ADF LAND DOMAIN PUBLICATION

LNOTE 7.2.6 OLVANAN PEOPLE'S ARMY LOGISTICS IN SUPPORT OF THE COMBINED ARMS BRIGADE

Issued by authority of the Chief of Army.

Publication release approved on DD MMMMMMM 2026 in accordance with the Army Standing Instruction (Knowledge Management) Part 2 – *Management and Governance of ADF Land Domain Publications*.

EDITION 1

LN 7.2.6 *Olvanan People's Army Logistics in Support of the Combined Arms Brigade*

Edition 1, 2026

ISBN: *XXX-X-XXXXXX-XX-X*

Sponsor: Chief of Army

Accountable Officer: Army G7

Release Authority: SO1 Land Domain Publications

Content Adviser: COMD Army Battle Lab

[1] https://www.legislation.gov.au/Series/C1968A00063
[2] https://www.legislation.gov.au/Series/C2004A04868
[3] https://www.legislation.gov.au/Series/C2004A03712
[4] http://drnet/AssociateSecretary/security/policy/Pages/dspf.aspx

Preface

1. ADF Land Domain Publications (LPubs) describe the fundamental principles that guide land forces' actions, and provide the common frame of reference on how the Army achieves its mission. LPubs are the basis of the Army's training system based on time-tested, proven principles of war, combined with the critical analysis of contemporary lessons. LPubs have been shaped since 1901 by Army's proud history and culture, while being constantly adapted as required, thereby representing the sum of the Army's collective historical knowledge, presented into objective guides for action. In essence LPubs explain and guide 'who we are', 'what we do' and 'how we do it'.

2. ADF doctrine provides the framework that guides thinking but does not dictate what to do. While doctrine publications are written in a non-prescriptive style that allows latitude in interpretation and flexibility in application, they are specific enough to provide informed guidance. Doctrine is about fighting power and the integration of its three components: intellectual, moral and physical, applied through mission command and our manoeuver approach to warfighting.

3. Land procedural publications provide the authorised procedural and technical knowledge required for land forces to achieve their mission. Unlike doctrine, procedural publications convey information covering a range of activities based on best possible practice, in clear detailed steps that, depending on the publication, describe and/or prescribe how to perform specific tasks and drills. Whilst the majority of procedural publications are descriptive in nature, the decision not to follow the guidance contained in the publications should be justifiable. Land procedural publications are aligned and subordinate to ADF doctrine.

4. Land procedural publications include a number of publications that prescribe the procedures for the safe conduct of a range of tasks and activities required for delivering a range of lethal warfighting capabilities. Procedural publications which are safety in nature are written with an expectation of compliance, and therefore do not attempt to prescribe every 'do' and 'don't'. A number of land procedural publications are classified as "Landworthiness" Regulations in accordance with *Defence Landworthiness Management System Manual*. **LPubs constitute a lawful general order when written in mandatory terms and apply to all personnel**.

5. **Land Domain Publication - Note (LNote)** is a provisional publication valid for no more than 24 months from its release until it is cancelled, released as an enduring LPub or absorbed into an existing LPub. LNote can be released:

a. as an addendum to an existing land publication

b. to provide additional information of significance in a timely manner to address an emerging issue, an identified lesson, or to satisfy a major/critical knowledge gap

c. as an unscheduled/short notice new publication, published in response to changing strategic guidance, introduction of new capabilities, emerging threats or opportunities.

6. **Land Domain Publication - Developing (LDev)** is developed for use during a specific Army trial or experiment, they are limited in their distribution, and are only valid for the duration of the trial or experiment. Following their validation, LDev may be incorporated into an existing LPub or released as an enduring LPub.

7. **Land Training Information Bulletin (LTIB)** is developed by a Training Authority, Training Centre or LDP, as a means to provide specific direction and training guidance related to a specific land capability.

8. **Land Aides-Memoire (LAM)** are a practical guide that succinctly contain information on a particular theme, task, position or employment category. They are drawn from wider authorised LPubs, or other Defence authorised documents.

Aim

9. The aim of this publication is to inform the training audience about how the Olvanan People's Army will logistically support their preferred combat manoeuvre echelon, the Combine Arms Brigade (CA-Bde). The specific use case scenario for the CA-Bde will be in an expeditionary setting beyond Olvana's territorial borders. Note that Olvana is a fictitious, nation-state construct, training adversary, as defined in the US Transformation and Training Command (T2COM) ODIN system.

Associated references

10. This publication should be read in conjunction with other references, in particular:

a. Olvana – Operational Environment - https://odin.tradoc.army.mil/DATE/a7f54b856bdda3a8a4666108b3f05c6e

b. Olvana – Southern Military Theatre - https://odin.tradoc.army.mil/FS/INDO-PACIFIC/OLVANA/SOUTH_MIL_THTR

c. The source for approved Defence terms, definitions and abbreviations is the Australian Defence Glossary (ADG), available on the Defence Protected Network at http://adg.dpe.protected.mil.au/.

Land publication L-Library

11. The ADF Land Power Library (L-Library) is the single access point, and digital catalogue for Army's authorised land power artefacts, supporting resources, including other related publications. In addition to accessing all current and historical publications, the L-Library contains links to ADF doctrine, and other ADF domain publications, as well as approved international partner publications. The L-Library is accessible via ADF Land Power Library and Army Knowledge Online.

12. Additional printed copies of Land Publications may be ordered using the Defence Print Ordering Portal which can be accessed via this link: https://printportal/overview.web.

Security

13. This publication is classified as OFFICIAL. Under Defence Security Principles Framework (DSPF), this information in this publication is available to the general public and there are no security clearance requirements for access.

Amendment record

1. Amendments to this Land Publication are issued on the authority of the Chief of Army pursuant to Army Standing Instruction (Knowledge Management) Part 2 – *Management and Governance of ADF Land Domain Publications.*

Number	Date of amendment	Authorised by
1.		
2.		
3.		
4.		
5.		

Contents

Figures

Tables

This page intentionally blank

Chapter 1
Overview of Olvanan Logistics

Section 1-1. Scope

1.1 The scope of this document aims to detail how the Olvanan People's Army (OPA) is able to supply and support the OPA's basic echelon of manoeuvre, the Combined Arms Brigade (CA-Bde). The CA-Bde is capable of being able to conduct independent actions for a limited time and will likely be the tactical echelon encountered when the OPA conducts expeditionary operations. Dedicated supply and support units in the form of the Maintenance Battalion and the Materiel Support Battalion adequately support the CA-Bde.

1.2 This document will focus on the use of logistics to support tactical operations in the land domain of the battlefield. It will not cover in much detail theatre logistics, or logistics in support of maritime and air operations.

1.3 When talking about logistics in the military context, it is important that this term be clearly defined. Logistics in the military context is the practice of moving, supplying and maintaining forces in the field. This encompasses distribution (stores, equipment and personnel), provisioning and holding of classes of supply, maintenance (including recovery), as well as casualty care and evacuation. Military logistics in this context also includes tasks to support the delivery of logistics, such as route (traffic) control and other tasks not covered under combat, such as detention operations, or specific combat support covered in other OPA doctrine (e.g. combat engineering).

Section 1-2. History

1.4 The OPA is the military arm of the Olvanan Communist Party (OCP). Its early days as a fighting force is notable for the concept of the *People's Army*. The early OPA was very much a peasant militia fighting a civil war against the Olvanan Nationalists post-WW2. Consequently, logistics in the early OPA did not have a centralised bureaucracy but was more an *in the field* task conducted by field commanders and their limited staff. OPA soldiers were expected to *live off the land* and forage for food to supplement their meagre rations. There were no dedicated maintenance units and the OPA was very much dependent on Donovian support to maintain equipment with technical specialist and spare parts. Only ammunition and fuel were centrally organised but haphazard at best.

1.5 Logistic mechanisation was also lacking, with the OPA utilising porters and pack animals to carry forward ammunition, rations and other key pieces of equipment into the battlefield.

1.6 However, with the victory of the Olvanan Communist Party (OCP) over the Olvanan Nationalists, the OPA needed to professionalise in order to hold onto the territorial gains it secured during the Olvanan civil war.

1.7 For much of the early days of the OPA, the concept of the *People's Army* prevailed. The battlefield failures of the short 1979 war with Sungzon on Olvana's southern border highlighted many deficiencies of the OPA, notably inflexible command and control, but also in its ability to sustain expeditionary operations outside of its own borders.

1.8 It was not until the Gulf War of 1991 that the OPA realised the severe deficiencies in its equipment, doctrine and force structures. During the 1991 Gulf War, the US-led coalition was able to defeat the Iraqi Army, a force nearly three-times as large as the Coalition, in as little as four days of ground combat operations (with a month of aerial bombardment prior to ground operations).

1.9 The OPA understood that the Iraqi Army was based on legacy Soviet-Donovian era doctrine and thinking. The OPA was also based on similar doctrine, albeit with Olvanan characteristics. If a US-led coalition could destroy the Iraqi Army so comprehensively in as little as four days of large scale conventional warfare, the OPA needed to modernise and do so quickly.

1.10 Throughout much of the 1990's the OPA implemented many sweeping changes to their doctrine, force structures, and in time, modernised equipment. The most notable change was in the repudiation of

the concept of the *People's Army*. Gone were the days of a largely peasant militia. The OPA was going to modernise and incorporate western-style tactics, techniques and procedures. This new doctrine is now called *Intelligentised Warfare*. Intelligentised Warfare seeks to incorporate emerging technologies into longstanding military practice. These technologies include decentralised computing, analytics, quantum computing, AI and unmanned robotic systems.

1.11 It was also during the 1990's that Olvana began to open up their trade with the rest of the world. Trade agreements with major economic powers such as the US and Europe allowed Olvana to develop their manufacturing industries. Today Olvana is one of, if not, the largest manufacturing base in the world. Most electronic and heavy industrial goods are produced in Olvana and shipped to the rest of the world. Olvana has been able to leverage its cheap labour costs and growing industrial might to become the economic powerhouse it is today.

1.12 This increase in economic activity and prosperity has had a dramatic impact on the OPA. In just two decades, the OPA has gone from a predominantly homeland defence focused, non-mechanised and analogue militia (albeit a very large one), to a large, mechanised, digital and professional army capable of projecting power in its near region.

1.13 In conjunction with the modernisation of the OPA, their logistics capabilities has also needed to grow and modernise. The interconnectivity of global supply chains has allowed Olvana to be able to ship their manufactured goods to almost anywhere in the world within a very short time. It is arguable that Olvana has mastered the factory to your doorstep logistic supply chain. Is it any wonder then that this same supply chain system also means that the OPA has been able to modernise their military logistic supply chains. In contrast to the Donovians, Olvanan supply chain logistics utilises the latest in standardisation, such as the use of palletised stores, materiel-handling equipment (reducing the need for physical manhandling) and digital inventory management and requisition systems.

1.14 In addition to supply chain improvements, the OPA has also made gains in other areas of battlefield logistics. These areas include casualty care and evacuation, maintenance and recovery, and route security/control and detention operations.

1.15 These OPA doctrinal changes are yet to be tested in a modern battlefield. However, it is reasonable to think that the OPA will have taken lessons learnt from recent conflicts and applied them to the continued modernisation of their forces.

Section 1-3. Principles of OPA logistics

1.16 OPA logistics follows the following principles.

a. **Just-in-time Logistics**. This principle aims to deliver the right support and supplies, at the right place, at the right time. Central to achieving this principle is the OPA's use of digital logistics networks down to the lowest echelons (Logistics Management System – LMS).

b. The superseded Donovian doctrine of calculation tables on expenditure for a given tactical action is no longer used (the *science of war*). Instead, every effort is made to support forward units with just the right amount of materiel and support in order for mission success. This means that the OPA practices a mixture of *pull* and *push* form of resupply. *Pull* logistics in the Frontline Zone, and a mixture of *pull* and *push* in the Rear and Garrison Zones, utilising a form of forward caching as a means to mitigate disruption of supply lines.

c. **Prioritisation of Effort**. The OPA recognises that materiel and resources will be limited in a modern battlefield. To support forward units, logistics detachments need to be task-organised and prioritised in line with the commander's main effort. This principle ensures that frontline units that are key to the Combined Arms Brigades' (CA-Bde) main effort receive support priority from the limited number of logistic force elements within the CA-Bde.

d. **Centralised control, Decentralised execution**. This principle sees the centralised command of the logistics effort within the CA-Bde. The organic materiel support battalion and the maintenance battalion form a Rear Area Support Group (RASG) that will coordinate their efforts across the CA-Bde. Decentralised execution ensures that the CA-Bde is not reliant on large vulnerable depots, but instead distributes critical materiel across smaller supply nodes.

e. Decentralised execution also ties in neatly with the prioritisation of effort principle, in that task-organised logistic detachments, once tasked, are left to carry out the mission of supporting the CA-Bdes fighting groups. The use of digital logistics networks also greatly aids in allowing

decentralised execution. Note that an officer will, where possible, always command all resupply/support detachments at the tactical level.

f. **Military-Civil Integration**. At the strategic and operational level, Olvana will heavily utilise military-civil integration of infrastructure, commercial transport (e.g. Roll-on/Roll-off ships) and private sector supply chains for rapid force sustainment. At the tactical level, this is more challenging, but the OPA will aim to utilise civilian contracted commercial transport in the Garrison Zone in order to supplement the CA-Bdes organic transport assets.

g. A point to note is that under wartime conditions, many Olvanan civilian companies will be co-opted to support military operations. There is no option for these civilian companies to deny requests from the OCP.

h. **Pre-positioning and Stockpiling**. Where possible, the OPA will aim to pre-position and stockpile critical stores and equipment as far forward as possible. At the operational level, this means that stores are stockpiled in forward staging bases that have been set up prior to any conflict. At the tactical level, the OPA will favour *push* logistics of stores into the *Reserve* Zone from the *Garrison* Zone, in preparation for upcoming offensive actions.

Chapter 2

Combined Arms Brigade Logistics

Section 2-1. Introduction

2.1 When compared to its western counterparts, the OPA CA-Bde has a significant organic logistics capability. The materiel support battalion, the maintenance battalion, the medical company, and the military police company provide the bulk of the logistic support within the CA-Bde.

Section 2-2. Materiel Support Battalion

2.2 The materiel support battalion's main function is to provide Class 1, 3, and 5 stores to the brigade (see Table 2.1). The exact composition of the materiel support battalion my vary between CA-Bdes, a typical composition consists of two ammunition companies, a transport company and supporting signals and Combat Service Support (CSS) platoon. Whilst the primary role of the materiel support battalion is the resupply of the CA-Bde, the transport vehicles within the battalion can be utilised as troop transport when needed. Figure 2.1 and Table 2.2 provides an overview of the materiel support battalion's force structure and key equipment.

Table 2.1 Classes of Supply

Class	Supply Type
1	Rations, Water
2	Clothing and Equipment
3	Petroleum, Oil, Lubricants
4	Construction Materials
5	Ammunition
6	Personal demand items
7	Major platforms / systems
8	Medical supplies
9	Repair parts
10	Materiel in support of Non-military programs (e.g. agriculture)

Figure 2.1 Materiel Support Battalion

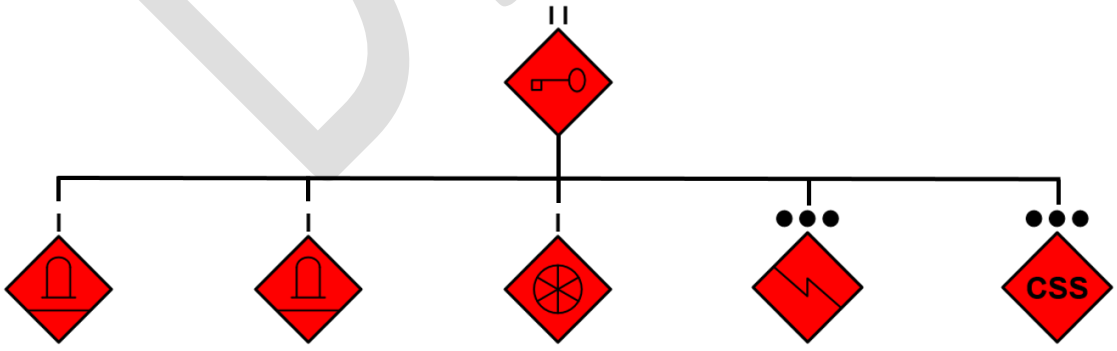


Table 2.2 Materiel Support Battalion key platforms and quantities

Totals – Key Platforms and Signature Equipment	
EQ2050 AMBULANCE	3
EQ2102 C2 BUS TRUCK	3
MOTORCYCLE	3
SX2150 FUEL TANKER	12
EQ2102 TRUCK	70
SX2306 TRUCK	80
SX2150 TRUCK	8
EQ2050 TRUCK	39
SX2150 WATR TRUCK	8
EQ2102 RECOVERY TRUCK	3
EQ2102 MAINTENANCE TRUCK	3

Section 2-3. Maintenance Battalion

2.3 The maintenance battalion provides the CA-Bde maintenance and recovery support. It is responsible for keeping the brigade's weapons, vehicles, and support systems operational. The battalion consists of four maintenance companies, one ordnance maintenance company, and one each of recovery, specialist maintenance, signals and CSS platoons. Figure 2.2 and Table 2.3 provides an overview of the maintenance battalion's force structure and key equipment. Note that the vehicles and equipment may change depending on the type of CA-Bde supported.

Figure 2.2 Maintenance Battalion

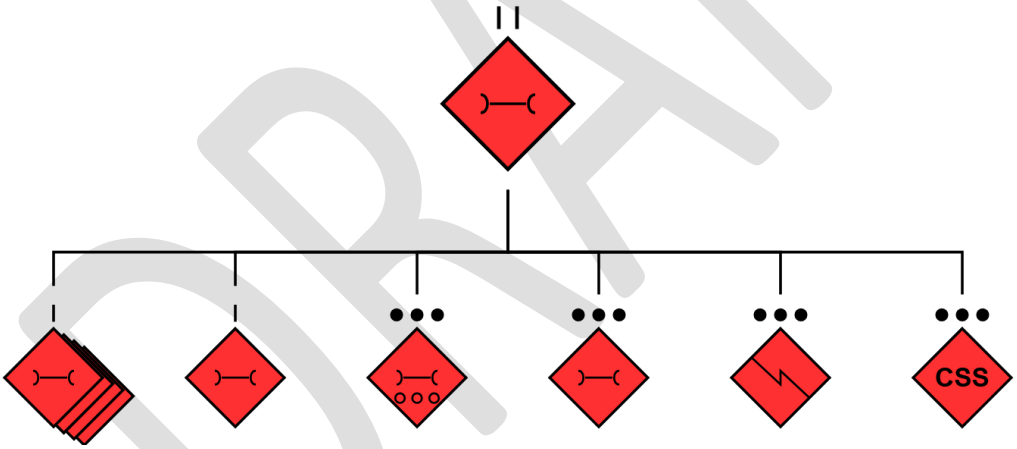


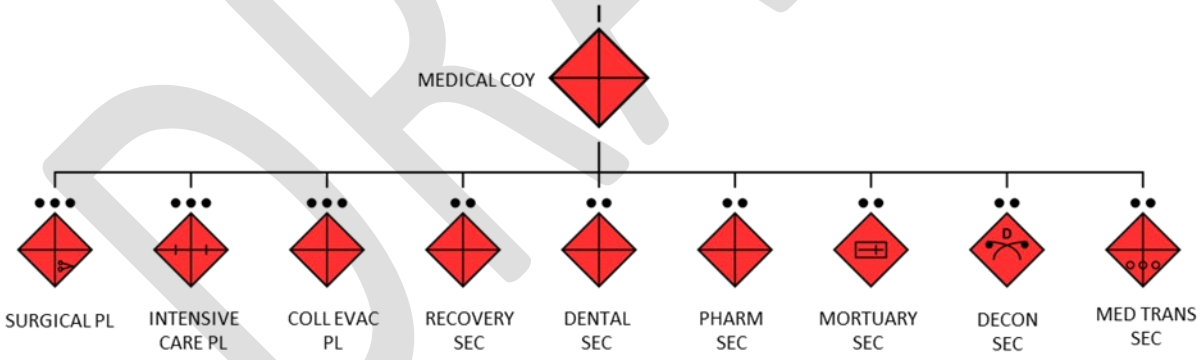
Table 2.3 Maintenance Battalion key platforms and quantities

Totals – Key Platforms and Signature Equipment	
ZBL-08 AMBULANCE	3
EQ-2102 C2 BUS TRUCK	3
EQ-2102 MESS TRUCK	2
MOTORCYCLE	3
EQ-2102 CARGO TRUCK	49
EQ-2102 CRANE TRUCK	4
EQ-2050 TRUCK	54
EQ-2102 WATER TRUCK 9.5 kL	2
ZBL-08 RECOVERY VEHICLE	2
EQ-2102 WRECKER	7
EQ-2102 MAINTENANCE VAN	58
TRAIER CGO 0.5 - 2T	74
TRAILER WATER 1.2 kL	2
TRAILER FLATBED 1.5 ton	23
TRAILER GENERATOR	19
TRAILER POL 4.2 kL	4

Section 2-4. Medical Company

2.4 The medical company provides close health support to the CA-Bdes. The capability would be similar to a NATO light Role 2 with surgical capabilities. The medical company comprises several specialist platoons with allied health sections in support. Figure 2.3 provides the force structure of a typical medical company.

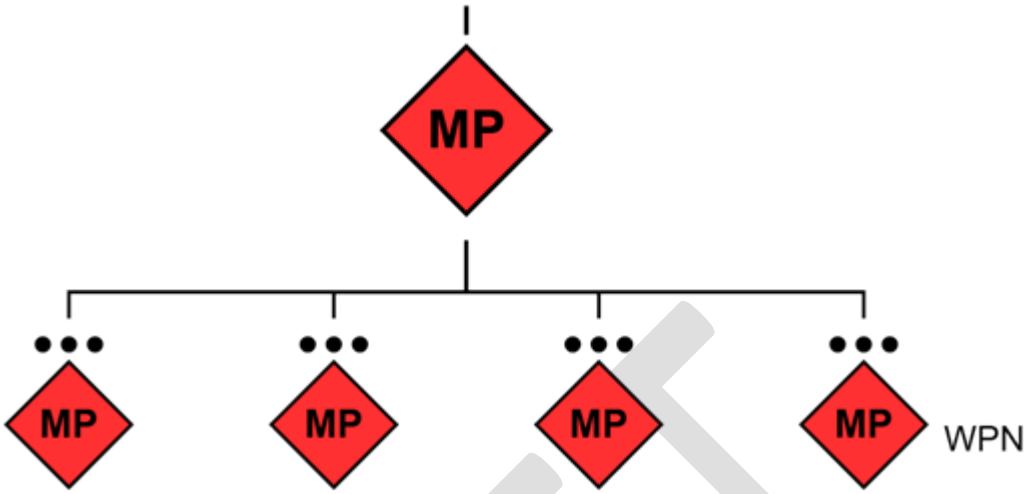
Figure 2.3 Medical Company



Section 2-5. Military Police Company

2.5 The MP company provides close military police support to the CA-Bde. This close support includes, route control and protection, detention operations, close protection for the CA-Bde HQ, and general military police duties for the CA-Bde. The MP company consists of three general duties MP platoons and a special weapons platoon that can also function as a general duties MP platoon. The MP company is typically equipped in lighter armoured wheeled vehicles such as the CSK-141, regardless of the CA-Bde supported. Figure 2.4 provides a breakdown of the MP company force structure.

Figure 2.4 Military Police Company



Section 2-6. Task Organised Logistics Echelons

2.6 Within the CA-Bde, logistic elements can be found as low as the company level. At each echelon from company to battalion to brigade, an organic logistic element can be found that will provide close support to its dependencies. This is similar to many western armies. Table 2.4 provides a comparison and overview between the OPA and western armies at the brigade level and below.

Table 2.4 OPA CA-Bde Logistic Echelons

Logistic Echelon	Western Terminology	Olvanan Terminology
Forward/Fighting/Combat Echelons	F-Echelon	*Zhandou* (Combat) - Echelon (**Z-Ech**)
Company level logistics	A1-Echelon	*Lian Zhichi* (Company Support) – Echelon (**L-Ech**)
Task organised logistic detachment	Company train	Resupply Detachment (**RD**)
Battalion level logistics	A2-Echelon	*Ying Zhichi* (Battalion Support) – Echelon (**Y-Ech**)
Brigade level logistics - forward	Combat Service Support Team Forward Support Company	Logistic Support Detachment (**LSD**)
Brigade level logistics - rear	Brigade Support Group Brigade Support Battalion	Rear Area Support Group (**RASG**)

2.7 Aside from the organic company level logistics, all brigade logistic echelons will be commanded by an officer, usually from the CSS platoon at the battalion, or one of the companies drawn from the brigade's materiel support or maintenance battalion. Where an officer is not available, such as in a Resupply Detachment (RD), the officer from the platoon assigned as security will be in charge.

2.8 **L-Echelon**. At the lowest levels, each fighting company within the CA-Bde will have limited logistic support. This will mainly be in the form of light wheeled vehicles carrying company stores, ammunition, and mission critical equipment. The L-Ech will vary in size between each CA-Bde and is typically located several tactical bounds behind the lead company elements.

2.9 It is important to note that the L-Ech can only provide limited ammunition resupply with no support for maintenance (outside of basic user maintenance), or dedicated casualty evacuation. Whilst a SNCO will control the L-Ech, the company 2IC (or Political Officer) will provide direction and supervision when co-located near the company HQ.

2.10 **Y-Echelon**. The Y-Ech is the battalion logistic support echelon and is based around the Combat Service Support (CSS) platoon. In battalions where there is a higher resource and maintenance requirement, such as the field artillery battalions, the CSS platoon may be at company strength. The Y-Ech is capable of supporting the battalion with resupply, maintenance and recovery, casualty evacuation, and a limited field kitchen. The Y-Ech will typically operate in the *Frontline* zone with the main battalion HQ, approximately 10-15km behind the battalion's forward companies.

2.11 **Logistic Support Detachments**. The LSD is a task-organised company sized detachment drawn from the brigade's materiel support battalion, maintenance battalion, and medical company. The role of the LSD is to provide second line support to either a forward battalion or a brigade axis of advance. When organised evenly, up to four LSDs can be formed to support each of the brigade's manoeuvre battalions. However, there is only enough medical personnel to support three of the potential four brigade LSDs.

2.12 Each LSD will be able to provide resupply, transport, maintenance and recovery, and casualty evacuation/light surgical capabilities to the forward battalions. The LSD will be commanded by one of the company commanders from either the materiel support battalion or maintenance battalion. The LSD can operate independently within the *Frontline* and *Reserve* zones of the battlefield.

2.13 Where possible the LSD will leverage security from a supported battalion, but more often will be responsible for their own security. An LSD will typically operate anywhere between 15 – 20km behind the supported forward battalion's Y-Ech, depending on the terrain and tactical situation.

2.14 **Rear Area Support Group**. The RASG comprises the CA-Bde materiel support battalion and the maintenance battalion. The RASG will be under the direct command of the CA-Bde HQ with the most senior officer between the two battalions exercising command of the RASG (usually this will be the materiel support battalion commander).

2.15 The RASG, when conducting expeditionary operations, will be located close to a sea or airport of debarkation (SPOD/APOD). Their role is to establish the primary storage facilities for all classes of materiel and maintenance. The RASG will be established in the *Garrison* zone, approximately 40 – 60km behind the frontlines. Whether they will be dispersed or concentrated in one location will be dependent on the tactical situation. In a high intensity conflict, they will disperse as much as possible with multiple smaller storage and maintenance facilities.

2.16 The RASG may be required to relocate forward as the CA-Bde advances, but will not be expected to move as frequently as the LSD. The point at which the RASG will relocate will be heavily dependent on terrain and tactical situation. There will be a requirement to handover semi-permanent storage facilities (such as fuel farms) over to follow on logistic forces, such as the Group Army logistic battalions or follow-on CA-Bdes.

2.17 **Resupply Detachments**. RDs are discrete task-organised elements that can be formed from the Y-Ech or the LSD for a specific task or period of time. An RD is usually a platoon-sized echelon that can forward deploy to conduct close resupply, onsite maintenance, recovery and casualty evacuation.

2.18 Once a logistic support task is completed, the RD will reform back into the Y-Ech or LSD and be re-organised into another RD as required. Due to the nature of their task of operating close to the frontlines, RDs require protection and are typically provided with close protection for the duration of their task by the supported battalion or company.

Section 2-7. OPA CA-Bde Task Organised Logistic Structures

2.19 Each logistic element within the CA-Bdes will vary slightly depending on the supported CA-Bde. The composition of the task-organised detachments will depend on the primary mobility vehicle of the CA-Bde. Figures 2.5 – 2.9 details the composition and breakdown of each CA-Bde's logistic echelons. Of note, the Marine Brigade's logistic echelons are significantly smaller than that of the other CA-Bdes due to their role and overall force structure differences.

Figure 2.5 Motorised (Light) CA-Bde logistic echelons

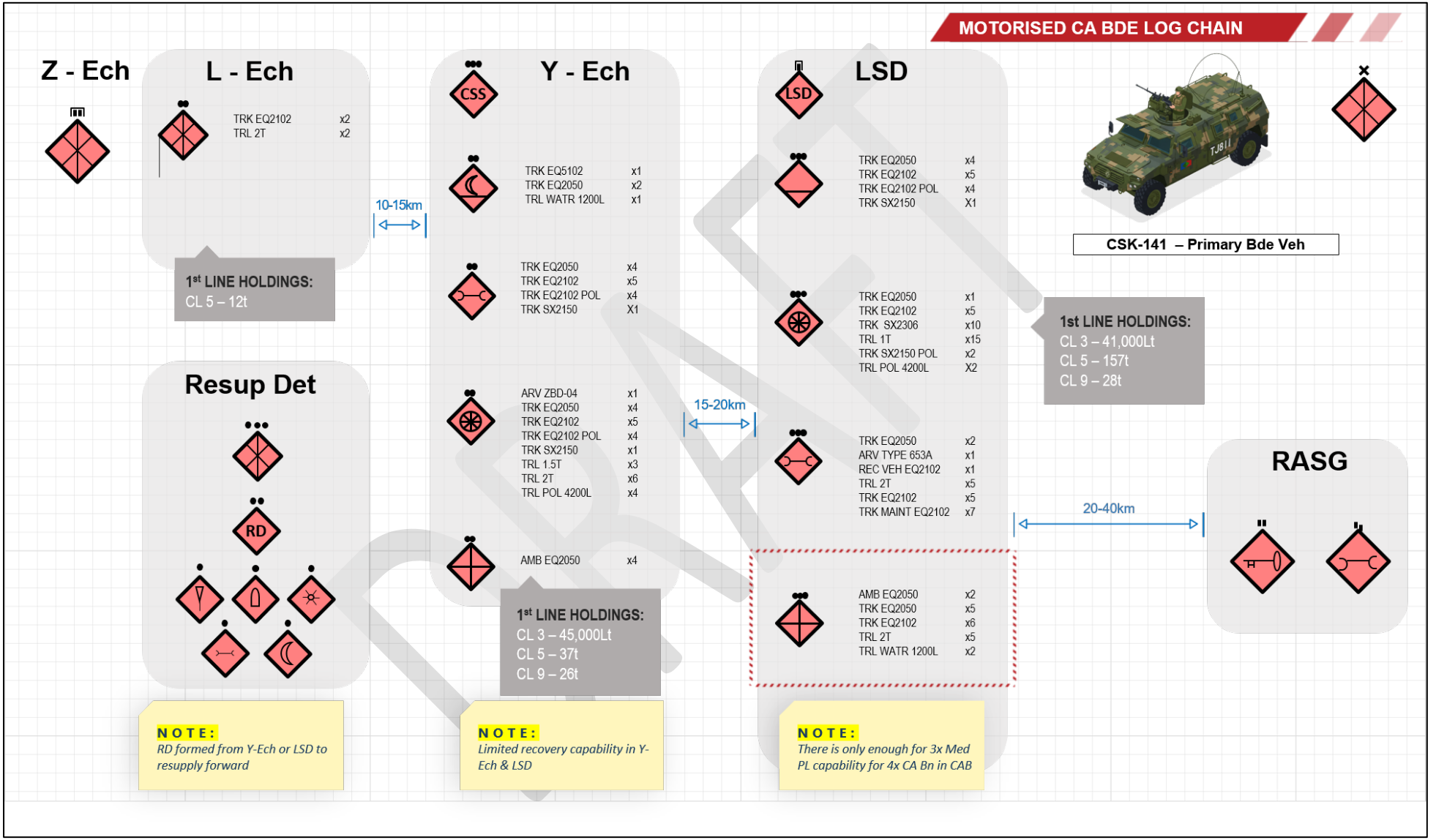


Figure 2.6 Mechanised (Medium) CA-Bde logistic echelons

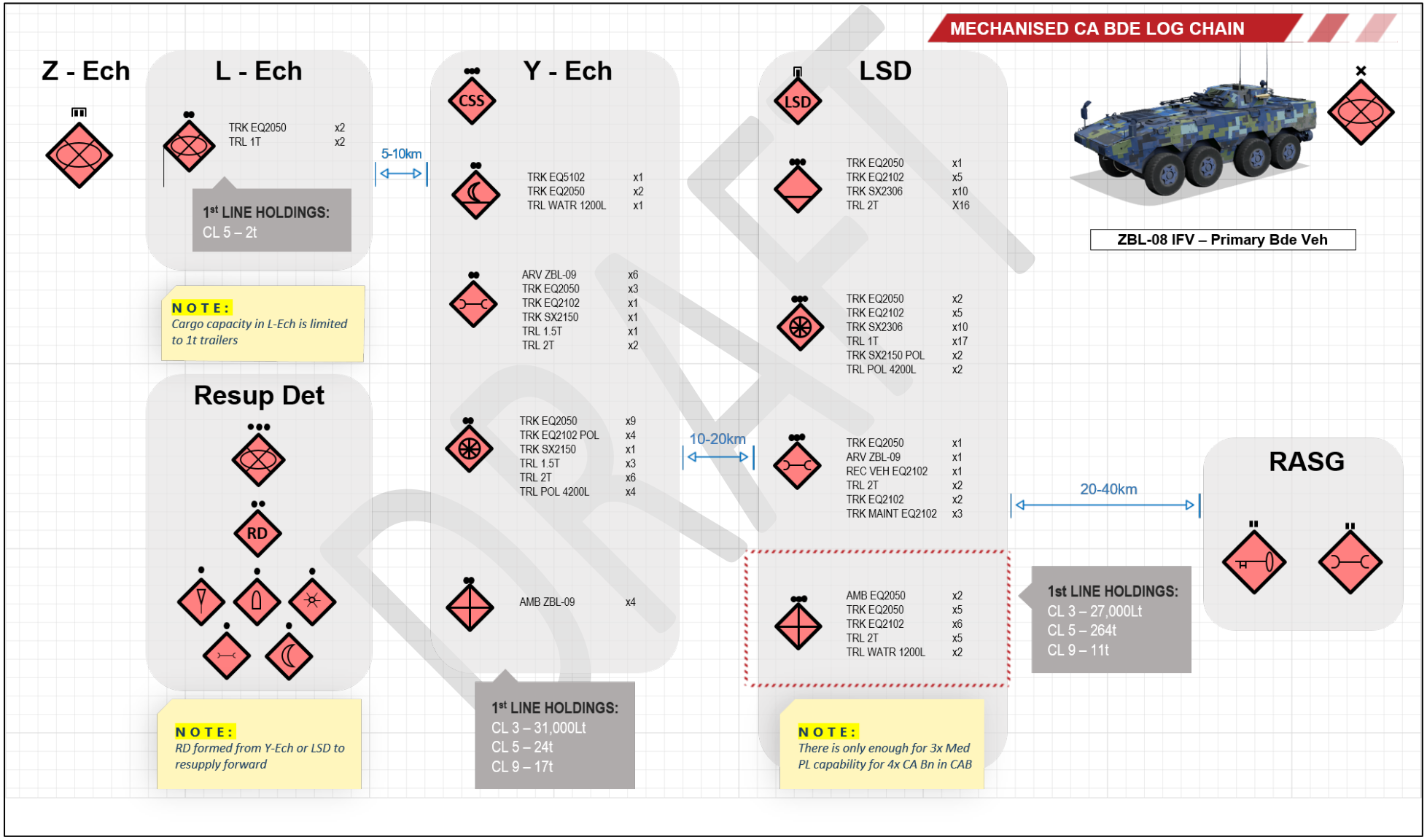


Figure 2.7 Armoured (Heavy) CA-Bde logistic echelons

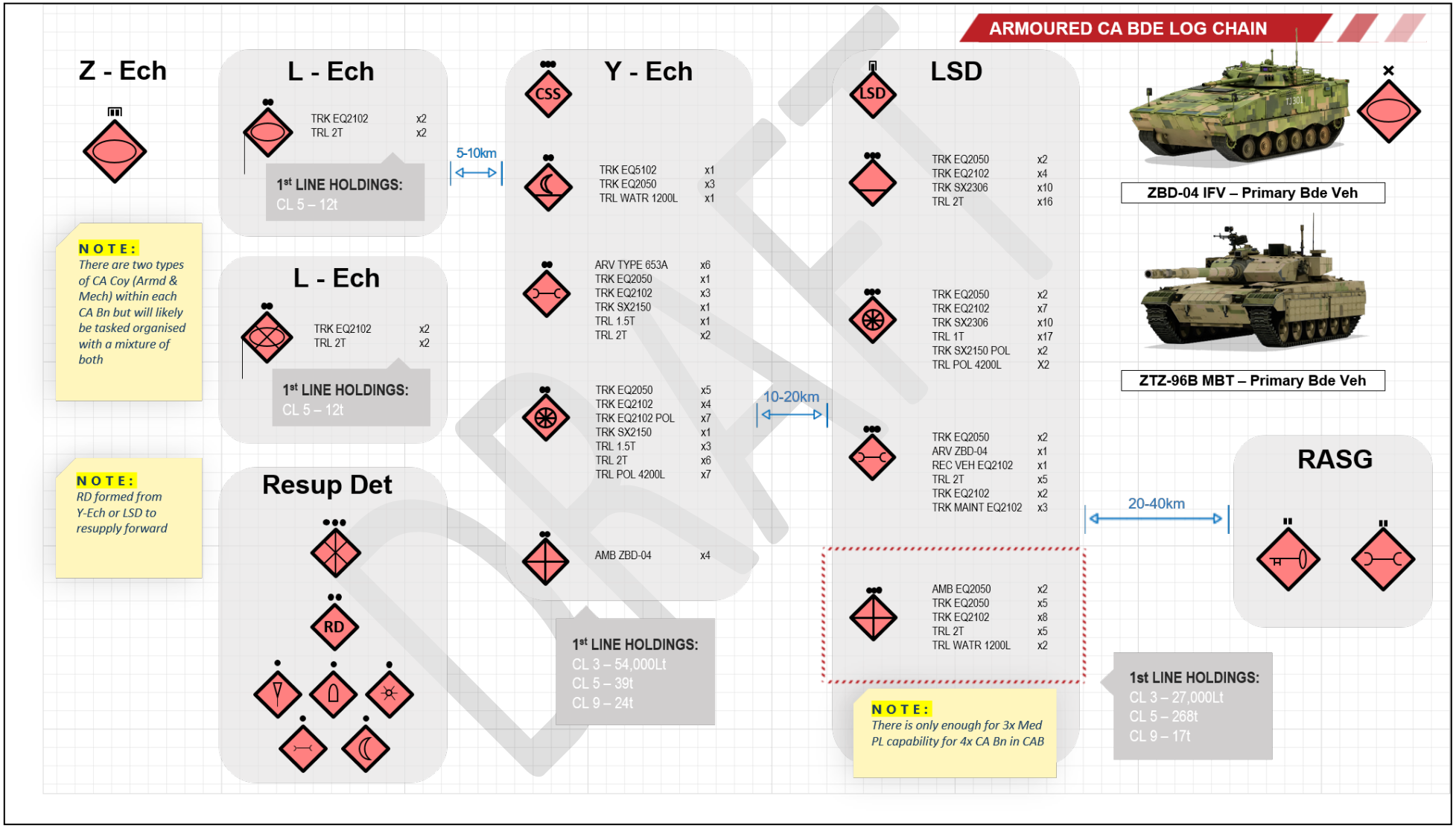


Figure 2.8 Amphibious CA-Bde logistic echelons

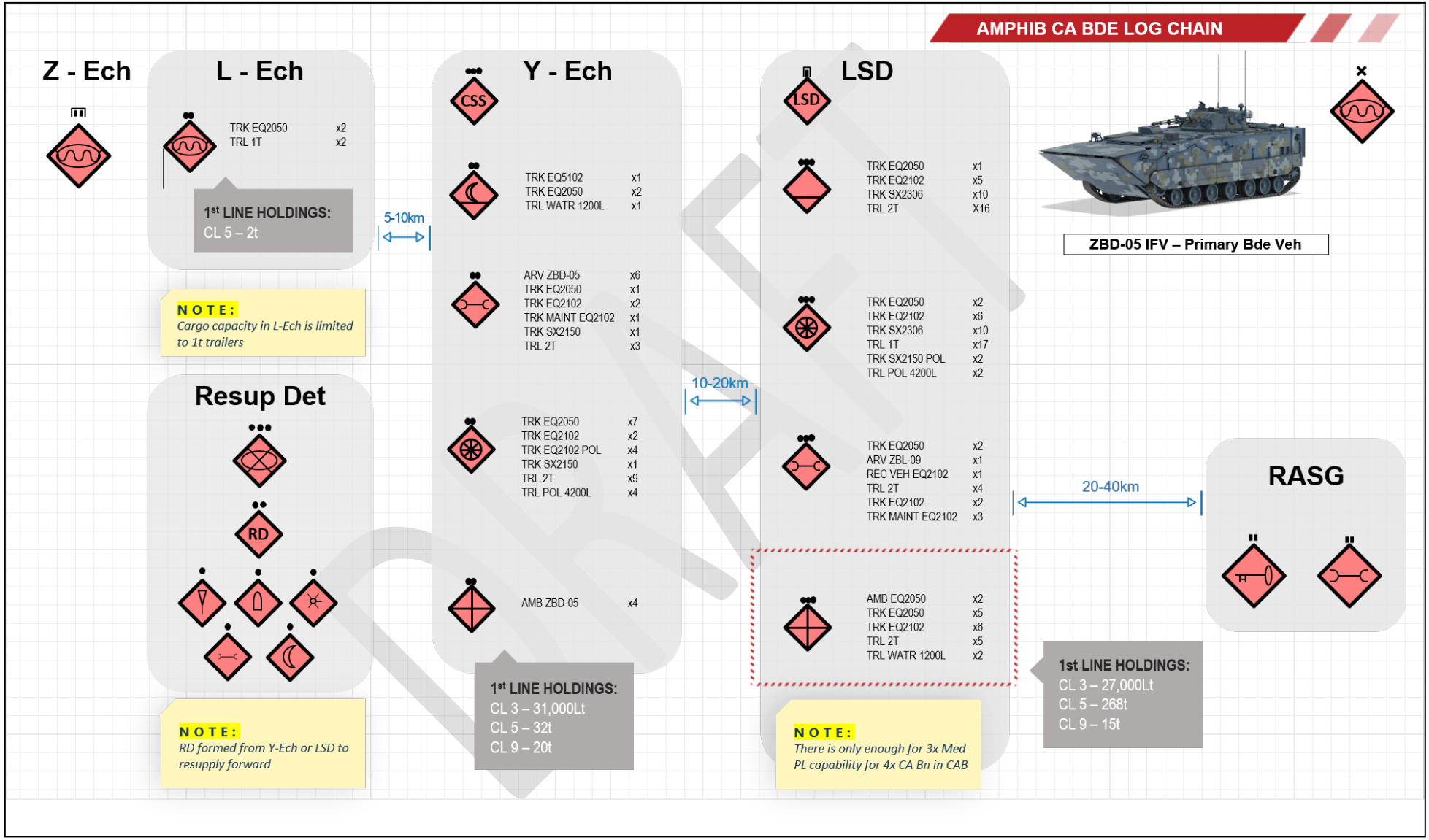
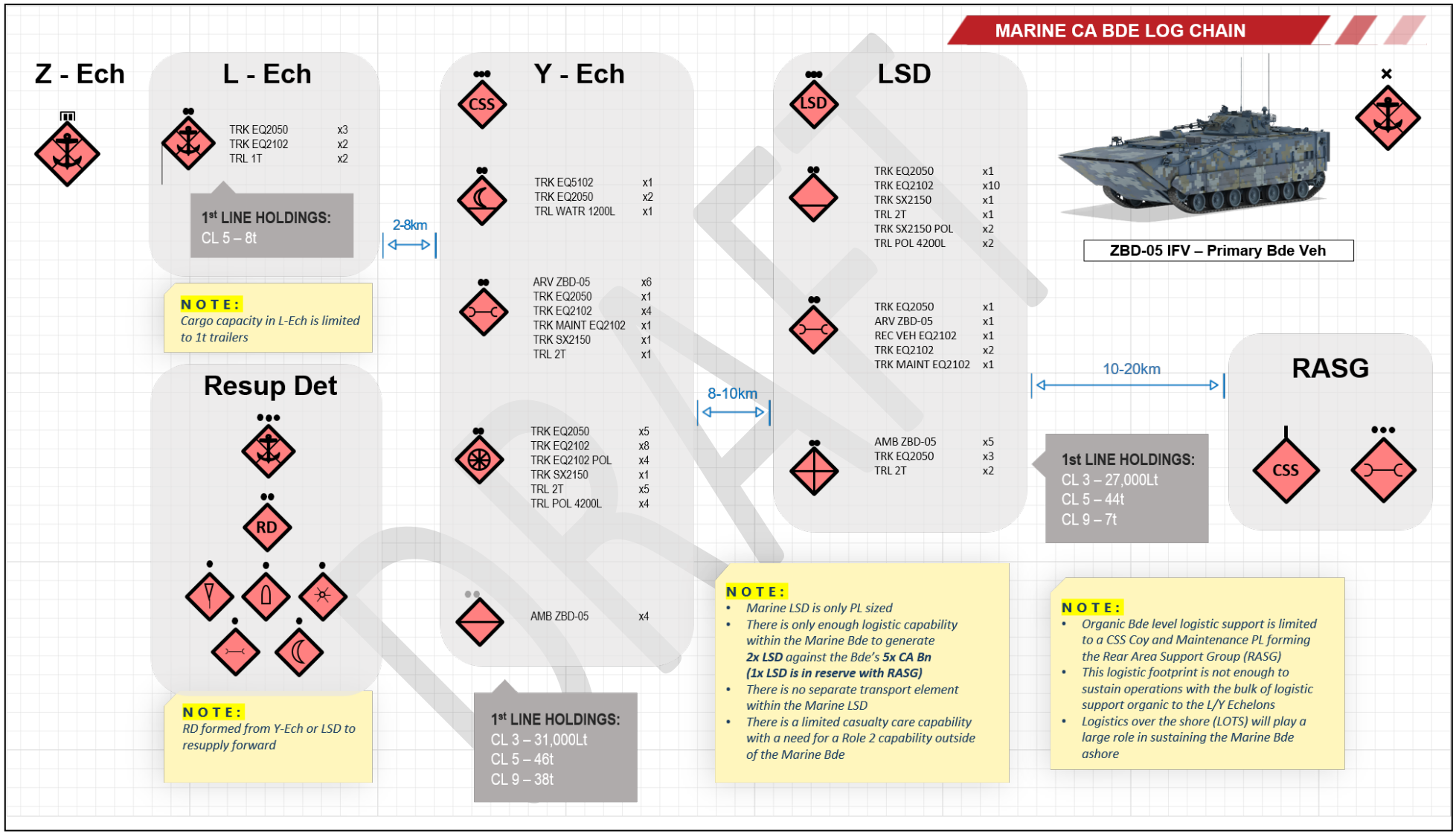


Figure 2.9 Marine CA-Bde logistic echelons



Chapter 3
CA-Bde Logistics Tactics, Techniques, and Procedures

Section 3-1. Resupply

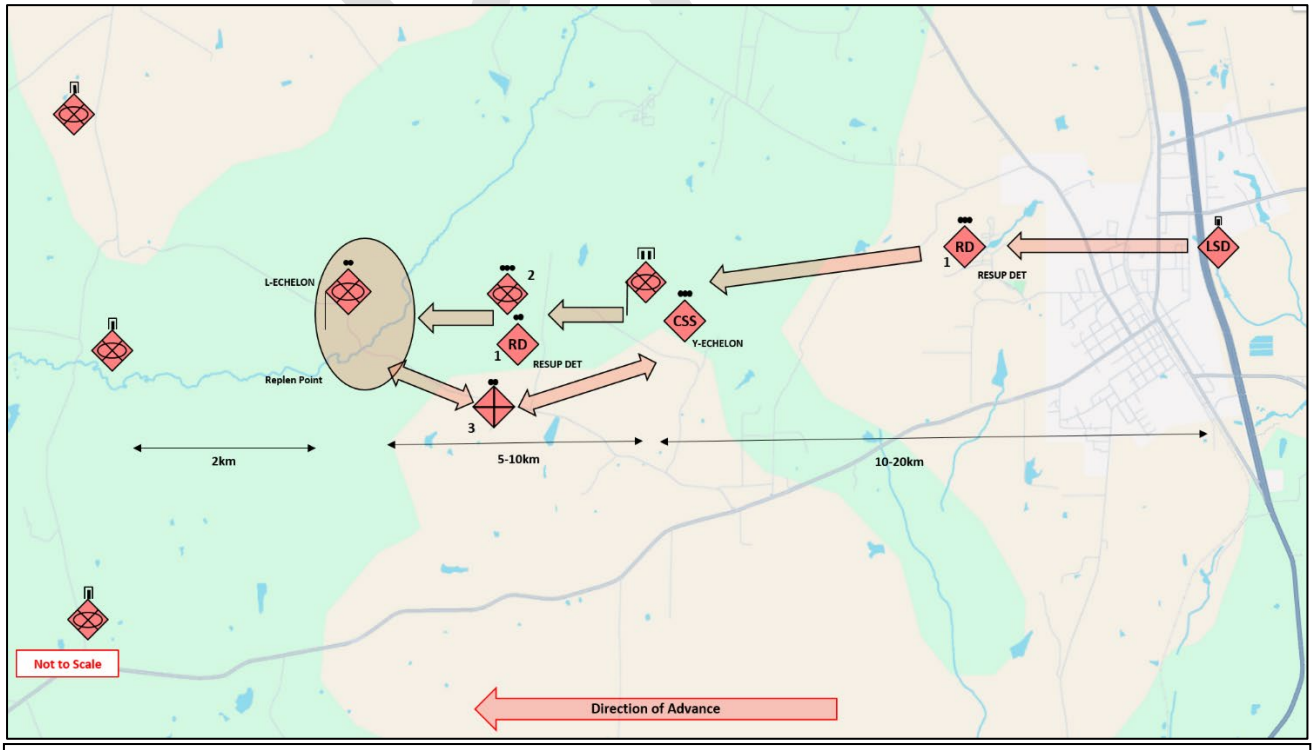
3.1 As a rule, OPA logistic detachments move forwards to resupply their dependencies. Rarely do logistic elements from a lower echelon move backwards towards a higher echelon, except for casualty evacuation. A Resupply Detachment (RD) will be formed from the LSD or Y-Ech to move forward and marry-up with the logistic elements from the supported battalion or company. The distance between each logistic echelon will depend greatly on the terrain and the tactical threat and situation. Ideally, logistic elements move as close to their dependencies as possible.

3.2 The closer the logistic elements are to the frontline, the more likely they will need protection, usually from the supported unit/dependency. The smallest logistic echelon will be a section sized RD. However, this RD will be under the command of the platoon providing the protection. Larger platoon sized RDs (typically formed from an LSD) will be under command of their own officer.

3.3 In the example in figure 3.1, the lead fighting elements of a mechanised infantry battalion requests a resupply from the battalion Y-Ech. The battalion Y-Ech will form a section-sized RD, which consist of fuel, maintenance, ammo resupply, and fresh food squads, to marry-up with the L-Ech. The battalion will allocate an infantry platoon to provide both security, and command and control for the RD as it marries up with the L-Ech.

3.4 Concurrently, a brigade LSD will form a platoon-sized RD to move forward and resupply the battalion Y-Ech. The RD from the LSD will not likely have a security party attached, but may have other fighting elements providing route security for all traffic along the main supply route taken.

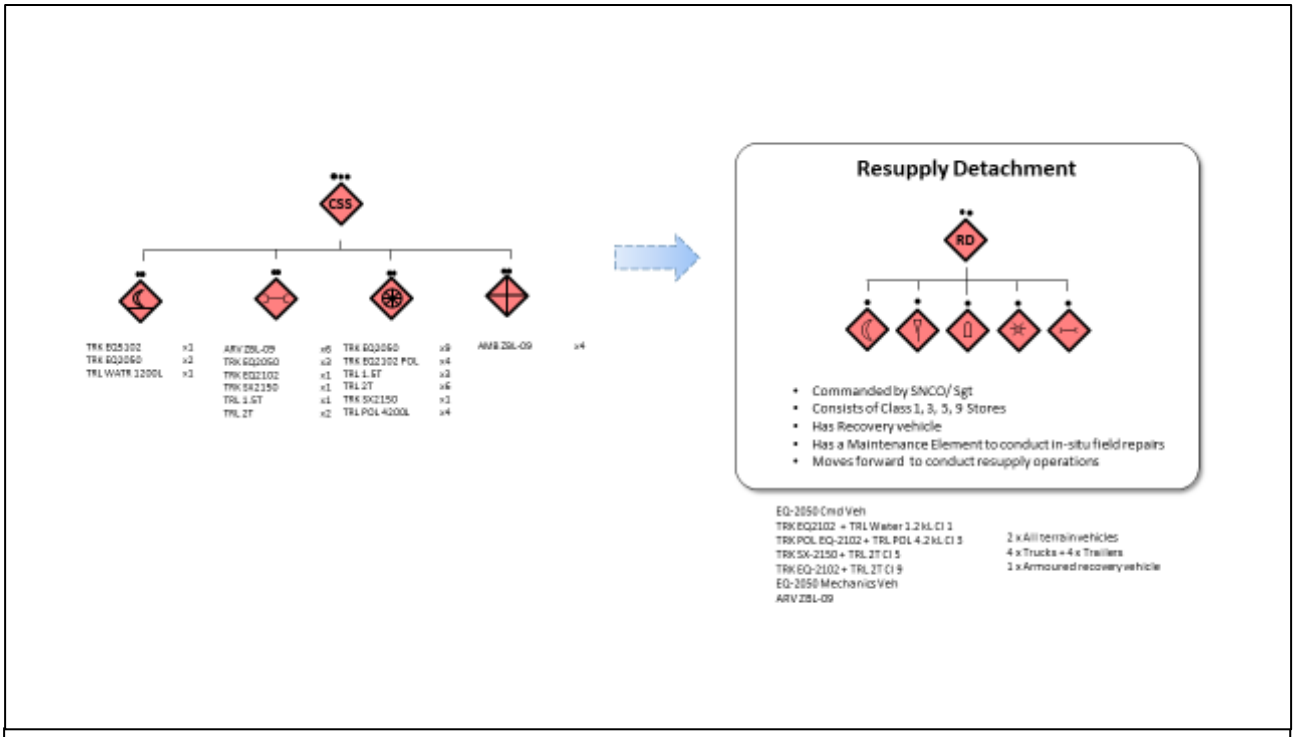
Figure 3.1 OPA resupply operation for a battalion



(1) RD are sent forward from both the LSD and Y-Ech to resupply the next logistic echelons. (2) The Y-Ech RD is commanded by an infantry platoon to provide protection as it moves close to the frontlines. (3) A medical section from the Y-Ech moves between the frontlines to evacuate casualties back to the Y-Ech location.

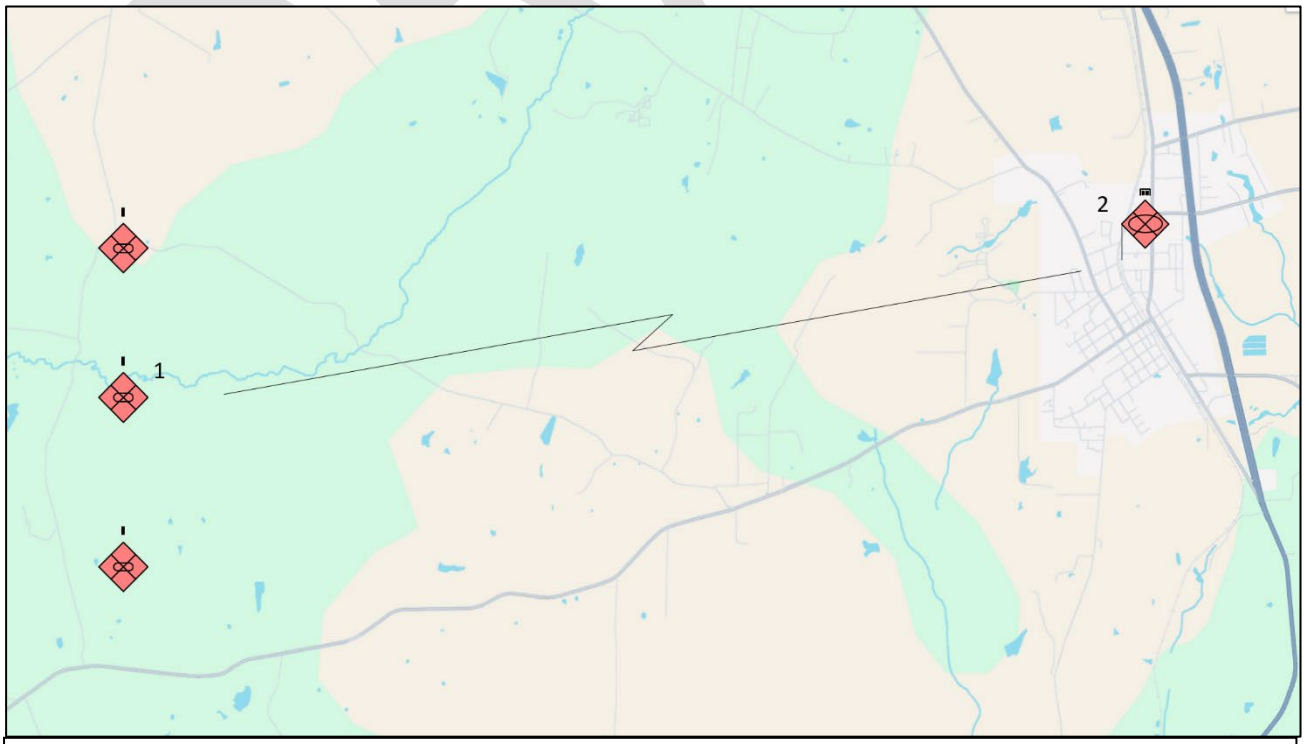
3.5 Figures 3.2 to 3.9 provides a detailed example of the sequence of events for how resupply operations are conducted from the perspective of the Y-Ech.

Figure 3.2 Resupply operations sequence of events – Task organisation



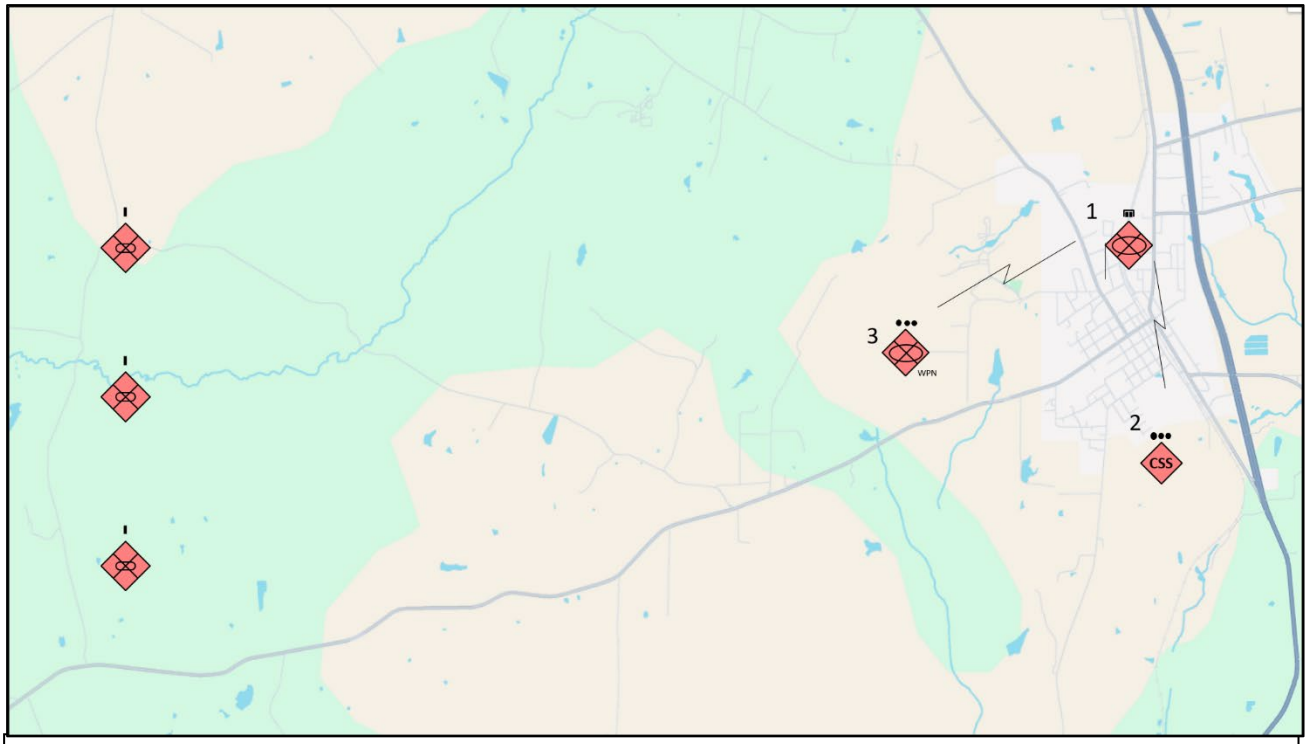
The Y-Echelon has already task organised several Resupply Detachments (RD) in preparation to conduct a resupply operation to forward fighting elements. This RD will typically incorporate all elements from the Y-Ech, including resupply of Class 1/3/5/9 stores, recovery vehicles, and maintenance. Note that a SNCO will likely be in command of the RD.

Figure 3.3 Z-Ech requests resupply from BHQ



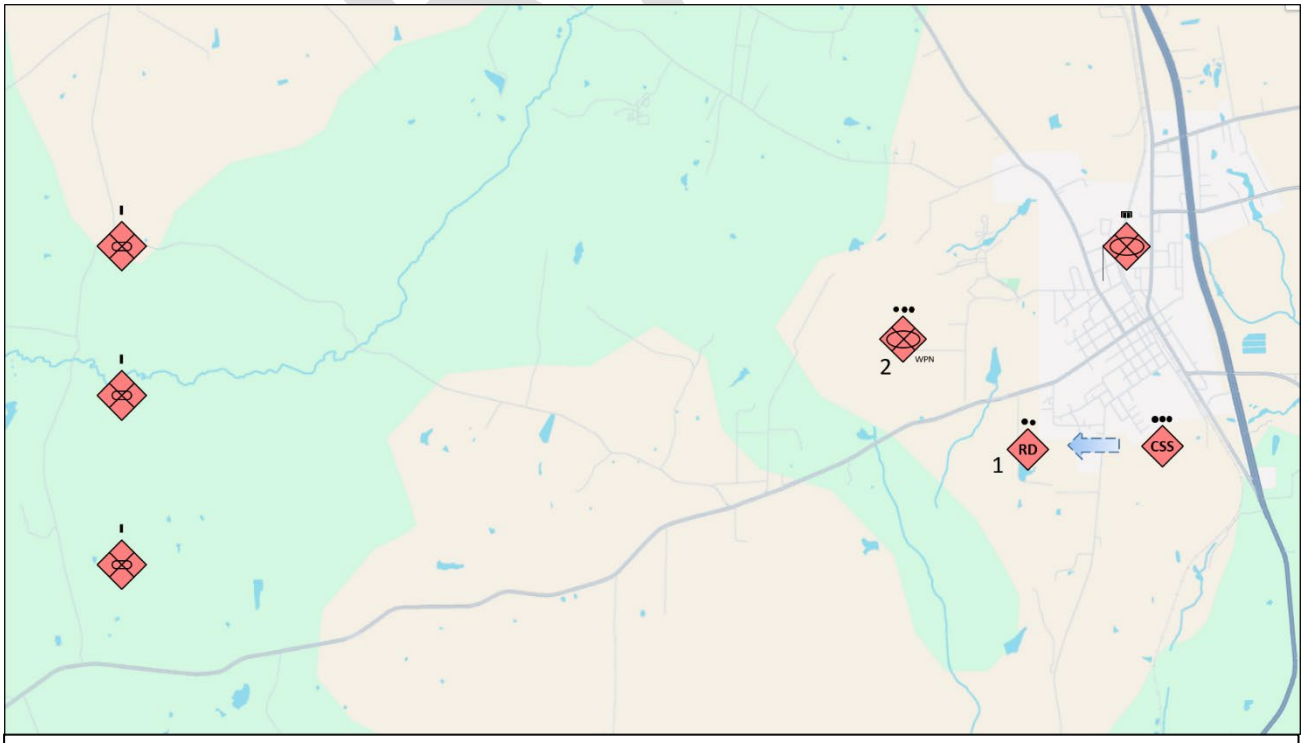
(1) The Z-Echelon forward elements are in need of resupply and have called for support from the Battalion HQ (2).

Figure 3.4 CA-Bn tasks Y-Ech and assigns Security Element



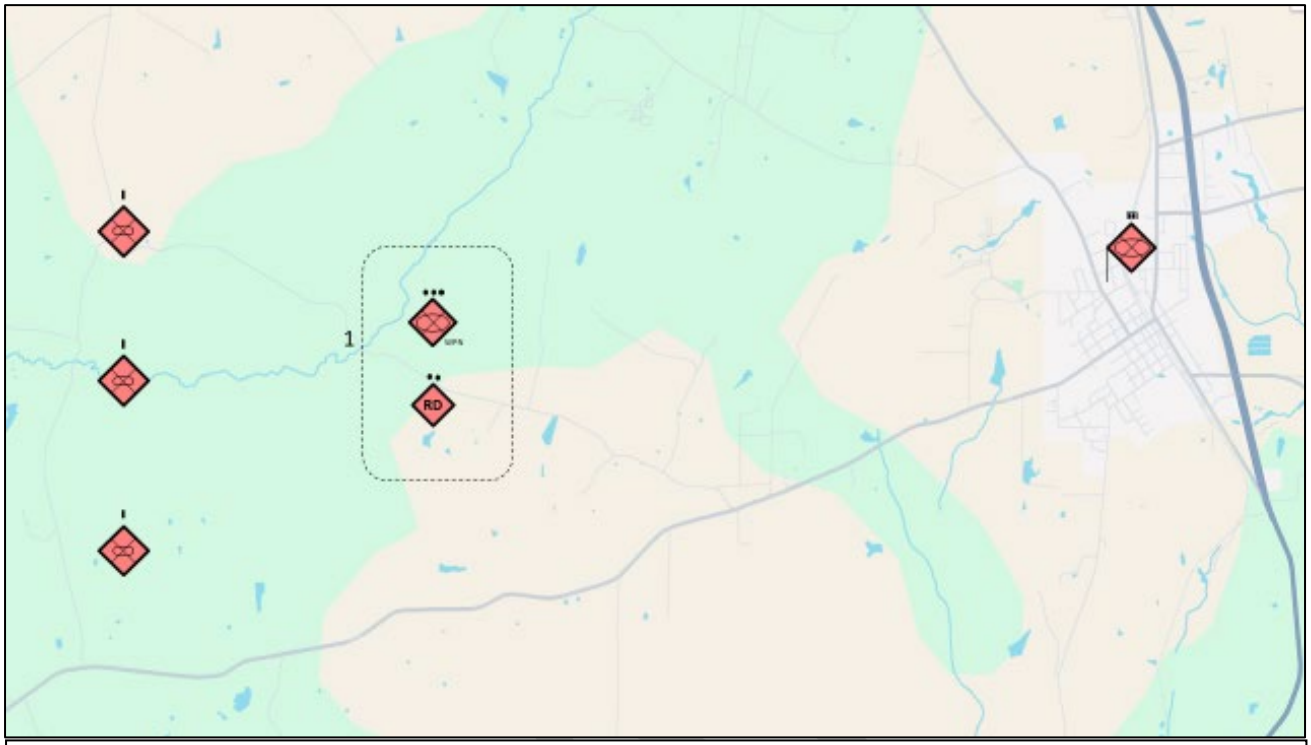
(1) Battalion HQ notifies the Y-Ech (2) of the requirements to resupply the forward elements. Since the resupply task will occur close to the front lines, a security element is tasked to provide command and control, and protection for the RD (3). The security elements will likely be Platoon sized.

Figure 3.5 RD marries up with Security Element



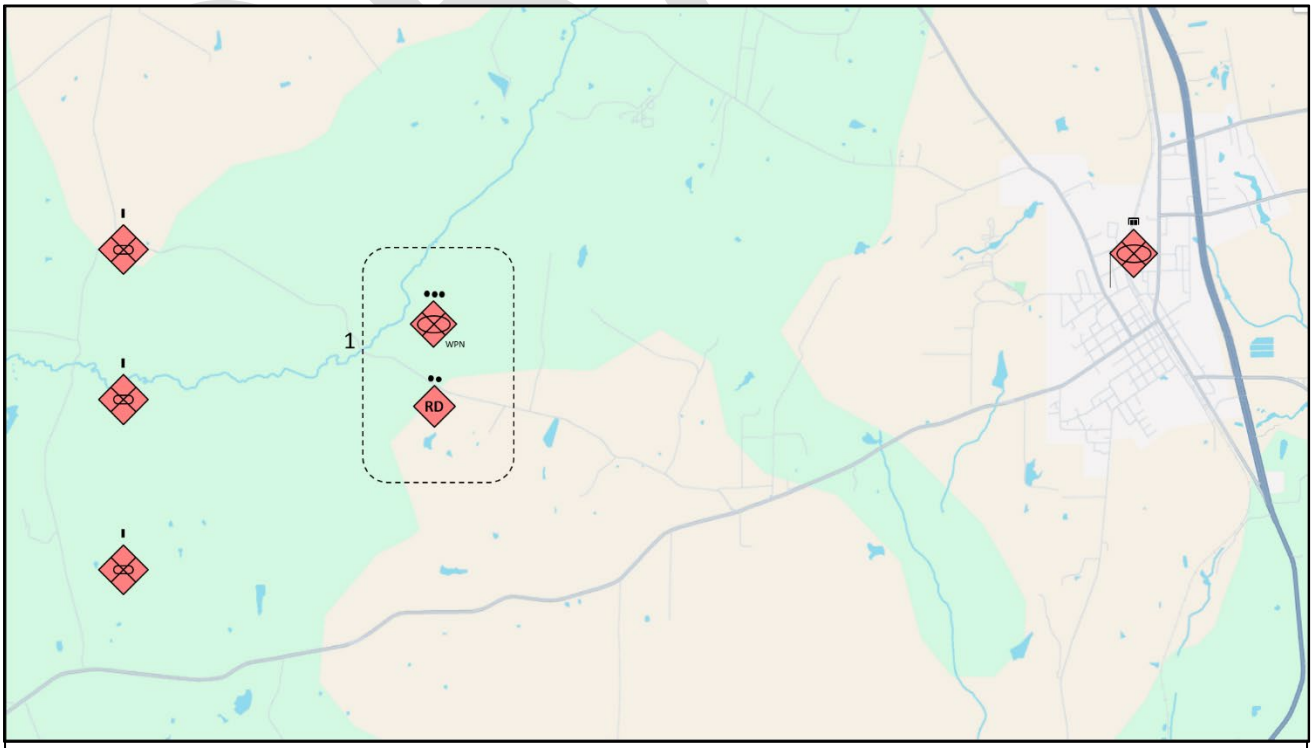
The task organised RD (1) will move forward and marry-up with the security element (2). Note that the RD will remain under the command of the security element officer for the duration of the task.

Figure 3.6 RD moves to designated Resupply Point



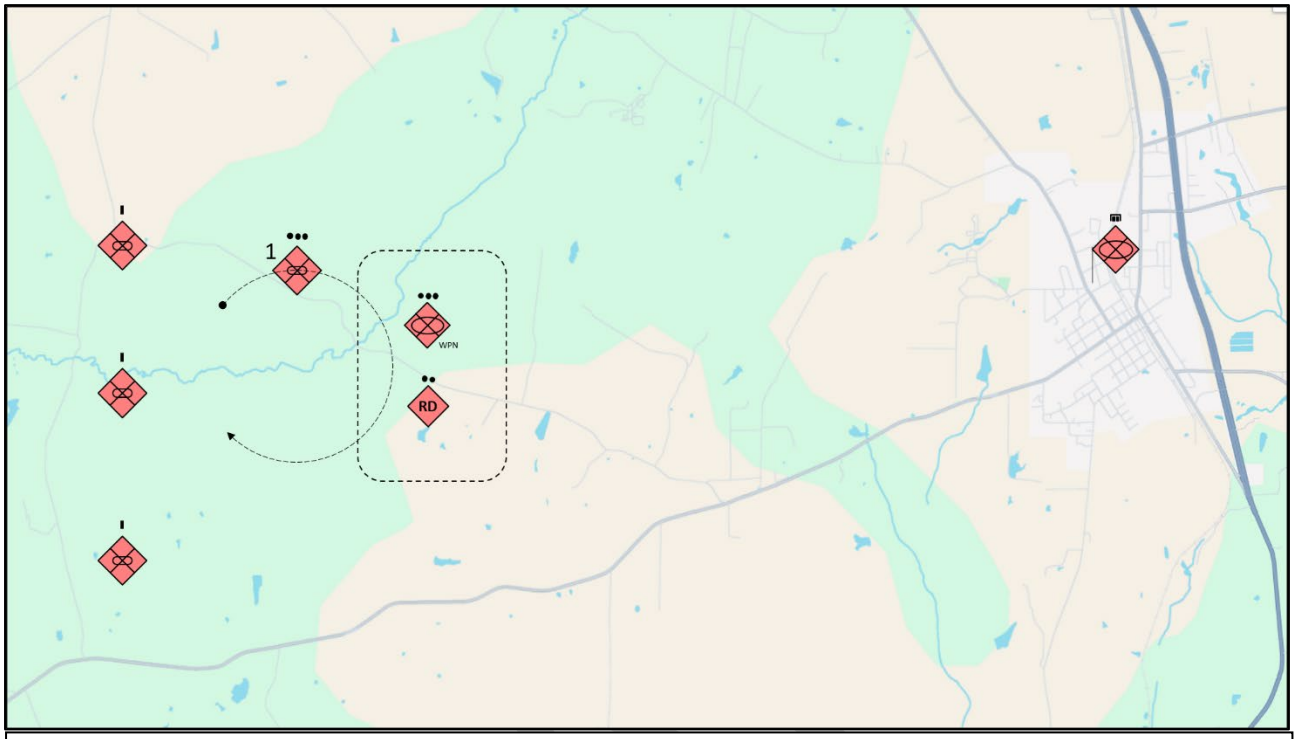
(1) The RD will move under escort of the security element to a designated resupply point established by the Company L-Ech behind the front lines (2). The location of the Resupply Point will be dependent on the tactical situation and local threat. It is important that the RD minimise their time close to the front lines as possible.

Figure 3.7 Resupply Point is established



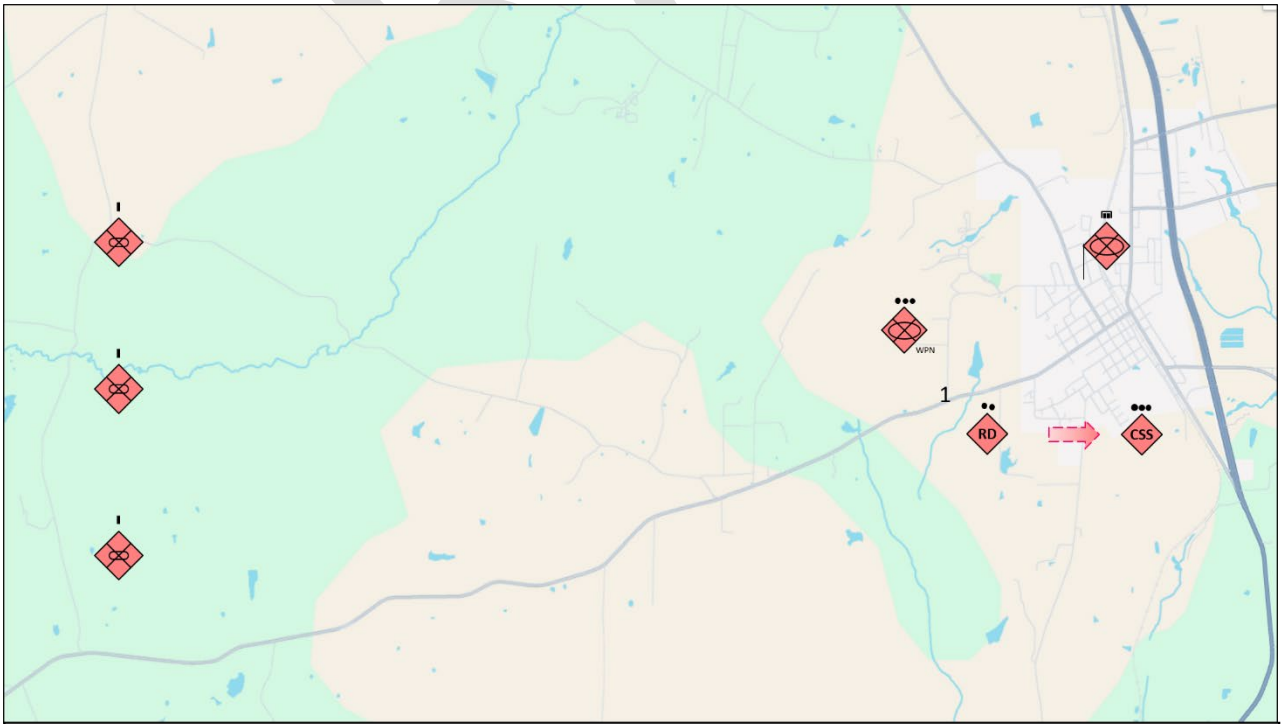
(1) The Resupply Point will be established with the security element providing all round protection. Once established, the Company L-Ech will coordinate the movement of the forward elements to the Resupply Point.

Figure 3.8 Combat Force Elements rotate through Resupply Point



(1) Platoon sized elements will rotate through the Resupply Point. CL 1/3/5 stores will be distributed. Recovery vehicles are only used to recover RD vehicles or to move fighting vehicles out of the way. Recovery will be conducted as the Y-Ech moves forward, not during resupply.

Figure 3.9 RD returns to Y-Ech

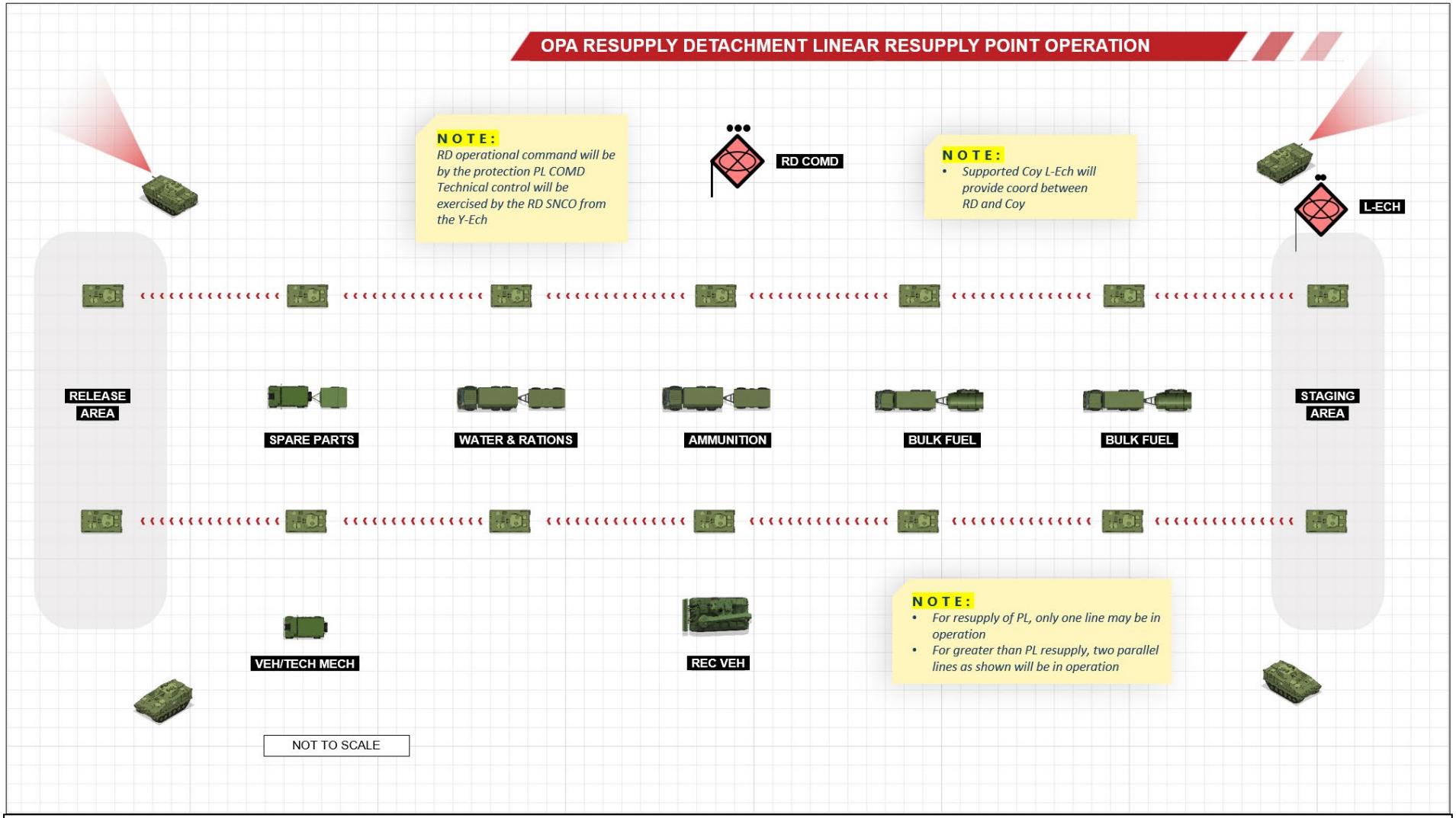


Once the forward company platoons have completed their resupply, the RD will disestablish the Resupply Point and return to the Y-Ech (1). Depending on the tactical situation, the RD may instead drop pallets of stores and leave the L-Ech with the responsibility for stores distribution.

3.6 Once married-up with their dependencies at a resupply point, the RD will carry out a resupply. An example of a linear resupply operation is included in figures 3.10 and 3.11. Depending on the size of the RD and the dependency, a resupply operation close to the frontlines may take 30 to 60 minutes. For larger resupply operations or if there is a high threat tactical situation, palletised stores may instead be dropped at the resupply point by the RD, leaving the L-Ech/Y-Ech to conduct redistribution, with the RD moving back towards the rear as soon as possible to minimise exposure. The OPA will prefer to conduct resupply under cover of night or poor weather wherever possible to reduce detection. Future RD operations may utilise UGV/UAV in smaller packets to drop off stores at designated resupply points. However, this has not yet been fielded by the OPA in quantity.

Figure 3.10 OPA CA-Bde units going through a resupply point

Figure 3.11 Linear resupply point operation



A resupply of a company-sized element will take between 30 – 60 minutes. A good resupply point should be under overhead cover and concealment, such as dense foliage or urban clutter.

Section 3-2. Maintenance and Recovery

3.7 Maintenance conducted in the battlefield with the CA-Bde is predominantly the responsibility of the CA-Bde maintenance battalion. However, each battalion within the CA-Bde has their own ability to provide field maintenance capabilities within the Y-Ech. Each Y-Ech has a maintenance section that can provide immediate limited support to forward elements. The LSD can draw from the maintenance battalion a platoon equipped with spare parts and recovery capabilities.

3.8 For both the Y-Ech and LSD, the limiting factor is the number of recovery vehicles available. Typically, within the Y-Ech, there may be one to six dedicated recovery vehicles capable of recovering the main vehicle platform of the CA-Bde. Within the LSD, there are only two recovery vehicles to support a forward battalion, or axis of advance.

3.9 This limited number of recovery vehicles means that the Y-Ech and LSD need to prioritise recovery efforts in line with the brigade or battalion commander's priorities. In the first instance, recovery is conducted by like-for-like platforms. In other words, self-recovery is the first option whereby similar or same vehicles recover each other. The typical priority list for recovery within the CA-Bde is as follows:

a. Mission critical equipment as designated by the commander (e.g. engineer vehicles, EW, indirect fires, etc)

b. Fighting vehicles (tanks, IFV, etc)

c. Support vehicles (e.g. wheeled HQ vehicles, ambulance, logistic vehicles, etc)

3.10 The OPA's philosophy is that a mobility-kill vehicle will be pushed aside (if blocking a route) and the follow-on Y-Ech will either repair onsite with spares (either carried or cannibalised from other damaged vehicles) or leave for follow on repair and recovery elements from the LSD and finally the RASG. Rearward recovery is only reserved for mission critical equipment due to the lack of dedicated recovery vehicles and the time it takes the recovery vehicle away from the battalion. Destroyed vehicles will be moved aside and only usable spare parts recovered.

3.11 Like the resupply operations, recovery operations by the Y-Ech and LSD will be conducted under the command of their respective commander. Rarely will a recovery section or platoon operate independently of the Y-Ech or LSD.

3.12 The CA-Bde will carry a limited number of spare vehicles, if any at all (certainly not during expeditionary operations). What spare vehicles the CA-Bde may have will be pushed forward to marry-up with the forward elements to replace combat losses. This task will likely be conducted during a forward passage of lines as the depleted battalion moves back into a reserve role within the CA-Bde.

Section 3-3. Casualty Care and Evacuation

3.13 Whilst the OPA tries to maintain the standard golden hour for casualty treatment, the OPA prefers to send medical support as far forward as possible in order to mitigate the length of time it will take to evacuate casualties rearward. Each battalion Y-Ech is equipped with a section of at least four dedicated ambulance vehicles whose type is commensurate with the primary combat vehicle for each CA-Bde.

3.14 This medical section can provide immediate medical support to casualties on the battlefield before evacuating casualties to an equivalent light Role 2 medical facility at the LSD. In practise, one ambulance is likely to be attached to each forward company within the battalion in order to provide close health support. Each ambulance will be staffed with at least one driver and one medic.

3.15 The LSD will have a medical platoon (light Role 2 equivalent facility - light surgical team with allied health support). Due to the limited number of medical platoons within a CA-Bde medical company, not all LSDs may have a medical platoon attached. The LSD medical platoon is equipped to provide emergency surgical support for battle casualties, stabilisation, and evacuation to a Role 3 or intermediate medical facility setup by the Group Army medical battalion.

3.16 Casualties will be evacuated backwards to a casualty collection point (usually co-located with the Y-Ech). From there, casualties will generally be evacuated by the LSD ambulances back towards the LSD medical platoon, as the Y-Ech ambulances return to their supported forward companies.

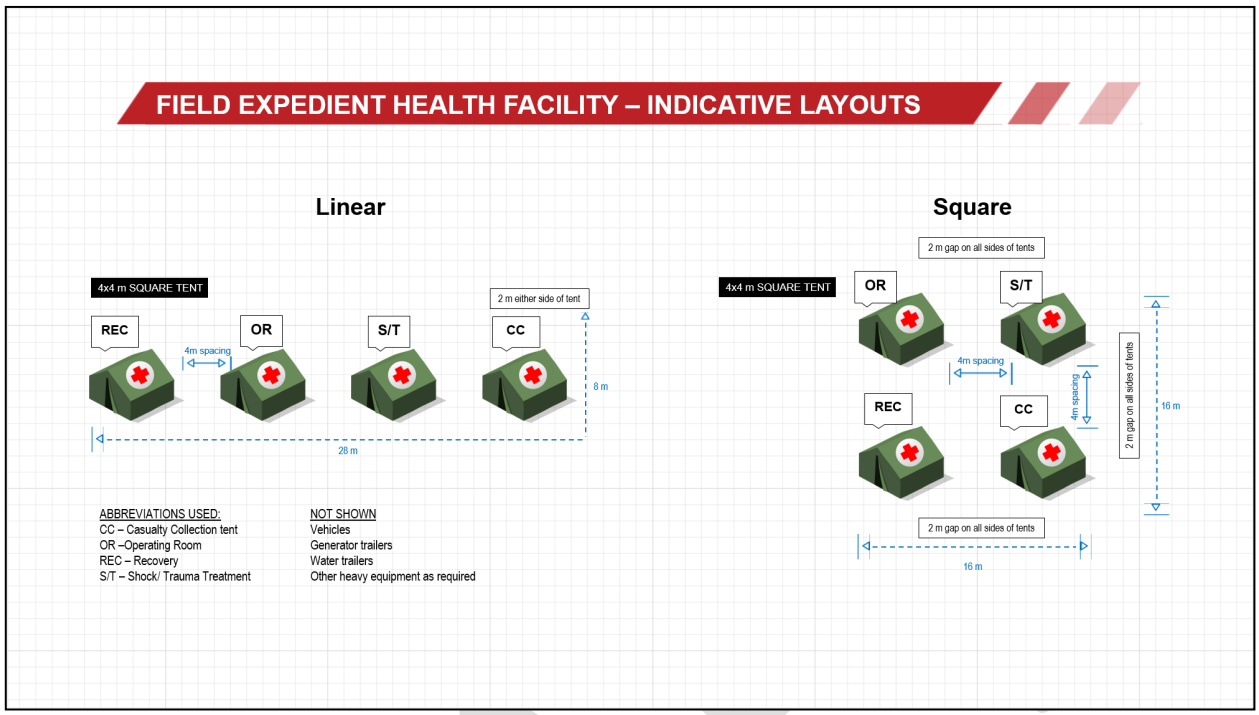
3.17 Aero-medical evacuation (AME) may also be utilised at any point along the casualty evacuation process if the tactical situation allows. There is no dedicated rotary-wing AME permanently allocated from the Group Army's aviation brigade, so this option should not be considered as a given. Future development in autonomous robotics may mitigate some of this risk, but have yet to be seen fielded within the OPA.

3.18 Triage of casualties is conducted at each point. Critical casualties with a good chance of survival will be given priority. However, the OPA expects that in high intensity conflicts, the treatment of casualties near the front lines will be heavily impacted. Deceased personnel will not generally be back-loaded towards the rear. Instead, they will be left for follow-on mortuary affairs sections within the medical platoon to deal with as part of battlefield clearance.

3.19 The medical platoon may not necessarily be tied in the same location as the LSD. The medical platoon may relocate more frequently if the tactical situation requires in order to support casualty care. Figure 3.12 provides the indicative layout for the LSD medical platoon.

Figure 3.12 OPA casualty evacuation utilising EQ2050 ambulance

Figure 3.13 Medical Platoon layout



Section 3-4. Mortuary Affairs

3.20 As a general rule, personnel killed in action (KIA - both friendly and enemy) will be tagged and bagged where possible and left along the side of the road near a casualty collection point. In the advance, KIA will be low priority to be back-loaded towards the RASG. Instead, the RASG mortuary affairs will collect KIA as they advance. However, if there are opportunities when the RD is sent back towards the Y-Ech/LSD/RASG after a resupply task and there is room, KIA may be back-loaded.

3.21 Where there are too many KIA for either the medical section or onsite forces to deal with, or the time it'll take for the RASG mortuary affairs to arrive and deal with the bodies is too long (i.e greater than two days), bodies may be temporarily buried by the local commander for environmental health reasons. Bodies will be exhumed by mortuary affairs once they are onsite. This action is more likely in areas such as hot and humid environments where there is a lack of refrigeration for bodies.

Section 3-5. Route Control

3.22 Route control is conducted by the CA-Bdes military police company. At least one MP platoon will be assigned to manage route control along each axis of advance where it is necessary. The lowest MP echelon that can operate independently would be the squad.

3.23 Choke points such as single lane bridges or key intersections will be managed by an MP squad with the platoon commander responsible for varying sections of the route. MP platoons are not likely to be assigned to a forward battalion, but centrally controlled by the MP company HQ with the CA-Bde HQ.

3.24 Depending on the threat, rear area security operations and patrols may also be conducted by the MP company. An MP platoon may be assigned to patrol routes between the RASG, LSD and Y-Ech, providing a mobile security element.

3.25 Movement of internally displaced persons (IDP) are also managed by the MP company, though this capability is limited. Where possible, management of IDPs are given to the Olvanan National Police (OAP). The delineation of responsibility is that the MP Coy is responsible for traffic in the *Frontline* and *Reserve* zones, whilst the OAP will be responsible for the *Garrison* zone.

Section 3-6. Detention Operations

3.26 Detention operations in the *Frontline* and *Reserve* zones is the primary responsibility of the MP company. This involves the handling, processing and holding of enemy prisoners of war (PW) or captured persons (CPERS).

3.27 Units capturing PW/CPERS will backload them towards the rear under guard. Naturally, this means that until the handover with the MP company is conducted, a battalion will have to assign part of their combat power in order to achieve this.

3.28 The MP company will assign a commensurate force (typically a platoon) to take responsibility of PW/CPERS from the forward battalions. Temporary detention centres will be established in the *Reserve* and *Garrison* zones for holding PW/CPERS.

3.29 Where possible, the MP company will try to handover PW/CPERS to the OAP as soon as possible, usually in the *Garrison* zone. Where the MP company may be stretched in dealing with PW/CPERS, the CA-Bde will assign additional combat units to augment the MP company (e.g. Motorised infantry platoon).

Section 3-7. Troop Transport

3.30 Whilst the OPA CA-Bdes are universally motorised, mechanised, armoured or amphibious, there are times when troops may be dismounted and their combat vehicles are not required, suitable, or available (e.g. jungle warfare). The transport elements from the materiel support battalion may be reconfigured to provide troop transport support for the now dismounted infantry battalions. This option may also be exercised when battlefield attrition depletes the CA-Bde of combat vehicles, forcing the remaining battalions to operate in a light motorised capacity.

3.31 Under these circumstances, the transport company from the materiel support battalion may be force assigned to a CA battalion for a duration. This has the negative impact in that these transport vehicles will not be used to carry critical ammunition, spares and other mission critical equipment forward. This option is rarely used, but is there to provide the CA-Bde commander with troop transport capabilities if needed.

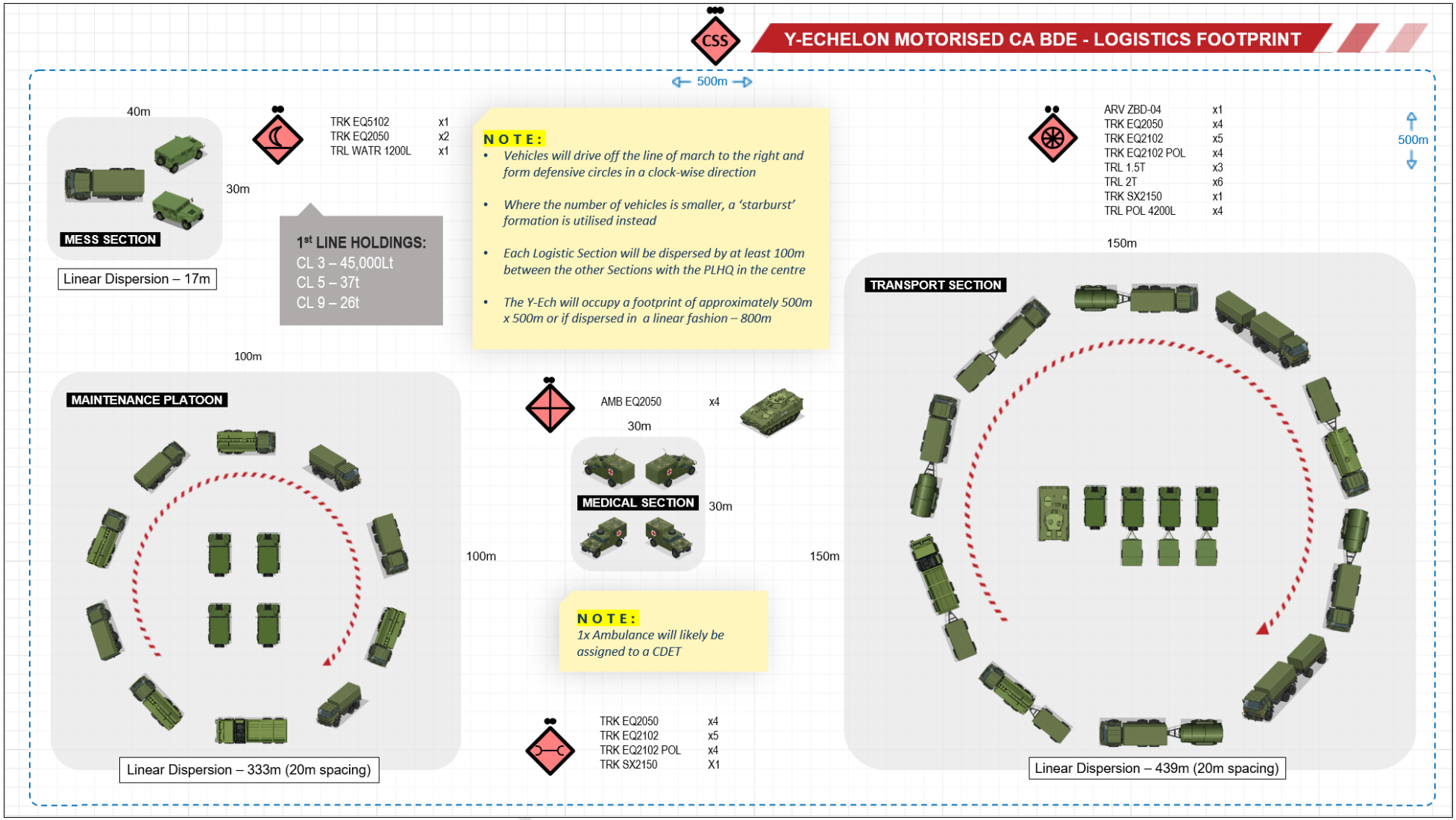
Section 3-8. CA-Bde logistics battlefield controls, dispersion and movement

3.32 Where the various logistic echelons are located are heavily dependent on the tactical situation. The forward company's L-Ech is typically located at least two tactical bounds behind the company HQ in the *Frontline* zone.

3.33 The battalion Y-Ech will be located in the rear edge of the *Frontline* zone or the forward edge of the *Reserve* zone between 10 – 15km from the company L-Ech. The locations remain dependent on the tactical situation.

3.34 The Y-Ech has a relatively large footprint (approximately 500m x 500m when dispersed, or 800m long in a linear fashion along a road). Due to their proximity to the frontlines, the Y-Ech will be dispersed as much as possible, but still be able to maintain some form of self-protection. Each section within the Y-Ech will form a protective circle (clockwise) or an outward facing star (starburst). Figure 3.13 provides a typical Y-Ech dispersion footprint.

Figure 3.14 Y-Ech (Motorised CA-Bde) dispersion footprint



3.35 The LSD will typically operate towards the rear of the *Reserve* zone in order to provide as close support to the forward battalions as possible without a requirement for a dedicated protective element from the CA-Bde. The LSD will be located approximately 10 – 20km behind the Y-Ech of the forward battalions (or up to 35km behind the forward edge of the battle area).

3.36 The LSD may be required to relocate every 24hrs depending on the rate of advance of the CA-Bde. Due to their location relatively far behind the frontlines, the LSD will be less dispersed compared to the Y-Ech and occupy a similar footprint of 500m x 500m with the vehicles more tightly packed in a carpark fashion, though it will have a longer linear dispersion of 1700m when alongside a road. Figure 3.14 provides a typical LSD dispersion footprint.

3.37 The RDs can be located between the forward edge of the battle area, all the way back to the RASG. They are the task-organised mobile logistic elements that will be moving frequently between the logistic echelons.

3.38 The RDs footprint will be relatively small at just 20m x 30m when stationary. However, due to their proximity to the frontlines, the spacing between vehicles in the RD will be greatly increased when on the move. This increases the RDs linear dispersion to 300m. Note that the RD will likely be under command of a security element (usually an infantry platoon from the supported battalion), so its dispersion will likely be larger. Figure 3.15 provides a typical RD dispersion footprint.

3.39 Movement control of all logistic elements in the *Reserve* and *Garrison* zones will be coordinated by the MP company. However, in the *Frontline* zone, movement control will be under the command of the lead battalions.

3.40 The typical locations for each of the CA-Bde logistic echelons is depicted in figures 3.16 and 3.17, depending on whether the CA-Bde is in the offence or defence. The terminology for zones will alter slightly between offence and defence, but the distances and effects remain the same.

Figure 3.15 LSD (Motorised CA-Bde) dispersion footprint

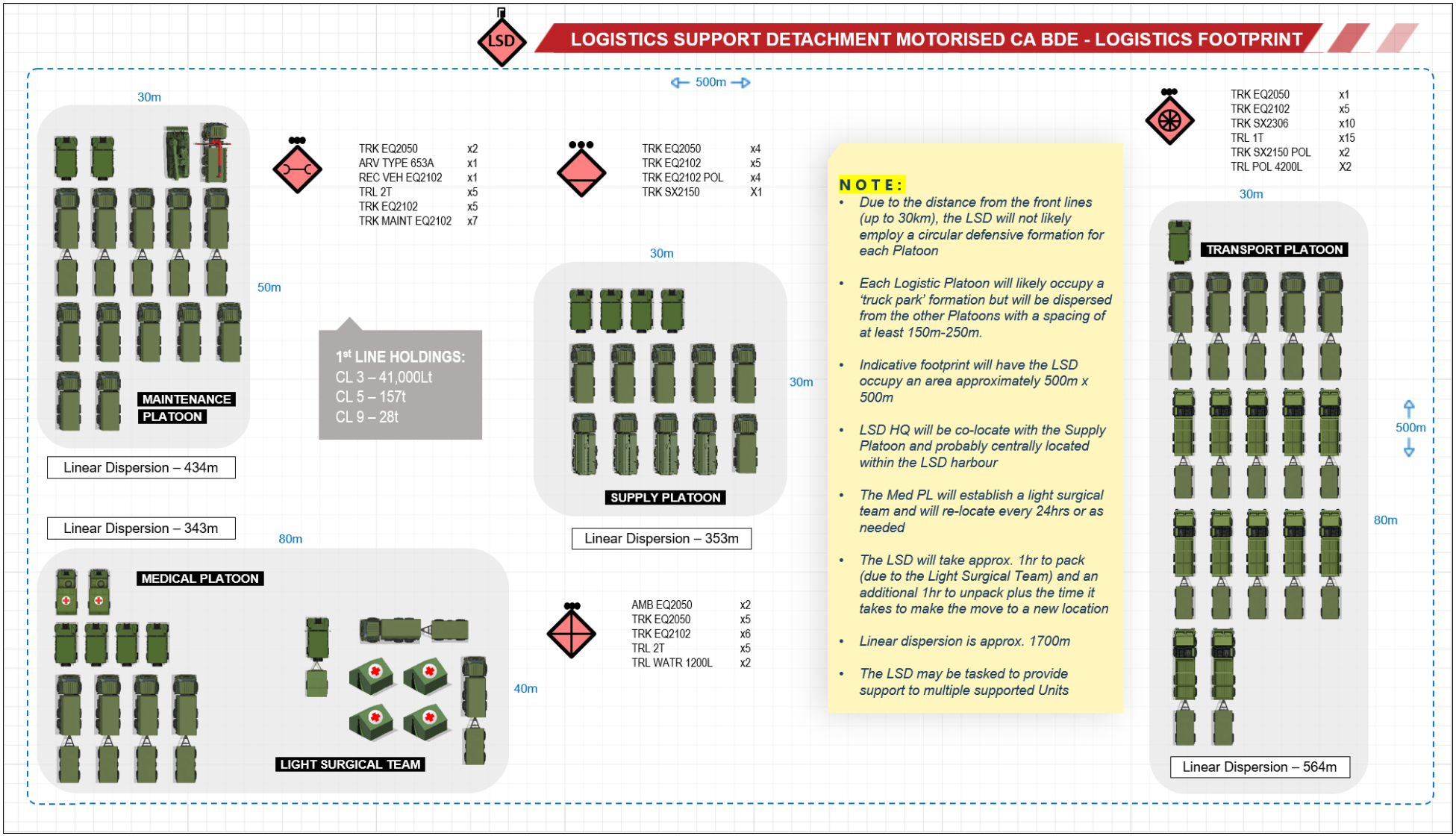


Figure 3.16 RD dispersion footprint

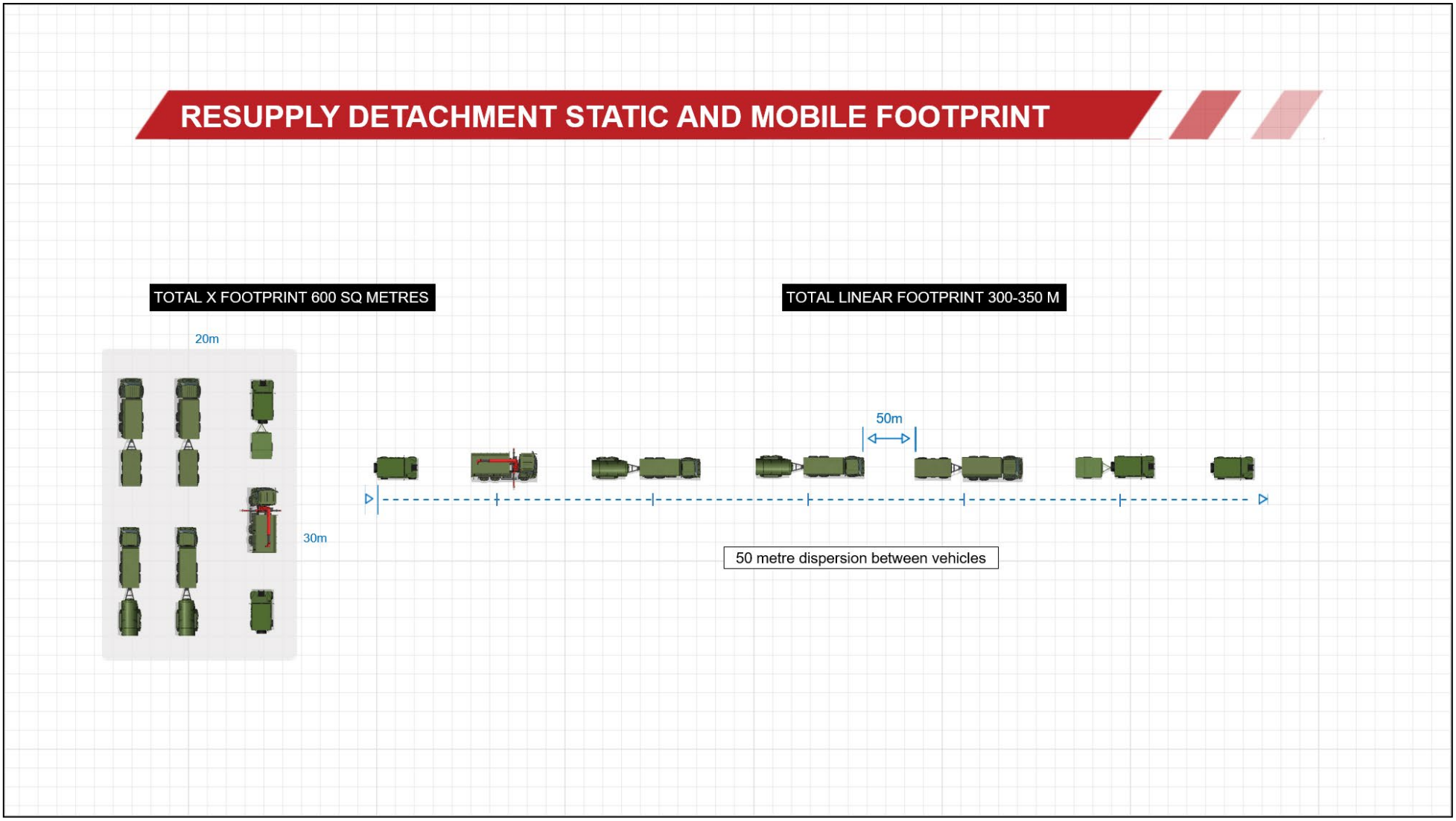


Figure 3.17 CA-Bde logistic echelon locations – Offensive Operations

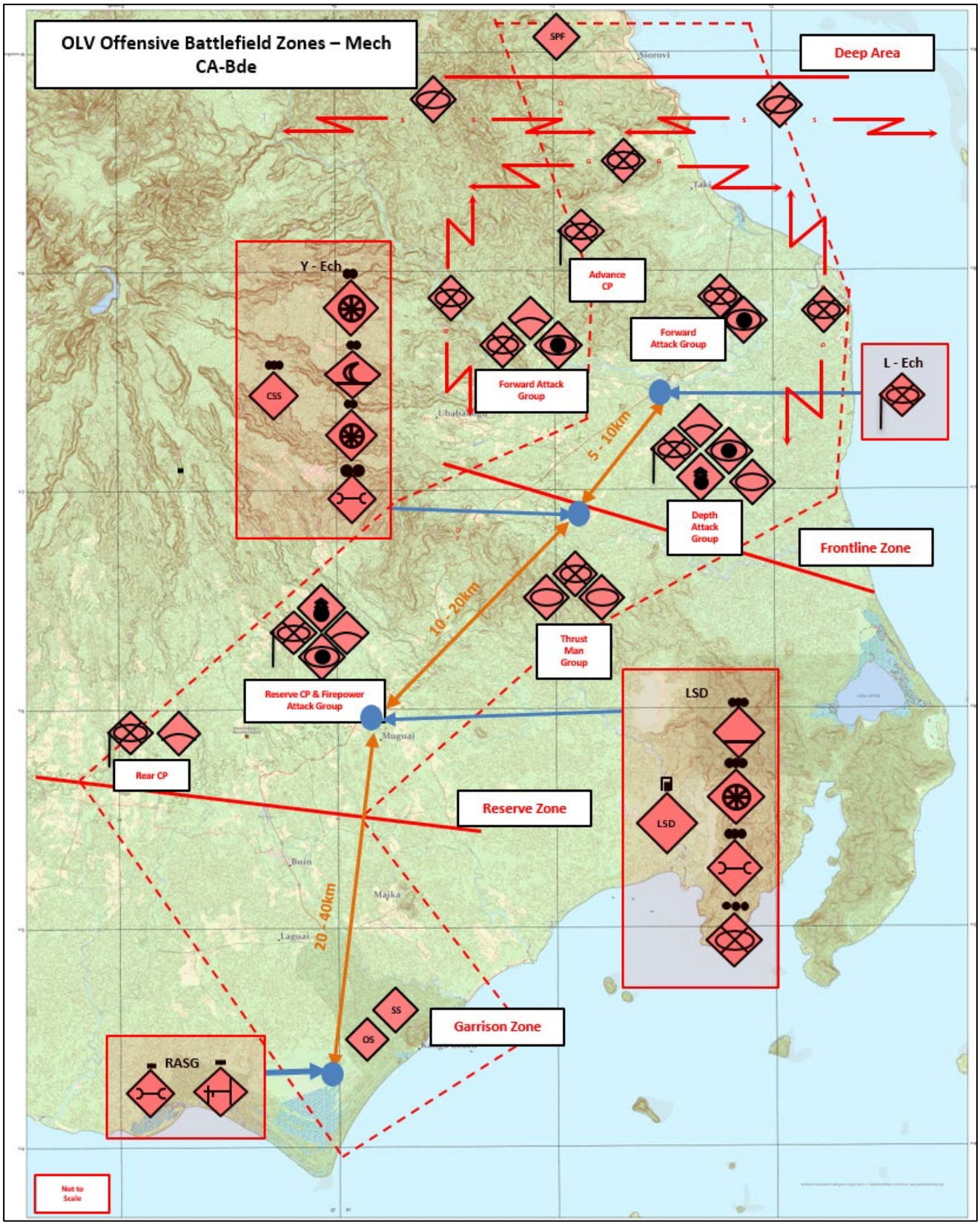
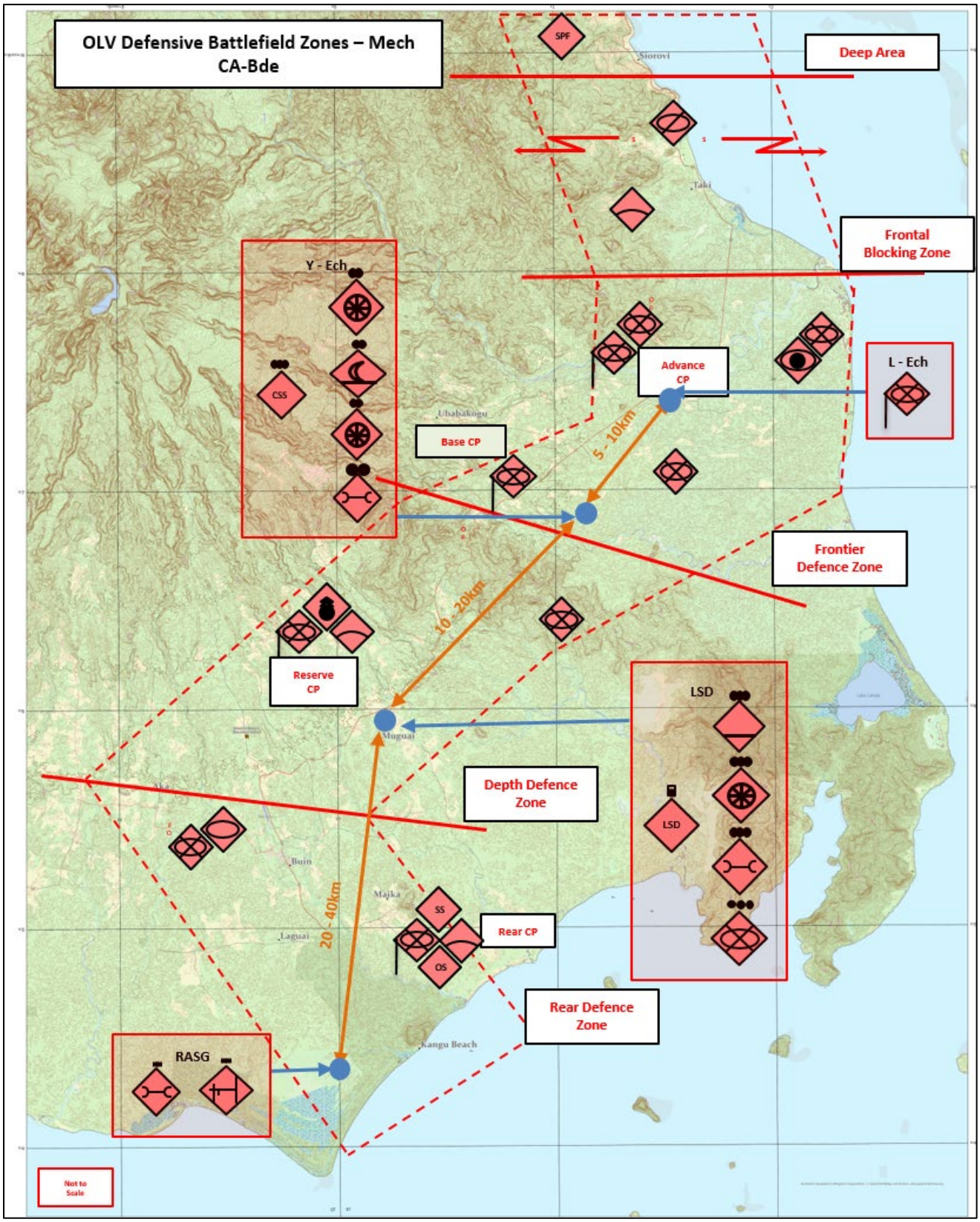


Figure 3.18 CA-Bde logistic echelon locations – Defensive Operations



Chapter 4

OPA Logistics Planning Tables

4.1 This chapter provides tabulated logistic data on each of the type of CA-Bde within the OPA.

Table 4.1 Summary of logistic capability by CA-Bde

CA-Bde Type	Rations – Req 3 Days (t)	Water – Req 3 days (kL)	Fuel Diesel (kL)	Fuel Petrol (kL)	Ammo Small Arms (t)	Ammo Hvy Weapons (t)	Fuel Haul Capacity (kL)	Water Haul Capacity (kL)	Adjusted Cargo Capacity less Hvy Eqpt (t)	Hvy Eqpt Tpt Capacity (t)	Formation Mass (t)
Mech CA-Bde	41	81	553	14	25	474	551	457	2145	560	26772
Mot CA-Bde	39	77	496	15	23	274	574	457	2435	560	23117
Armd CA-Bde	38	75	534	5	23	571	635	434	2143	-	28108
Amphib CA-Bde	41	81	519	3	26	466	585	434	1481	-	28593
Marine CA-Bde	35	70	381	2	23	343	379	105	1406	-	21609

4.2 **Rations requirements for 3 days** details how much rations expressed in tonnes is needed by each soldier within the CA-Bde for 3 days. For example, a Mechanised CA-Bde will need 41 tonnes of rations in total to feed each soldier for three days.

4.3 **Water requirements for 3 days** details in kilolitres how much water is needed by each soldier across the CA-Bde for three days (4L/day/soldier).

4.4 **Fuel Diesel** details the maximum amount of diesel fuel that is required by each CA-Bde if every vehicle fuel tank is filled to capacity. For example, the Armoured CA-Bde will need 534 kL of diesel to fill each vehicle fuel tank to maximum capacity.

4.5 **Fuel Petrol** details the maximum amount of petrol fuel that is required by each CA-Bde if every petrol powered vehicle in the CA-Bde is filled to capacity. For example, the Motorised CA-Bde will need 15kL of petrol to fill each petrol fuel tank to maximum capacity.

4.6 **Ammunition Small Arms** details how much small arms ammunition, expressed in tonnes, is carried by the CA-Bde as first line ammunition.

4.7 **Ammunitions Heavy Weapons**, details how much ammunition, expressed in tonnes, for heavy weapons (cannons, artillery, mortars, ATGMs, etc) is needed by the CA-Bde. For example, the Amphib CA-Bde requires 466 tonnes of heavy weapons ammunition to equip each major/heavy weapon system with first line ammunition.

4.8 **Fuel Haul Capacity** details how much POL, expressed in kL, the CA-Bde can carry on dedicated logistic vehicles and trailers. For example, the Marine CA-Bde can carry 379kL of fuel on dedicated logistic vehicles and trailers.

4.9 **Water Haul Capacity** details how much potable water, expressed as kL, a CA-Bde can carry in dedicated water storage vehicles and trailers. This does not include any other potable water that is carried in portable storage containers (e.g. 20L jerry cans).

4.10 **Adjusted Cargo Capacity** details the total lift capacity of the CA-Bde utilising dedicated logistic vehicles and trailers. For example, the Mech CA-Bde can lift 2145 tonnes of cargo.

4.11 **Heavy Equipment Transport Capacity** details, in tonnes, how much lift capacity a CA-Bde can provide in moving heavy vehicles (e.g. engineer plant equipment) internally to the CA-Bde. Note the lack of heavy lift capacity in the Armoured, Amphib and Marine CA-Bdes.

4.12 **Formation Mass** details the total mass of the CA-Bde based on combat loads (i.e. full ammunition and fuel loads).

Table 4.2 Summary of logistic limitation by CA-Bde

Logistic Limitations	Mech CA-Bde	Mot CA-Bde	Armd CA-Bde	Amphib CA-Bde	Marine CA-Bde
Fuel Haul Capacity: Start State Fuel	1.0x	1.1x	1.2x	1.1x	1.0x
Water Haul Capacity: Start State Water	5.7x	5.9x	5.8x	5.4x	1.5x
Adjusted Cargo Capacity: Start State Ammo	4.3x	8.2x	3.6x	3.0x	3.8x
Bounds that can be conducted (based on internal fuel carriage)	2x	2x	2x	2x	2x
Water – days usage carried	21	21	21	18	6
Rations – days carried at 10% total cargo capacity	27	32	29	20	21

4.13 **Fuel haul capacity** details how much fuel can be carried as spare in dedicated POL storage on a logistic vehicle or trailer (not including what can be carried in small containers such as 20L fuel containers) as a multiple of the total number of fuel carried internally by each vehicle in the CA-Bde. For example, the Armoured CA-Bde can carry 1.2x fuel on mobile dedicated POL storage (e.g. POL trailer, SX2150 POL) of what the Armoured CA-Bde vehicles would have in their fuel tanks at full capacity.

4.14 **Water haul capacity** is based on the multiple of how much water can be carried in dedicated logistic vehicles and trailers to support the requirement for each soldier in the CA-Bde for 4Lt water per day. For example, the Motorised CA-Bde can carry up to 5.9x water needed to supply each soldier in the CA-Bde to last 21 days.

4.15 **Adjusted start state ammo** details how much additional ammunition expressed as a multiple of tonnage resupply that a CA-Bde can carry on dedicated logistic vehicles and trailers. For example, a Mechanised CA-Bde can carry an additional 4.3x tonnage of ammunition to resupply each weapon system at least another four times.

Table 4.3 Summary of tactical range by CA-Bde

CA Brigade Type	Range (before refuel needed)
Motorised (Light) CA-Bde	150km
Mechanised (Medium) CA-Bde	150km
Armoured (Heavy) CA-Bde	88km
Amphibious CA-Bde	88km
Marine CA-Bde	49km

4.16 **Tactical range** is defined as the range that a CA-Bde will move under tactical conditions which includes movement of less than 40km/h, driving off-road where feasible, tactical bounds taken by lead elements, and maintaining one third of fuel within each fuel tank as a commander's reserve. These figures do not represent road moves under optimum conditions, but instead represent real-world tactical movement considerations where fuel consumption will be considerably higher. The limits of range have been calculated based on the primary combat vehicles for each CA-Bde type. Wheeled vehicles naturally will travel further than tracked vehicles for a given fuel capacity.

Annex A

Combined Arms Brigade Logistic Systems

1. The OPA CA-Bde has several types of dedicated logistic systems/platforms available. For resupply vehicles, they can generally be broken down into light, medium and heavy wheeled utility vehicles.

2. **Light Utility Vehicles**. The standard OPA light logistic vehicle is the EQ2050 light utility truck. The EQ2050 is a direct copy of the US High Mobility Multi-purpose Wheeled Vehicle (HMMWV). These vehicles are designed to operate in rear echelons or areas where engagements are unlikely. They can be up-armoured, but unlikely since the dedicated vehicle in the motorised CA-Bdes is the CSK-141.

3. Instead the EQ2050 can be found in the HQs from company to brigade level and used as part of the L-Ech, Y-Ech and LSD as a general utility vehicle. It can carry up to 1.25t of stores and passengers and would typically tow a trailer of up to 1t capacity.

Figure A.1 EQ2050 Light Utility Truck

4. **Medium Utility Vehicles**. The standard medium utility vehicle for the OPA CA-Bdes is the EQ2102. The EQ2102 is six wheeled truck capable of carrying up to 5t of cargo on-road and 3.5t off-road. The back deck can be configured to take palletised stores and some have been configured to utilise an automatic palletised drop-off system (similar to the US Palletised Load System, or the Australian Integrated Load Handling System). There are several variants and configurations of this vehicle that are used for different purposes (e.g. maintenance/repair, POL, water, field kitchen). The EQ2102 may also be towing a trailer of up to 2t. The OPA will continue to modify this platform to allow for better transportation of palletised stores. The EQ2102 can also be utilised as a troop transport vehicle.

5. The EQ2102 is usually found at the company and battalion level logistic echelons, though they can be also found in quantity are the brigade RASG.

Figure A.2 EQ2102 Medium Utility Truck

OLVANAN PEOPLES ARMY

EQ2102 6X6 MEDIUM UTILITY TRUCK	
Manufacturer	Olvana
Crew	1 + 4 Passengers (in cab)
Weapons	12.7mm HMG
Mass	7.1t
Dimensions	Length: 7.825m, Width: 2.5m, Height: 2.925m
Speed	90km/h
Sensors	Nil
Protection	Nil
Notes	5t cargo capacity (road) 3.5t cargo capacity (cross-country) Can tow 2t trailer

6. **Heavy Utility Vehicles**. The OPA CA-Bdes utilise a variety of heavy utility vehicles, but the main two types are the six wheeled SX2150 and the larger eight wheeled SX2306. The SX2150 is the more common of the two and can generally be found at the Y-Ech and LSD. With a cargo capacity of up to 10t on-road and 5t off-road, the SX2150 can also tow a trailer of up to 6.5t. This vehicle is more suited supporting units within the CA-Bde that require heavy ammunition expenditure such as the field artillery battalion or air defence battalion. Like the EQ2102, the SX2150 can also be equipped with a palletised drop-off system.

7. The SX2306 is a more specialised heavy utility vehicle and is typically found within the LSD and RASG. With a heavier cargo capacity of 20t on-road and 10t off-road, this vehicle is predominantly used to carry ammunition and heavy spare equipment such as replacement engines and parts.

Figure A.3 SX2150 Heavy Utility Truck

OLVANAN PEOPLES ARMY

SX2150 6X6 HEAVY UTILITY TRUCK	
Manufacturer	Olvana
Crew	1 + 3 Passengers (in cab)
Weapons	Nil
Mass	20t (max weight)
Dimensions	Length: 7.12m, Width: 2.52m, Height: 3.05m
Speed	87km/h
Sensors	Nil
Protection	Armoured cab
Notes	10t cargo capacity (road) 5t cargo capacity (cross-country) Can tow 6.5t trailer

Figure A.4 SX2306 Heavy Utility Truck

OLVANAN PEOPLES ARMY

SX2306 8X8 HEAVY UTILITY TRUCK	
Manufacturer	Olvana
Crew	1 + 1 Passenger (in cab)
Weapons	Nil
Mass	30t (max weight)
Dimensions	Length: 10m, Width: 2.5m, Height: 2.6m
Speed	100km/h
Sensors	Nil
Protection	Armoured cab
Notes	20t cargo capacity (road) 10t cargo capacity (off-road)

8. **Recovery Vehicles**. The CA-Bdes will also utilise dedicated recovery vehicles. These vehicles will be limited in quantity and be commensurate with the primary combat vehicle of the supported CA-Bde. For example, the mechanised CA-Bdes will be equipped with ZBL-09 Armoured Recovery Vehicle (ARV) variants, whilst the armoured CA-Bdes will be equipped with a Type-653A and ZDB-04 ARV variants.

9. It is interesting to note that the number of recovery vehicles within each CA-Bde varies widely and will be dependent on the reliability and ease of recovery of the CA-Bde's primary combat vehicle. For

example, there are only one and two dedicated recovery vehicles within the motorised CA-Bde Y-Ech and LSD respectively due to the ability for the self-recovery of light wheeled vehicles (CSK-141) within the CA-Bde. Conversely, the mechanised, armoured and amphibious CA-Bdes have significantly more dedicated recovery vehicles (six in the Y-Ech and two in the LSD) available.

10. **Logistics Management System**. Like a battle management system (BMS), the OPA CA-Bdes utilise a logistics management system (LMS) in parallel to the BMS. This system provides real-time data on the current holdings of the CA-Bde. However, this system still requires human input. Whilst inventory management utilising barcodes and serial numbers can be managed relatively easily within the RASG, as the supply chain moves closer to the front lines, the ability to accurately assess holdings of stores becomes more difficult. The L-Ech and Y-Ech will typically have to manually update their holdings on the LMS. The LSD will have more opportunity to utilise automated systems to keep their inventory holdings up to date.

11. This does not take into account disruption due to enemy actions. Storage depots destroyed due to enemy action will require manual input. Whilst the OPA has moved away from the Donovian doctrinal ‘scientific’ method of logistic planning (mandated ‘push’ logistics), it does still utilise expenditure tables from which to rely upon when the LMS cannot keep up with the changing tactical situation.

Annex B

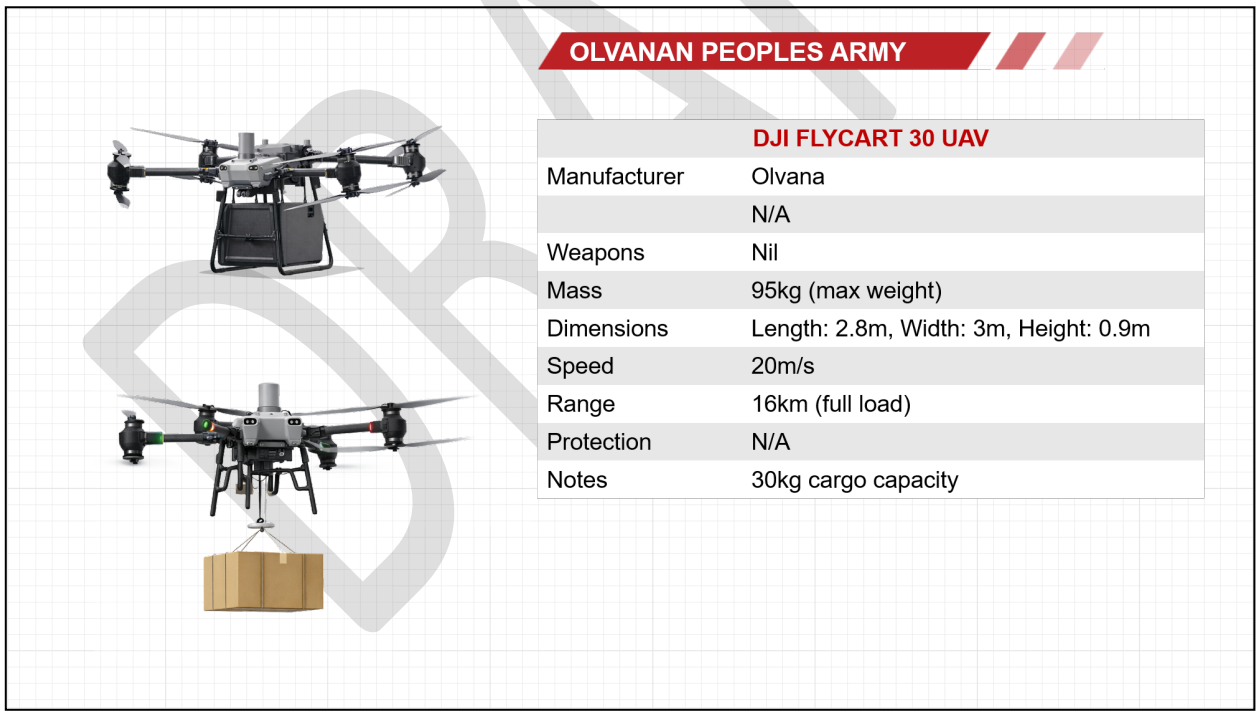
OPA Future Logistics Development

1. **Unmanned Systems**. The OPA has begun exploring the use of unmanned systems to complement, not necessarily replace, existing logistics systems. These include the use of UAVs to drop-off critical supplies such as just-in-time medical stores (bloods, plasma) at the point needed, or ammunition and rations. This provides the immediate flexibility to resupply troops close to the frontlines with essential stores (mainly CL 1, 5, and 8) without the need to put vulnerable logistic vehicles and troops closer to the front lines.

2. Systems such as the DJI FlyCart 30 is a commercial drone that can carry up to 30kg of payload with a range of 16km with a full load (under optimum conditions). Whilst this is not enough to supply heavier CL 5 or CL 3 stores, it does provide an immediate resupply capability where it is needed. These resupply drones are likely to be employed at the Y-Ech and LSD level and will fulfil the role conducted by the RD. These UAVs can also be utilised to terrain where normal logistic vehicles will have trouble accessing, such as jungle terrain. Caching of stores for dismounted troops in dense jungle terrain can also be utilised with these systems.

3. Note however, that these logistic UAVs are typically only for use in delivering stores. There is no provision as yet for the ability for these UAVs to be able to backload stores from the frontlines. This includes casualties.

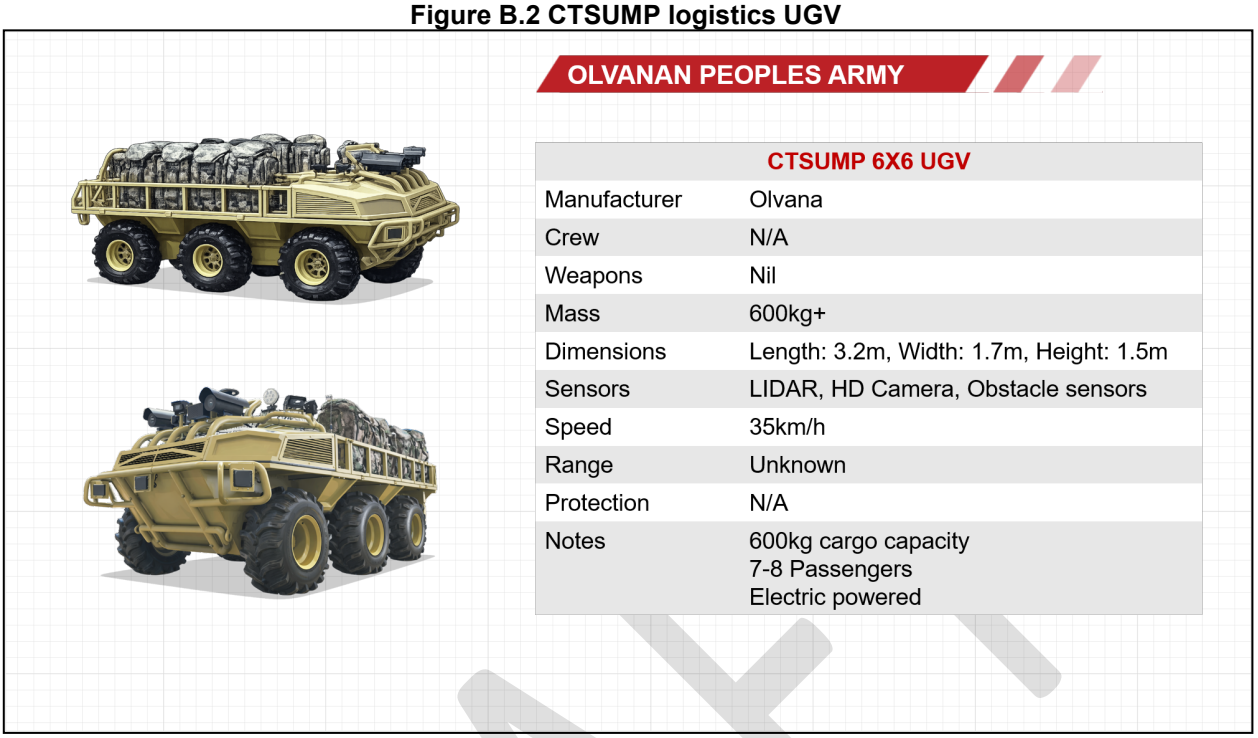
Figure B.1 Fly Cart 30 logistics UAV



4. The use of Unmanned Ground Vehicles is also under exploration within the OPA. UGVs have been used extensively for EOD purposes, but their use to provide resupply to frontline troops is also being explored. UGVs have been used in factories and distribution centres in Olvana as part of the supply chain in the manufacturing sector. They may see use at forward bases such as APOD/SPOD to unload/load and move stores. However, their use closer to the frontlines is still limited as UGVs have tended to be used in a combat role on the frontlines rather than as resupply vehicles. That may change. One advantage that UGVs have over UAVs is the ability to backload stores, including casualties. The OPA has not yet fielded UGVs for use in casualty evacuation. Systems such as the Crew Task Supported Unmanned Mobile Platform (CTSUMP) 6x6 wheeled UGV is currently being trialled, mainly as a ‘mule’ to carry stores integral

to dismounted infantry platoons. These systems may be repurposed to provide resupply in a more distributed manner instead of a centralised resupply such as used by the RDs.

Figure B.2 CTSUMP logistics UGV



5. **Space-based Delivery Systems.** With the costs for the delivery of payloads into space reducing, there is the possibility of utilising rocket systems to delivery logistic stores from mainland Olvana to almost anywhere in the world within hours. Whilst this may sound very science fiction, the technology does exist and has been there for decades. It has only been in the last few years that the cost per payload has decreased to make delivery via space-based systems feasible.

6. There are of course practical issues with this method of delivery. In a large scale conventional war, launching rockets into space tends to send a signal that can be mistaken for an escalation for nuclear war. If this system is utilised by the OPA, it will likely limit it to theatre logistics and not at the tactical level.

7. **3D Printing.** Olvana is the world leader in commercial 3D printing. Whilst 3D printing has mainly been the realm of hobbyists and small enterprises, its use to mitigate the conundrum of spare parts supplies in remote areas (such as expeditionary operations within the Indo-Pacific) is being considered by the OPA. 3D printing spare parts close to the point of need negates the requirement for storing multiples of spare parts at forward distribution centres. All that is required to be stored are the raw 3D printing materials such as the plastics or metals needed, and the part design criteria within the software. The RASG can print the parts needed and reduce the amount of overall stores required, reducing waste. It is unlikely that 3D printing will be conducted by the LSD.

8. This is still an area yet to be explored by many armies and some trials have been conducted to look at where 3D printing can be used to supplement existing supply chains to support maintenance of vehicles and equipment in the field.

Abbreviations

Term	Definition
2IC	Second in Command
AME	Are-Medical Evacuation
APOD	Air Point of Debarkation
BMS	Battlefield Management System
CA-Bde	Combined Arms Brigade
CA-Bn	Combined Arms Battalion
CPERS	Captured Person
CS	Combat Support
CSS	Combat Service Support
IDP	Internally Displaced Person
L-Ech	*Lian Zhi Chi* (Company Support) Echelon
LMS	Logistics Management System
LSD	Logistics Support Detachment
MP	Military Police
OAP	Olvanan National Police
OCP	Olvanan Communist Party
OPA	Olvanan People's Army
PW	Prisoner of War
RASG	Rear Area Support Group
RD	Resupply Detachment
SPOD	Sea Point of Debarkation
WW2	World War 2
Y-Ech	*Ying Zhi Chi* (Battalion Support) Echelon
Z-Ech	*Zhandou* (Combat) Echelon