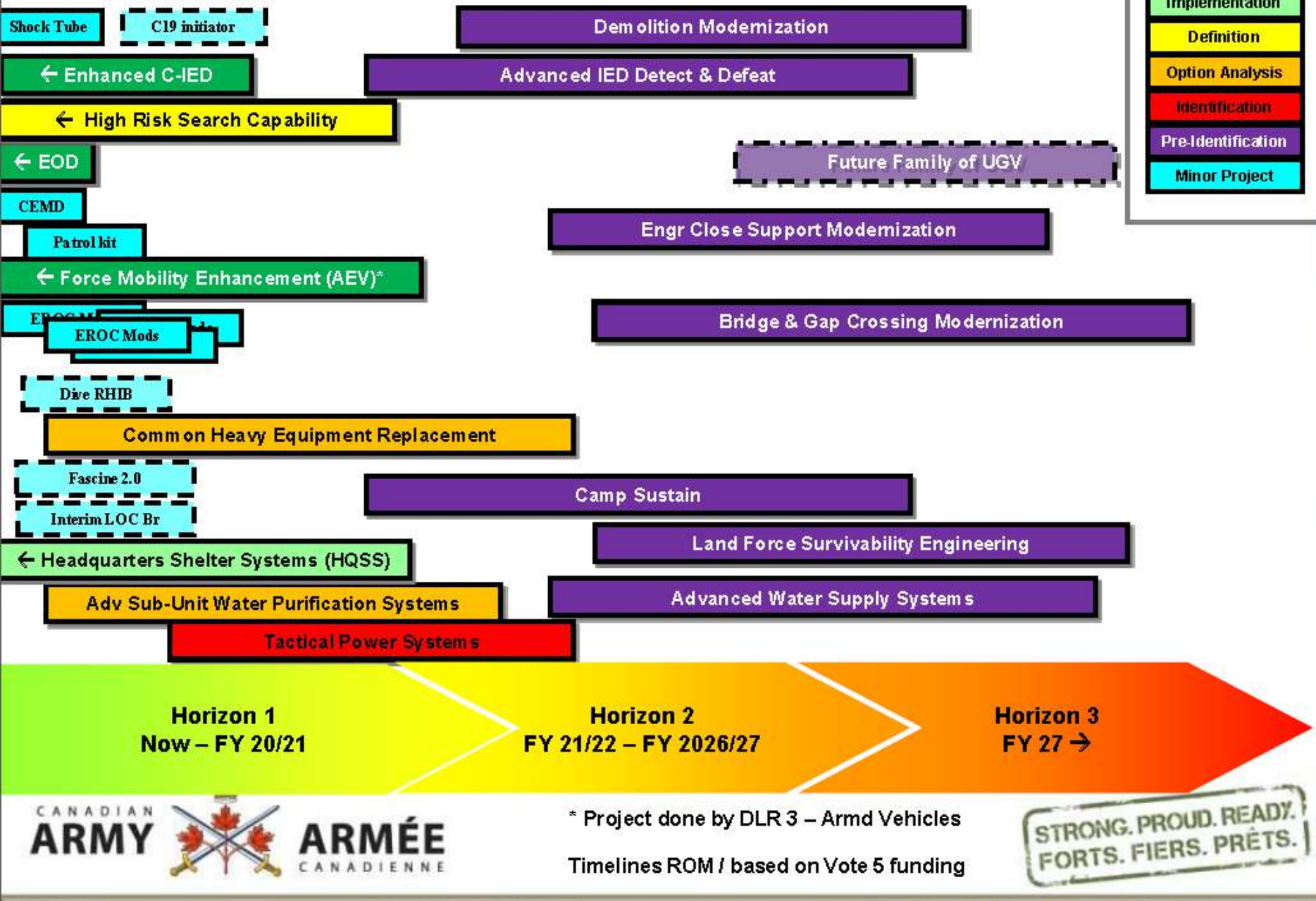
Programme d'Équipement du Génie | Engineer Equipment Program

LCol Jake Galuga

Director Land Requirements 7 (DLR 7)
Directeur Besoins en Ressources Terrestres 7 (DBRT 7)

October 2015

Engineer Equipment Program



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* Project done by DLR 3 – Armd Vehicles

Timelines ROM / based on Vote 5 funding

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Equipment Delivery – FY 15

Shock Tube Initiation Systems

- In process of delivery to Ammo Depot
- Target date for availability: Apr 2016
- Train-the-trainer expected near Apr 2016.

Combat Engineer Metal Detector

- In process of delivery to Units
- Initial training nearly finished
- 600 x Minelab F3 C

Deployed Geomatics Survey Suites

- Delivered to Units
- Project closeout imminent

Field Heater Replacement

- Space heater delivered, water heaters nearly complete
  - 2490 field space heaters
  - 600 field water heaters

Field Water Heater

Field Space Heater

CANADIAN ARMY ARMÉE CANADIENNE

Equipment – 2-3 years (MCP for approval)

Army Dive RHIB

- ~ 8.5 m RIB (x 6), w/ trailer and truck
- Support operational functions
- Target date: FY 16/17
- PRICIE Details:
  - RCN fleet standardization & life-cycle management
  - Boat & Trailer training

C19 Claymore Shock Tube initiation sets

- In consultation with Infantry
- Will include new training C19

Patrol suites

Expected Deliverables*:

- Laptops and comms (Int Spec Tm Kit v2)
- Nexus device and camera (Patrol Collection Kit)
- Software (EC2IS replacement)

*These are existing kits used for costing purposes and a starting point for user requirements. Actual deliverables will be modified according to user feedback.

EROC Modifications

- Cougar Winterization
- Husky Winterization
- Buffalo Winterization
- Cougar Upgrades (wpn racks, Ngrain, DVA…)
- Husky Upgrades (under veh camera, Ngrain)
- Buffalo Upgrades

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DLR 7 Major Crown Projects in Implementation / Delivery

Project	$ (M)*
Headquarters Shelter Systems (HQSS)	205
Enhanced Counter-IED	197
EOD Team Equipment	79

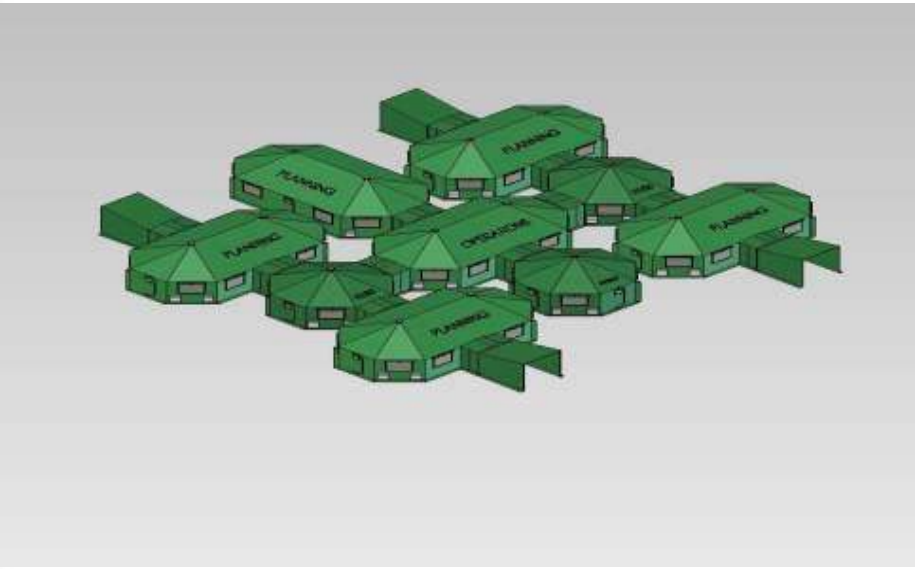
Headquarters Shelter Systems (HQSS)

Project Description

- This project will provide modern tactical shelter systems for the CF in support of domestic and international operations.

Project Objectives

- To procure HQSS capability IOT re-establish and enhance the field deployable infrastructure available to Unit and Bde HQs.



Schedule

SS(ID)	Apr 2010
PPA	Apr 2011
PA Imp	Jun 2012
Contract award	Winter 15/16
IOC	2018
FOC	2020

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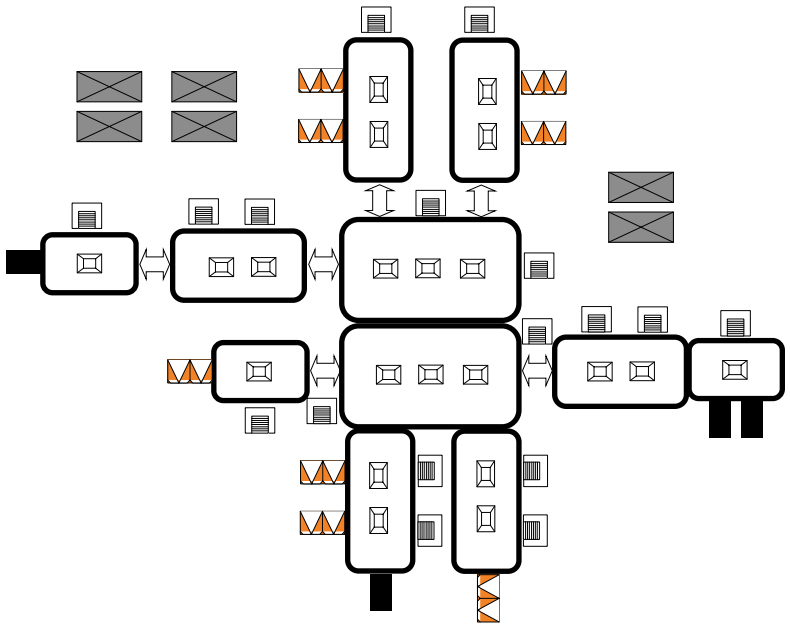
Headquarters Shelter System (HQSS)



HQSS Components:

- 800-1000 FT² — OPERATIONS SHELTER (124)
- 400-700 FT² — PLANNING SHELTER (1338)
- 175-300 — OFFICE SHELTER (311)
- SHELTER CONNECTOR HUB (467)
- BLACK-OUT VESTIBULE (1718)
- VEHICLE BOOT (442)
- CONTAINERS (1025)
- HEATER/AIR CONDITIONNER (1219/1170)
- TACTICAL LIGHTING KIT (8494)

- Each component max weight 160kg
- Each component works at -51°C to +49°C
- No special tools required for assembly
- Transportable by road, rail, air and sea
- Snow load minimum of 10lbs per sq ft
- Fire Safety compliant (CSA)

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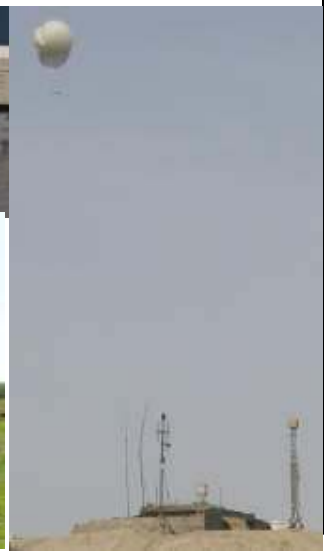
Enhanced Counter-IED Project (1112)

Project Description

- Deliver equipment that will enhance C-IED capability to:
  - Defeat the device (mechanical neutralization, persistent surveillance, standoff detection and neutralization)
  - Attack the network (technical analysis and forensics)

Deliverables

- Persistent Surveillance Systems
- Deployable Technical Analysis Laboratory
- Remote Explosive Threat Clearance
- Specialized standoff and detection capability



Schedule

SS(ID)	14 Nov 07
SS(PPA) – Phase 1	10 Apr 08
IOC Phase 1	Apr 09
FOC Phase 1	June 10
IOC Phase 2	2017
FOC Phase 2	fall 2017
Closeout	2018

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E-CIED - Delivered

Cougar Vehicle x 8

ROMECS x 4

Persistent Surveillance System (PSS) x 8

Deployable Technical Analysis Laboratory (DTAL) x 2

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Coming soon: WOLF (2017)

- 8 x WOLF IED Detect & Defeat vehicles with:
  - Stand-off IED detect system
  - 0.50 cal RWS
  - Mast-mount camera array
  - Lightweight roller system
  - 2017-2018 delivery
- Currently investigating incorporation of high-energy laser system (HEL)

Situational Awareness (Voss II Gyrocam)

Standoff IED Detection

Cougar 6x6 vehicle

Lightweight Roller System

RWS (Kongsberg M151 Protector)

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CF EOD Team Equipment

Project Description

- Provide the CF with a modern and robust EOD capability which will enable EOD operators to neutralize the unexploded ordnance and IED threat as safely as possible, thus minimizing the risk to deployed forces from this increasing threat.

Deliverables

- Provide 42 EOD Equipment suites:
  - 7 for ops stocks
  - 16 for LF Engineer Regiments
  - 4 for Fleet Diving Units
  - 6 for Explosives Disposal flights
  - 5 for EOD School (CFSAL)
  - 4 for Log Stock






Schedule

SS(ID)	4 Apr 06
SS(PPA)	15 Feb 07
First contract award	24 Aug 07
SS(EPA)	11 Jun 09
IOC Ph 1	Mar 11
IOC Ph 2	Mar 12
FOC	Nov 2015
Closeout	2016

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PROJECT 1111 CF EOD TEAM EQUIPMENT 2010

Note: Illustrative of equipment types only, not all equipment shown

Detection & Identification

X-Ray System

Communication & Information

ROVs & Accessories

Disruptors, Dearmers & Demolitions

Protection Group

Access & Manipulation

Storage, Workshop & Transport

DLR 7 Major Crown Projects (to Horizon 2)

High-Risk Search Capability (HRSC)	$47M
Common Heavy Equipment Replacement (CHER)	$360M
Advanced Sub-Unit Water Purification Systems (ASUWPS)	$96M
Tactical Power Systems	$ 90M

High Risk Search Capability (HRSC)

Project Description

- Provide the CF with equipment for intermediate and advanced search capability to facilitate tactical search operations

Deliverables

- 9 x Advanced Search suites
- 70 x Intermediate Search suites
  - Detail follows





Schedule

PA Imp	2016
IOC	2018
FOC	2020
Closeout	2021

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PROJECT 2514 – HIGH RISK SEARCH CAPABILITY - 2015

Advanced Team Only

Blue: In service with EOD
Black: New Capability
Green in service within the army

Detection & Identification


HME Analyzers


Chemical Agent Detector


Radiation Detection


Hand held GPR & MD


Non-Linear Junction Detector


Complex Terrain MD


APD


FerOL


Hand Held Flashlight


Trip-wire Illuminator


Explosives Detection Kits


Imaging and Recording System

X-Ray System


X-Ray Imaging System

ROV System


Medium UGV


Small UGV

Access


Lightweight Ram


Tactical Breaching Torch


Grappling Hook


Wire Caving Ladder


Hydraulic Door Opener


Modular Assault Ladder


Mechanical Breaching Tool

Hook & Line


SCBA


Hoist and Harness

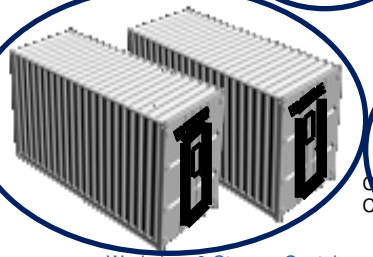

Breaching Bolt Cutter

Transport, Workshop and Miscellaneous


Frontal Headlight


Collapsible Stoke-litter


Light Bombsuit


Workshop & Storage Containers


Confined Space Communication system


Flood Lights


Load Carriage

Modifications to Cougar for HRSC

Extra Seats for * Man Team and altered Storage lockers

Adv Sub-Unit Water Purification Systems (ASUWPS)

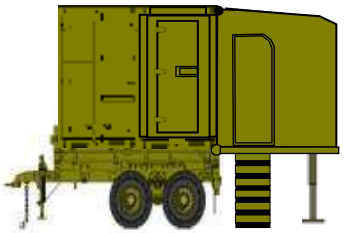
Project Description

Linked to CAFOSC Project (CJOC) & AFEC Project (RCAF)

- Clean water is required to sustain personnel and equipment on military operations. Due to the weight, bulk and consumption levels of water, it is normally purified in the theatre of operations. This project will provide large quantities of purified water from non-potable and NBC contaminated sources in all climate conditions, both domestically and globally.

Project Objectives

- Mini RO water purification systems purchased in the 1990s are experiencing OEM supportability issues. The systems and capability will be obsolete by 2013 and are being divested.
- Up to 76 water purification systems
- Up to 250 Water Buffalos



Schedule

PA Def	Fall 2015
PA Imp	Spring 2017
IOC	2019
FOC	2021

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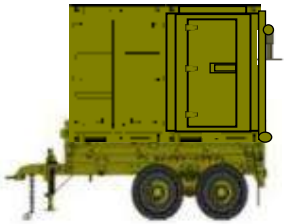
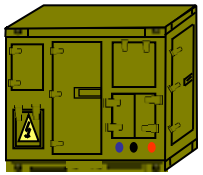
ASUWPS Deliverables

- ASUWPS
- Water Storage & Distribution Systems
- Deployable Sustainment Kits
- Cold Deployable Sustainment Kits
- Water Tank Skids
- Multi-purpose Trailers

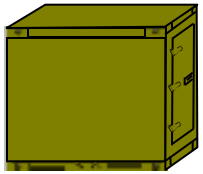


Trailer



ASUWPS

Water Storage & Distribution Systems



Deployable Sustainment Kit

Water tank skid

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Common Heavy Equipment Replacement (CHER)

Project Description

- Replace the CAF aging heavy equipment fleet that includes dozer, grader, loader, excavator, and high mobility armoured backhoe with an optimized and modern earthwork and moving capability for domestic and deployed operations
- Scope includes Materiel Handling Equipment

Project Objectives

- The project will deliver a mix of engineer heavy equipment to support RegF engineer units in training, domestic, and deployed operations, and a commercial equipment capability for ResF engineer units
- The project will include scalable armoured protection for use in non-permissive environments

Schedule

PA Def	Spring 2016
PA Imp	2018
IOC	2019
FOC	2021

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CHER - Expected Deliverables

- Militarized horizontal construction equipment

Dozer 36

Excavator 25

Simulator 12

High-Speed Armoured Backhoe 12

Compactor 12

Medium Crane 14

Loader 30

Grader 25

Lowbed Trailer 20

PLS Dump Box 40

Dump Truck 22

Tilt-Trailer 86

Backhoe 22

- Commercial equipment

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CHER - Expected Deliverables

- Militarized material handling equipment

Rough Terrain Container Handler		
	CA	5
	CJOC	5
	RCAF	0
	SOF	0
	Total	10

Rough Terrain Fork Lift – Heavy		
	CA	12
	CJOC	4
	RCAF	3
	SOF	0
	Total	19

Rough Terrain Fork Lift – Medium		
	CA	36
	CJOC	8
	RCAF	11
	SOF	2
	Total	57

Rough Terrain Fork Lift – Tel		
	CA	103
	CJOC	24
	RCAF	2
	SOF	0
	Total	129

Rough Terrain Fork Lift – Light		
	CA	121
	CJOC	12
	RCAF	2
	SOF	2
	Total	137

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Tactical Power Systems

Project Concept

- Replace all tactical generators from 2kW to 60kW with efficient power generation, management and distribution systems.

Project Objectives

- The Overall intent of
  - Reducing fuel consumption on deployment
  - Increasing Equipment Reliability
  - Providing alternative energy sources (solar, wind)
  - Providing energy back-up
  - Enabling commander and staff to manage energy

Schedule

PA Id	Winter 2015
PA Def	2017
PA Imp	2018
IOC	2019
FOC	2020

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DLR 7 Future Projects (Horizon 3)

Camp Sustain
Advanced Formation Water Purification Systems
Gap Crossing Modernization
Advanced IED Detect and Defeat
Land Force Survivability Engineering
Demolitions Modernization
Engineer Close Support Capability Modernization

Camp Sustain

Project Concept

- This project will examine power generation and management, solid waste and wastewater disposal and recycling, water provision and distribution, and heat and cooling in a coordinated and holistic system. New technologies will be leveraged to enable self-sustainment and minimize logistic footprint (and reliance on fuel and water convoys) .

Potential Objectives

- Decrease 'liquid logistic' (fuel and water) shipments by 50%
- Reduce environmental impact of deployed camps / FOB
- Leverage advances in solar, wind, waste power and grey water recycling
- Key concepts: Self-sustainment, efficiency, utilities as a system

Schedule

PA Id	2016
PA Def	2018
PA Imp	2020
IOC	2021
FOC	~2023

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Advanced Formation Water Purification Systems

Project Concept

- This project will provide large quantities of purified water from non-potable and NBC contaminated sources in all climate conditions, both domestically and globally.

Project Objectives

- Current ROWPU and water bagger will require replacement by 2020
- Repair and overhaul to extend life expectancy until 2025 to allow for complete replacement
- Modern technology more capable with respect to salinity and contamination

Schedule

PA Id	2019
PA Def	2021
PA Imp	2023
IOC	2024
FOC	2026

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Gap Crossing Modernization

Project Concept

- This project will ensure the freedom of movement for modern Army vehicles by delivering a suite of gap crossing equipment capable of spanning wet and dry gaps.

Project Objectives

- Replace current gap crossing equipment that will be obsolete by 2015, are manpower intensive and very slow to build.
- Replace current bridging holdings that are not capable supporting the LEO 2 MBT
- Fundamentally review current in-service bridging capability in order to provide a globally deployable gap-crossing capability

Schedule

PA Id	2020
PA Def	2023
PA Imp	2024
IOC	2025
FOC	2028

Timelines represent 'current' plan, but subject to change .

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Capability Areas: Gap Crossing Modernization

1: Infantry Foot Bridge

2: Light Support Bridge

3: Fascines

4: Medium Support Bridge

5: Heavy Assault Bridge

6: Heavy Support Bridge

7: Line of Communication Bridge

8: Heavy Floating Raft / Bridge

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Advanced IED Detection & Defeat

Project Concept

- This project will provide the Army with an improved, integrated improvised explosive device detection and neutralization capability.

Project Objectives

- Examine land and air based remote detection and multi-sensor landmine detection system.
- Exploit emerging TDP's within ADM(S&T)
- Respond to new threat technology capabilities.
- Integrated stand-off detection and neutralization for route clearance operations and convoy warning






Schedule

PA Id	2018
PA Def	2020
PA Imp	2022
IOC	2024
FOC	2026

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Land Force Survivability Engineering

Project Concept

- This project will provide the land force with enhanced survivability engineering capability in the area of advanced deployable field fortification, CBRN, Urban Search and Rescue (USAR), and toxic hazards.

Potential Objectives

- Advanced deployable field fortifications
- Specialist capability for USAR
- CBRN response to a chemical, radiological or toxic hazard threat

Potential Schedule

PA Id	2019
PA Def	2021
PA Imp	2023
IOC	2025
FOC	2027

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Future Family of Unmanned Ground Vehicles

Project Description

- This project will seek to address obsolescence of multiple ad-hoc fleets of in-service UGV by providing a family of UGV with common controls, parts, and training requirements

Project Objectives

- Replace EOD fleets (TEODor, AV2D, Dragon Runner, Cobra) with family of vehicles
  - Common interface
  - Common / interchangeable parts
- Reduce training burden on users
- Consider other uses for UGV
  - Cargo carrying for dismounted operations

Schedule

PA Id	2020
PA Def	2023
PA Imp	2025
IOC	2026
FOC	2028

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Non-DLR 7 Projects of Interest

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Coming 2017: WISENT II AEV

Description:

Heavily Armoured Engineer Vehicle capable of providing engineering support to any Land-based Operation.

Upgrades:

- RWS
- Heavy duty dozer blade
- Articulating excavator arm
- Hydraulic tool set
- Welding and Cutting
- TBMS
- Mine Breaching System
  - Mine plough equipped with a magnetic signature duplicators and Safe lane marking system

Technical Data:

- Protection - Same as Leo 2 MBT
- Range - 390 roads 290 X county
- Max speed – 60-64 km/h
- Length - 10.763m
- Width – 3.54 (4.14m extensions)
- Height – 2.92m (W/O RWS)
- MLC – 80
- Winching Capabilities – 40t/3.5t
- Firepower – 5.56 - 7.62 mm

C4 (RDX) Replacement (DAEME)

Concept

- This project will replace C4 plastic explosive with a less toxic alternative.
- Replacement as C4 stocks deplete
- In-service replacement

Objectives

- New plastic explosive
- Associated accessories

Schedule (TBC)

- Expect ~ 6-7 yrs

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DLR 7-Other Concepts

Deployable Firefighting Capability
Deployable Detainee Handling Facility
Area Access Control
Family of Unmanned Vehicles (UxV)

Research and Development

- **High Energy Lasers (HEL)**
  - MR 219 purchased 10 kW High Energy Laser (2011)
  - Buy and try 'purely for laboratory research and will not be used in operations'
  - DRDC-V: HILDA and HELEN projects
  - Establish other uses for directed energy in cbt engineer role
  - Consider countering threat HEL systems
- **Various IED Defeat technologies**
  - High Voltage discharge
  - Picosecond laser
  - Spintronics

Questions / Discussion…