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MP 0.5.1 TD



**MALAYSIAN ARMY
MILITARY APPRECIATION
PROCESS (MAP)**

2017

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MALAYSIAN ARMY MILITARY APPRECIATION PROCESS (MAP)

2017

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FOREWORD

The Malaysian Army in particular and the Malaysian Armed Forces in general, has conformed and focus its doctrines to the Australian method of study in the military sciences and art of warfare. Doctrines need to be reviewed constantly in view of the ever-changing environment and organisational changes.

Likewise the study of military decision making, i.e. the appreciation, has been taught in most of our training establishments. But by virtue of our officers training background this decision making process has not been standardised or documented in its true form. Presently this process is being imparted to officers and other ranks at their various training schools. It has been found that there are variants in the thought process at the basic level (cadet training), intermediate level (various training institutions) and at the armed forces or advance level (Staff College).

In view of this, the Army Training and Doctrine HQ feels that there should be a formal and standardised approach and format used throughout the army.

The aim of this manual is to provide guidance for the Malaysian Army Military Appreciation Process (MAP).

This manual is for use as a general reference for officers and NCOs and by training establishments as the reference for teaching the MAP.

This manual is concerned with the application of the MAP and Intelligence Preparation of Operational Environment (IPOE) across the Spectrum of Conflict including peace operations. It also describes both the Staff and Individual decision making process and the method of applying the

process to produce viable and supportable military plan. The description of the IPOE in this manual is for the purpose of applying it to the MAP. The detail of the entire IPOE process will be describe in a proposed manual soon.

**DEPARTMENT OF ARMY
MINISTRY OF DEFENCE**

ISSUED BY MY COMMAND

A handwritten signature in black ink, featuring a large, stylized 'Z' or 'S' shape with a vertical line extending downwards from the center.

**DATO' SRI ZULKIPLE BIN HJ KASSIM
General
Chief of Army**

PREFACE

The aim of this publication is to provide guidance on the Military Appreciation Process (MAP). While the focus remains primarily on the staff and individual processes, this publication also outlines the support provided by battlespace operating system planning.

This manual is for use as a general reference for Officers and Non-Commission Officers (NCOs) and by training establishment as reference for the foundation of instruction in the MAP. The MAP highlighted here in this manual is an introduction to a part of the entire appreciation process. Not all levels in the Army will apply MAP in conducting their respective operations. It should be made known here that MAP is applied to those formations/units that have the elements to conduct independent operations or is self-contained. This publication should be used as a general reference by Officers and NCOs and by training establishments as the foundation for instruction in the MAP. Here in the Malaysian Army context battalion and above conducts Staff Military Appreciation Process (SMAP), where these unit/formations have the relevant staff officers/departments to conduct SMAP. Whereas, for Individual Military Appreciation Process (IMAP) is used when commanders of echelons without staff (sub-unit and below) plan military tasks and when commanders of echelons with staff conduct individual planning in order to lead the efforts of their staff.

The examples introduce in this manual for both the offensive and defensive operations (format of appreciation) and MAP are non-exhaustive. Users of this manual should take the initiative to expand on these examples to come up with tactically sound solutions. This includes two methods of applying the MAP (staff and individual). The focus of this manual is on formal planning. The role of intuition in planning and decision-making is recognised. Where appropriate, selected examples of the outputs of the staff and individual military appreciation process are included.

AMENDMENT CERTIFICATE

1. Proposal for amendment of Manual MP 0.5.1 TD are to be forwarded to:

Kolonel Doktrin
Markas Latihan Tentara Darat
Kem Segenting
71050 PORT DICKSON

Amendment List		Amended By		Note
Paragraph	Date	Name	Initials	
(a)	(b)	(c)	(d)	(e)

GLOSSARY

Section 1 : Acronyms and Abbreviation

AA	Avenues of Approach
AD	Air Defence
AI	Area of Interest
AO	Area of Operation
AOE	Analysis Operational Environment
ASCOPE	Area, Structure, Capabilities, Communications, Organisations, People, Events
BG	Battle Group
BOS	Battlefield Operating System
CAttk	Counter Attack
CAR	Combine Arms Rehearsal
CBRN	Chemical, Biological, Radioactive, Nuclear
CC	Critical Capability
CCIR	Commander's Critical Information Requirement
CDP	Commander's Decision Point
CI	Counter Intelligence
CIS	Communication and Information System
C-RSI	Counter-Reconnaissance, Surveillance, Intelligence
CIMIC	Civil-Military Cooperation
CMAP	Combat Military Appreciation Process
COA	Course of Action
COG	Centre of Gravity
COS	Chief of Staff
CONOPS	Concept of Operation
CR	Critical Requirements
CS	Close Support
CSS	Combat Service Support
CT	Combat Team

CV	Critical Vulnerability
DP	Decisive Point
DPT	Decision Point
DSO	Decision Support Overlay
DZ	Drop Zone
EA	Engagement Area
EEFI	Essential Elements of Friendly Information
ET	Essential Task
EW	Electronic Warfare
FASSD	Feasible, Acceptable, Suitable, Sustainable, Distinguishable
FE	Force Element
FEE	Force Element Estimate
FF	Friendly Forces
FFIR	Friendly Forces Information Requirement
FRAGO	Fragmentary Orders
FS	Fire Support
FSC	Fire Support Coordination
FSCL	Fire Support Coordination Line
HPT	High Payoff Target
HQ	Head Quarters
HVT	High Value Target
HVTL	High Value Target List
IED	Improvised Explosive Device
IMAP	Individual Military Appreciation Process
IPOE	Intelligence Preparation of Operational Environment
IR	Intelligence Requirement
JIPOE	Joint Intelligence Preparation of Operational Environment
LOO	Line of Operation
LZ	Landing Zone
MAP	Military Appreciation Process
MC	Mobility Corridor

MCOO	Modified Combined Obstacle Overlay
MDCOA	Most Dangerous Course of Action
ME	Main Effort
MLCOA	Most Likely Course of Action
MOP	Measure of Performance
NAI	Named Area of Interest
OPLAN	Operation Plan
ORBAT	Order of Battle
ORM	Operational Risk Management
PIR	Priority Information Requirement
ROC	Rehearsal of Concept
ROE	Rules of Engagement
SE	Supporting Effort
SMAP	Staff Military Appreciation Process
SMESC	Situation, Mission, Execution, Service Support, Command and Signals
SOM	Scheme of Manoeuvre
SOP	Standard of Procedure
TAI	Target Area of Interest
TASKORG	Task Organisation
TCV	Targetable Critical Vulnerability
TPL	Time Phase Line
TTP	Tactic, Techniques and Procedures

Section 2: Terms

Adversary

A party acknowledged as potentially hostile to a friendly party and against which the use of force may be envisaged.

Air Defence

All measures designed to nullify or reduce the effectiveness of hostile air action.

Area of Operation

The AO is the geographic area where the commander is assigned the responsibility and authority to conduct military operations.

Area of Interest

The AI is the geographical area (including airspace) from which information and intelligence are required for the planning and conduct of our operations within AO. The AI is larger than the AO. It is defined such as other friendly or task force locations critical to achieve the higher commander's intent, anticipated future task locations, the time frame within which to conduct operations and the location of any friendly force activities or capabilities that could influence operations during that time, locations of enemy forces able to project power or move into AO within the time frame of our operation, the fact that the AI can be subdivided into sub-AIs such as ground, air and political AIs to focus and coordinate intelligence gathering as required and the fact the AIs are not bounded by any restrictions other than the identification of any factor that may threaten or assist in the accomplishment of the commander's intent.

Battlespace

The geographic locality that contains the environmental and non-environmental domains environment, factors, and conditions that must be understood to successfully apply combat power, protect the force or complete the mission. The

environmental domains are sea, land, air and space. The non-environmental domains are the information domain, electromagnetic spectrum and time.

Battlespace Operating System

The combination of personnel, collective training, major systems, supplies, facilities, and command and management organised, supported and employed to perform a designated function as part of a whole.

Branch

An option for a particular phase within a line of operation of a campaign or operation designed to anticipate decisive points and provide the commander with the flexibility to maintain the initiative. Note: A branch is a deviation from, and then return to the same line of operation.

Combat Service Support

The support provided to deployed forces, primarily in the fields of administration and logistics.

Combat Support

The provision of air base services and other operations support activities necessary to sustain air operations from major and small air bases in Malaysia and airheads in both Malaysia and abroad.

Command and Control

The process and means for the exercise of authority over, and lawful direction of assigned forces.

Centre of Gravity

That characteristic, capability or locality from which a force derives its freedom of action, strength or will to fight.

Critical Capabilities

Inherent capabilities enabling a Centre of Gravity (COG) to function as such.

Critical Requirements

Essential conditions, resources and means for a critical capability to be fully operative.

Critical Vulnerability

A vulnerability in a force that if destroyed, captured or neutralised will significantly undermine the fighting capability of the force and its Centre of Gravity.

Commander's Critical Information Requirements

The information and intelligence requirements for which a commander has an anticipated and stated priority in planning and decision making. The CCIR are normally expressed as three types of information:

Priority Intelligence Requirements

Questions about the enemy or environment for which there is a priority need to collect information and produce intelligence.

Friendly Forces Information Requirements

Information about the activities or capabilities of own or adjacent units.

Essential Elements of Friendly Information

Information regarding friendly forces that needs to be denied to the enemy's information gathering systems for the success of the operation (for example, the location of own reserves).

Constraint

An action imposed by a superior commander or another authority which must be undertaken. Note: May be derived from a specified or an implied task, for example, tasking of a subordinate commander to maintain a reserve for employment that may be employed by the superior commander on order.

Control Measures

For counter insurgency, restrictive measures imposed upon a civil population and relating to such matters as movement, registration or the possession of food stocks or weapons. Directive given graphically or orally by a commander to subordinate commands in order to assign responsibilities, coordinate fires and manoeuvre, and to control combat operations.

Course of Action

A possible plan open to an individual or commander that would accomplish, or is related to the accomplishment of the mission. Note: It is initially stated in broad terms with the details determined during staff wargaming.

Commander's Intent

A personal expression by the commander of why and how an operation is to be conducted, and the desired outcomes a clear understanding of the commander's intent facilitates effective directive control and is critical to subordinate planning and conduct of operations. Whilst very much a personal statement reflective of the style of the commander, it is normally expressed in the form of purpose, method and endstate.

Purpose

The purpose explains why an operation is being conducted and is usually derived from the "in order to" element of the mission statement and the higher commander's intent. It explains the contribution of the operation to the higher commander's plan.

Method

A description of the method by which the commander achieves his/her purpose explained in terms of effects created on the enemy. The method focuses on the enemy rather than the ground or friendly troop schemes of manoeuvre. Whilst it is inextricably linked to the scheme of manoeuvre it does not give detailed tasks or actions. Rather it uses verbs like dislocate, disrupt and pre-empt to describe effects desired on the enemy. It can include a description of the enemy COG, the critical vulnerabilities that will be targeted to undermine this COG and the decisive events that will be achieved.

Endstate

The endstate describes the commander's desired outcome for the operation or the state, which the commander wishes to exist when the operation is complete. It defines the success criteria of the operation and may include descriptions of status and locations of both enemy and friendly forces. It will also provide information regarding the disposition of forces for transition into the next phase of operations.

Critical Events

Where and when the enemy was expected to take major actions or make important decisions during an anticipated COA. These events may be developed or grouped into enemy decisive events, and provide a focus for detailed COA analysis.

Concept of Operation

A verbal or graphic statement, in broad outline of a commander's assumption or intent in regard to an operation of series of operations. The concept of cooperation frequently is embodied in campaign plans and operation plans; in the latter case particularly when the plans cover a series of connected operations to be carried out simultaneously or in succession.

The concept is designed to give an overall picture of the operation. It is included primarily for additional clarity of purpose. Frequently referred to as commander's concept.

Commander's Decision Point

A point in time and space at which a commander must make a decision in order to influence the operation in a particular target area of interest. Note: Must be offset from the point where the action has to take place, in order to allow sufficient lead-time for action to be initiated.

Decisive Points

A significant operational milestone that exists in time and space or the information domain which constitutes a key event, essential task, critical factor or function that, when executed or affected allows a commander to gain a marked advantage or contributes to achieving success.

Environment

The surroundings in which an organisation operates including air, water, land, natural resources, flora, fauna, humans and their interrelation.

Essential Tasks

Those tasks, which must be completed to allow achievement of the mission or superior commander's intent.

Force Element

A component of a unit or an association of units having common prime objectives and activities.

Fragmentary Orders

An abbreviated form of an operation order, issued as required, that eliminates the need for restating information contained in a basic operation order. It may be issued in sections.

High Pay Off Target

Target whose loss to the enemy will greatly contribute to the success of the friendly course of action.

High Value Target

An asset that is critical to the enemy commander in the successful completion of a course of action or operation. HVTs are ranked in assessed order of importance in a HVT matrix. The HVT matrix forms the basis of friendly force targeting process and is refined throughout the MAP as the enemy courses of action are developed.

Implied Tasks

Tasks that have not been specifically directed but are considered to be required to achieve an allocated mission, another task or the superior commander's intent.

Information Operations

The operational level planning and execution of coordinated, synchronised and integrated lethal and non-lethal actions against the capability, will and understanding of target systems and/or target audiences, particularly decision-making, while protecting and enhancing our own.

Information Requirements

Those items of information, which need to be collected and processed in order to meet the Intelligence Requirements (IR) of a commander and are levied by HQs during the IPOE on those formations/units/sub-units most likely to be able to gain the information required.

Intelligence Requirements

Questions about the enemy or environment for which there is a need to collect information and produce intelligence. IR fills a gap in the commander's knowledge and understanding of the enemy or environment. At the operational and tactical levels, IR are usually expressed as specific questions about an

enemy's order of battle, deployments and intentions and local environmental conditions. An IR may generate multiple information requirements or if the IR itself is a simple one, it may translate directly into a single information requirement.

Line of Operation

In a campaign or operation, a line linking decisive points in time and space on the path to the centre of gravity.

Main Effort

A concentration of forces or means, in a particular area and time, where a commander seeks to bring about a decision.

Method

A description of the means by which the commander achieves their purpose explained in terms of effects created on the enemy.

Named Area of Interest

The geographical area where information that will satisfy a specific information requirement can be collected. NAI cover the areas where critical events are likely to occur and are usually selected to capture indications of enemy courses of action. They may also relate to determining conditions on the battlefield. NAI focus the reconnaissance, surveillance and intelligence efforts and as such must be able to be covered by available assets. They can be a point, route or area and are refined and updated progressively as information requirements are met.

Specified Task

Tasks that have been specifically directed by a superior commander.

Targeted Area of Interest

The geographical area where key enemy assets or BOS capabilities are vulnerable to targeting by friendly forces. TAIs can be developed into engagement areas and are cross referenced to the relevant NAIs and DPTs and the HVT matrix.

Tempo

The relative measure of the abilities of opponents to understand, decide and implement appropriate adaptations to plans, dispositions or postures.

Threat

A potential event or intention that could adversely affect the security of a facility, asset or function, e.g. loss, damage, destruction, reduced capacity, compromise, etc.

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No. MP 0.5.1 TD

Headquarters
Malaysian Army Training Command
PORT DICKSON, January 2017

MALAYSIAN ARMY MILITARY APPRECIATION PROCESS

CONTENTS

	Paragraph	Page
Conditions of Release		ii
Foreword		iii
Preface		v
Amendment Certificate		vi
Glossary		vii
Contents		xix
Reference		xxv

CHAPTER 1

INTRODUCTION

Sections		Paragraph	Page
1.	General	101	1 - 1
2.	Application of Military Appreciation Process	108	1 - 3
3.	Conclusion	112	1 - 5
 Annex			
A.	Overview of Staff Military Appreciation Process (SMAP)		1A - 1
B.	Hypothetical Example		1B - 1

CHAPTER 2**INTELLIGENCE PREPARATION OF OPERATIONAL
ENVIRONMENT (IPOE)**

Sections	Paragraph	Page
1. General	201	2 - 1
2. IPOE – Step 1: Define The Operational Environment	212	2 - 4
3. IPOE – Step 2: Describe The Operational Environment Effects	224	2 - 11
4. IPOE – Step 3: Evaluate The Enemy	243	2 - 31
5. IPOE – Step 4: Determine Enemy Course of Action	260	2 - 39
6. Conclusion	296	2 - 60

Annex

A.	Symbol Used For IPOE	2A - 1
B.	Example IPOE Briefing Format	2B - 1
C.	Example of MCOO	2C - 1
D.	Example Conventional Doctrinal Threat Overlay	2D - 1
E.	Example of Intelligence Collection Plan	2E – 1

CHAPTER 3**STEP 1: PRELIMINARY ANALYSIS**

Sections		Paragraph	Page
1.	General	301	3 - 1
2.	Outputs	303	3 - 1
3.	Conclusion	309	3 - 3
Annex			
A.	Preliminary Analysis Aide Memoire		3A - 1
B.	Preliminary Analysis Briefing Format		3B - 1

CHAPTER 4**STEP 2 : MISSION ANALYSIS**

Sections		Paragraph	Page
1.	General	401	4 - 1
2.	Mission Analysis Process	406	4 - 3
3.	Mission Analysis Outputs	443	4 - 15
4.	Conclusion	458	4 - 21
Annex			
A.	Mission Analysis Aide- Memoire		4A - 1
B.	Roles and Responsibilities of Key Staffs		4B - 1
C.	The Centre of Gravity (COG) Construct and Analysis		4C - 1

D.	The Commander's Intent Statement	4D - 1
E.	Acceptable Degree of Risk (Operational Risk)	4E - 1
F.	Targetable Critical Vulnerability and Essential Task List	4F - 1
G.	Example Decisive Points Method Matrix	4G - 1
H.	Mission Analysis Briefing Format and Sequence	4H - 1

CHAPTER 5

STEP 3: COURSE OF ACTION DEVELOPMENT

Sections	Paragraph	Page
1.	General	501 5 – 1
2.	COA Development Process	503 5 – 3
3.	COA Development Outputs	517 5 – 12
4.	Staff Interaction	520 5 – 13
5.	Conclusion	521 5 – 14

Annex

A.	COA Development Aide-Memoire	5A – 1
B.	COA Development Briefing Format	5B – 1
C.	Force Ratio Comparison	5C - 1
D.	Example of COA Overlay	5D – 1
E.	Advantages & Disadvantages Analysis	5E - 1

CHAPTER 6**STEP 4: COURSE OF ACTION ANALYSIS**

Sections		Paragraph	Page
1.	General	601	6 - 1
2.	COA Analysis Activities	607	6 - 3
3.	Conclusion	626	6-12

Annex

A.	COA Analysis Aide Memoire		6A - 1
B.	Wargame Matrix and Event Overlay		6B - 1
C.	Decision Support Overlay		6C - 1
D.	Wargaming Method		6D - 1
E.	Staff Responsibility During Wargaming		6E - 1
F.	COA Analysis Briefing Format		6F - 1

CHAPTER 7**STEP 5 : DECISION AND EXECUTION**

Sections		Paragraph	Page
1.	General	701	7 - 1
2.	Conduct	702	7 - 1
3.	Conclusion	705	7 – 8

Annex

A.	Concept of Operation Briefing Format		7A – 1
B.	Suggested CONOP Format		7B – 1

C.	Suggested Operations Orders	7C - 1
----	-----------------------------	--------

CHAPTER 8

BATTLESPACE OPERATING SYSTEM PLANNING

Sections	Paragraph	Page
1. General	801	8 - 1
2. BOS Planning in Preliminary Analysis and IPB	805	8 - 2
3. BOS Planning in Mission Analysis	806	8 - 3
4. BOS Planning in COA Development	819	8 - 6
5. BOS Planning in COA Analysis	826	8 - 8
6. BOS Planning in Execution	832	8 - 10
7. Conclusion	834	8 - 10

Annex

A.	RSI Planning Aide Memoire	8A - 1
----	---------------------------	--------

CHAPTER 9

INDIVIDUAL MILITARY APPRECIATION PROCESS (IMAP)

Sections	Paragraph	Page
1. General	901	9 - 1
2. IPOE	904	9 - 2
3. Step 1: Preliminary Analysis	920	9 - 10
4. Step 2: Mission Analysis	922	9 - 12

5.	Step 3: COA Development	942	9 - 17
6.	Step 4: COA Analysis	964	9 - 26
7.	Step 5: Decision And Execution	969	9 - 29
8.	Conclusion	976	9 – 30

Annex

A.	Course of Action Analysis Matrix	9A - 1
----	-------------------------------------	--------

CHAPTER 10

COMBAT MILITARY APRECIATION PROCESS (CMAP)

Sections	Paragraph	Page
1. General	1001	10 - 1
2. Steps of the CMAP	1009	10 - 3
3. Outputs and Outcomes	1023	10 - 8
4. Conclusion	1026	10 - 8

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CHAPTER 1

INTRODUCTION

SECTION 1

GENERAL

BASIS OF THE MANOEUVRE WARFARE APPROACH

101. The Malaysian Army uses the manoeuvre warfare as its foundation of war fighting theory. The manoeuvrist approach is based on the manoeuvre theory which is a way of thinking about warfare rather than a particular set of tactics or techniques, its essence is defeating the threat's will to fight rather than ability to fight. Manoeuvre theory emphasises the centrality of the human element in warfare. It relies on speed, deception, surprise and application of fire and movement. The fundamental tenets of manoeuvre theory concentrated on applying strength against weakness, recognising and exploiting war's inherent characteristics of friction, danger, uncertainty, chaos and focusing friendly planning on defeating the threat plan rather than defeating threat forces. Explanation on manoeuvre theory can be found in M 1 TD (The Army).

102. Importantly, manoeuvre theory regards war as a competition based in time and space rather than on spatial position alone. In which the ability to maintain a higher tempo of operation relative to the threat creates opportunity of defeating the threat center of gravity. Manoeuvre theory is based on the thorough understanding of the threat and particularly on the threat's perceived strength can be undermined. The theory also assumes the detailed knowledge of friendly forces, and the neutral or non-combatant parties within and outside the operational environment.

103. While the manoeuvrist approach seeks to conserve friendly resources wherever possible, it is still accept close combat as an essential characteristic of land warfare. Close combat involves the ability to find, close with and destroy the threat. This ability is essential and manoeuvre theory is applied into the foundation of the decision making process.

MILITARY APPRECIATION PROCESS OVERVIEW

104. The Military Appreciation Process (MAP) is a decision making and planning tool applicable at all levels that can be used by a commander or at a higher level by a commander and their staff. By its nature it is command, iterative and cyclical and it is used to develop a tactical plan in response to a given situation across the spectrum of operations.

105. The MAP consists of the following five steps:

- a. Step 1 – Preliminary Analysis (see Chapter 3).
- b. Step 2 – Mission Analysis (MA) (see Chapter 4).
- c. Step 3 – COA Development (see Chapter 5).
- d. Step 4 – COA Analysis (see Chapter 6).
- e. Step 5 – Decision and Execution (see Chapter 7).

106. These steps are supported by the continuous process of Intelligence Preparation of Operational Environment (IPOE) (see Figure 1–1).

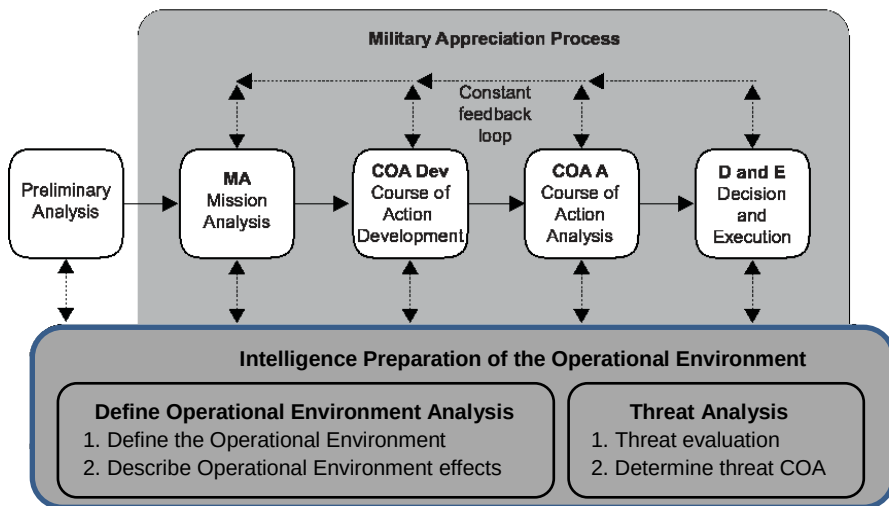


Figure 1 – 1: The Military Appreciation Process

107. The MAP has a top down planning focus where the situation and commander's intent determine the COA concepts that are then developed and refined in subsequent steps. **Annex B** to Chapter 4 details the responsibilities of the commander and staff.

SECTION 2

APPLICATION OF THE MILITARY APPRECIATION PROCESS

108. The MAP can be applied individually or by a commander and staff the choice being based on the planning time available and staff resources. The primary focus of this manual is for a commander leading a staff planning process. Chapter 9 details the Individual Military Appreciation Process (IMAP) and relates to commanders conducting individual planning.

109. The focus of any planning process should be to develop a timely, flexible, tactically sound, fully integrated and synchronised plan that increases the likelihood of mission success with the fewest casualties possible. However, any operation may develop faster than and quite different from that envisaged in the initial Staff Military Appreciation Process (SMAP). Even the most detailed analysis cannot anticipate every possible threat action, unexpected opportunity or change in orders. In these situations, it may not be possible or appropriate to follow or review the full SMAP, but it is critical to identify when the situation or predicted situation has changed. The commander may therefore need to direct how the SMAP is to be abbreviated, accepting a lesser degree of analysis. This can only be done effectively when the commander and staff are familiar with the full process. IPOE is a separate process and continuously to support the application of SMAP and a graphical overview of the SMAP is shown **Annex A**. A hypothetical example is provided in **Annex B**.

110. The following four techniques can be applied to save time in the MAP:

- a. Increase the commander's involvement in the MAP allowing them to make decisions during the process without having to wait for detailed briefings after each step.
- b. Include more specific direction in the commander's guidance, limiting options and focusing staff on the planning aspects that the commander feels are most important.
- c. Limit the number of COA to be developed and analysed to only one, in extreme cases, in order to achieve a workable plan that meets the mission in the time available.

d. Maximise parallel planning with the early issue of WngO and the sharing of all information with subordinates, especially IPOE products. While this is an extremely effective method of increasing tempo, it must be balanced against the risk that the efforts of subordinates will be wasted.

111. The relationship between time constraints and planning considerations is outlined in Figure 1–2.

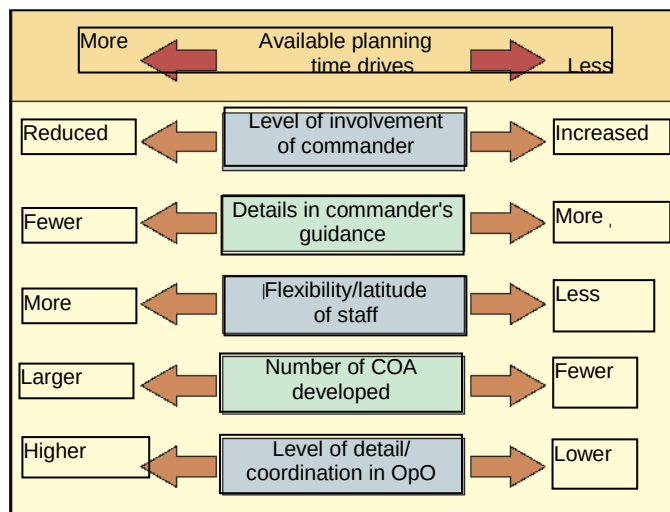


Figure 1 – 2: Time Planning Relationship

SECTION 3

CONCLUSION

112. This appreciation process is the best tool for commander or staff in the making of sound justifiable decision to solve identified military type of problems or situations by facilitating the users to do their analysis towards the problems objectively without overlooking any relevant factors that will

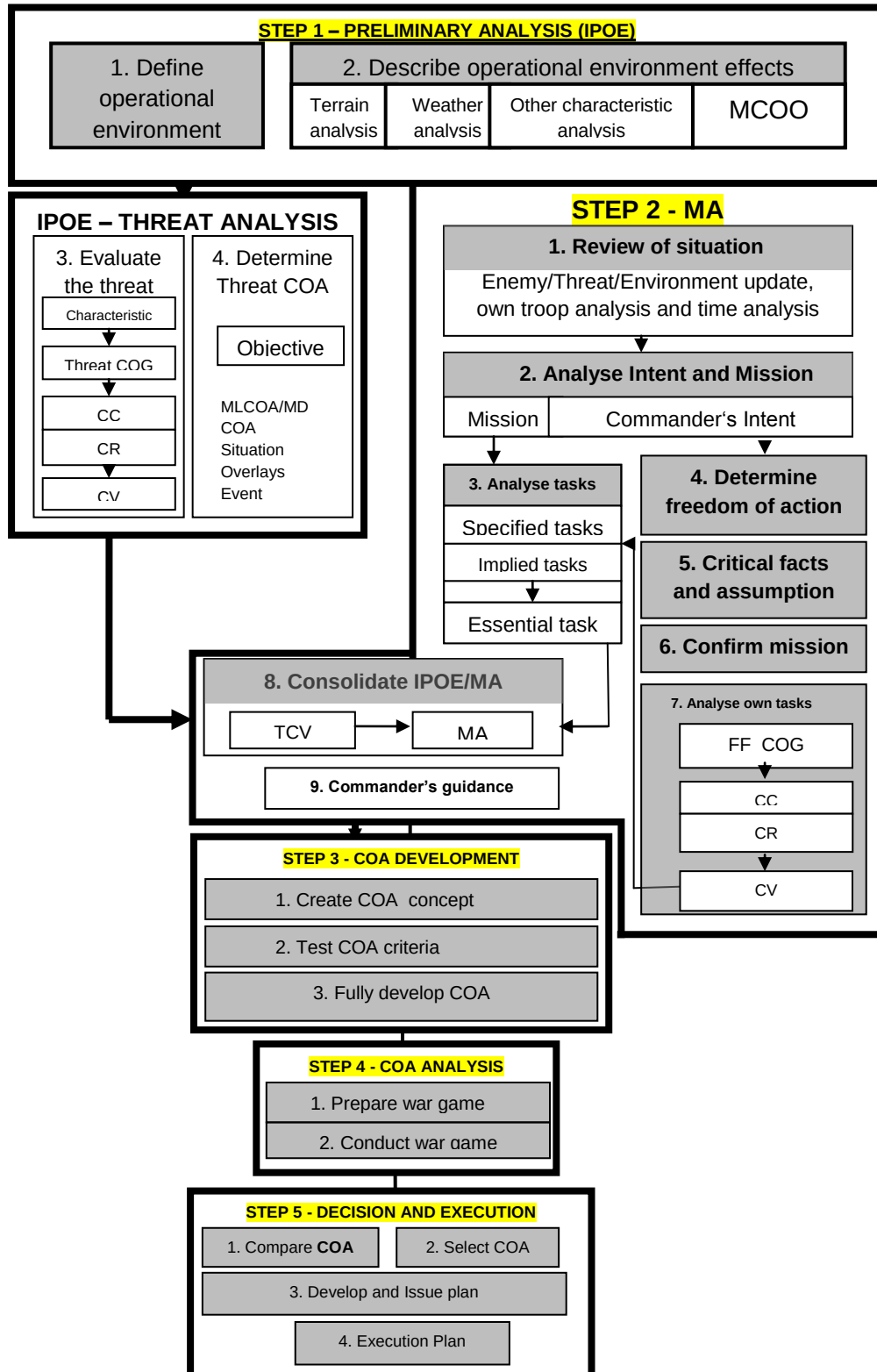
influence the way on how decision will be made or the problems to be solved.

113. MAP designed to be continuously conducted until the specific problem solved using a systematic sequential process whereby each step or activity in the process plays significant role and has its own significant output(s) that is required for the subsequent steps or activities. At the end of the process, all the decisions made can be justified by looking through the process or in other words the source of decision(s) can be backtracked from the process itself.

114. This appreciation process should not be a burden to a user as it seems to be a thorough or complex process of analysis required to solve a problem. It is because this process was designed to be suited or can be modified to suit any type of situations or environment. The SMAP and the IMAP explained in the next chapters will guide users on how to do the process to suit the specific environment or situation.

ANNEX A TO CHAPTER 1

STAFF MILITARY APPRECIATION PROCESS (SMAP) FLOW CHART



ANNEX B TO

CHAPTER 1

**EXAMPLE – 14 BDE (MECH) CONDUCTING DELAY
DEFENCE**

INTRODUCTION

1. This hypothetical example will be use throughout the explanation of this manual in order to set an example to the conduct of each steps in MAP. The hypothetical example will involve the 14 Bde (Mech) conducting delay defence operations.

SPECIAL IDEA

2. In early 2016, a global crisis caused by significant increase in crude oil price badly affects LAN as it tumbles the nation domestic economy and international trade. On the other hand, MALAYSIA can sustain the effect of the global economy crisis which led LAN to overlook to MALAYSIA to overcome LAN crisis. In May 2016, LDF starts consolidating its forces at southern part of their location.

3. 101 Corps is spearheading the invasion force to capture KELANTAN, TERENGGANU and PAHANG with the ORBAT as fol:

a. **Corps Troops.**

- (1) 201 InfDiv – to secure KELANTAN.
- (2) 202 InfDiv – to capture TERENGGANU.
- (3) 203 InfDiv – to capture PAHANG.
- (4) 204 InfDiv (Mech) – lead elm to 101 Corps.

b. **101 Corps Deployment.**

(1) 201 InfDiv to secure KELANTAN and to outflank adversary posn via inland rd of KUALA KRAI – GUA MUSANG – KUALA LIPIS.

(2) 202 InfDiv is to adv from LANUNLAND via inland and coastal rd to capture TERENGGANU.

(3) 203 InfDiv is to adv from LANUNLAND via inland rd of KUALA KRAI – GUA MUSANG – KUALA LIPIS – JERANTUT – MENTAKAB to contain adversary and facilitated adv force from N to capture Pahang.

(4) MER ready to conduct outflank manoeuvre through amphibious lodgment (coastal hook) and vertical manoeuvre through airborne op which to secure bhd IVO PEKAN on D+10.

c. The immenfmn that 14 Bde (Mech) facing is the 202 InfDiv and elm of 204 InfDiv (Mech) with ORBAT as fol:

(1) 704 Inf Regt.

(2) 705 Inf Regt.

(3) 706 Inf Regt.

(4) 305 Tk Regt.

(5) 202 Recon Bn.

(6) Elm of 204 InfDiv (Mech).

4. **Current Sit.** 101 Corps consolidate in KOTA BAHRU with 90% of cbt power as they prepare to adv and capture KELANTAN, TERENGGANU and PAHANG state with support from LAF and LAN. En log elm remains at 90% capability by utilising local resources from their mainland. MER force projection capability is still intact and ready to be depl in 10 days after the commencement of the Land Offensive Operation. 204 Mech Div is expected to lead 101 Corps adv as LDF first ech and support by strong FS assets. Ni Op will be cond to pen deep in FF AO with wide range of EW and RSI assets, Recon Bn and Raider Coy. 202 Inf Div as a main treat to 14 Bde (Mech) will adv using 2 prongs which are inland and coastal as the SE to 101 Corps.

a. **En Intent.** En immobj is to secure KUANTAN as the springboard to dominate and capture KELANTAN, TERENGGANU and PAHANG.

b. **En Loc.** 202 Inf Div is now consolidating at LAN mainland. Endisposn are as fols:

(1) 202 Inf Div together with the elm of 204 Inf Div are now consolidating in LAN mainland.

(2) MER Regt will cond amph landing D+10 area PEKAN.

c. **Sp Assets.**

(1) **FS Assets.** Long rangem slfm 2nd Ech is supporting 1st Ech throughout adv.

(2) **RSI Assets.** All Div Recon Bn and Raider Coy are consolidate with advgd to provide deep and wide range of RSI along axis of adv.

(3) **Engr.** Engrtp has been push fwd immediately to cond Cmob tasks iot maintain momentum of adv.

(4) **EW**. Corps EW assets in loc of sp1stEch.

5. On that en info 3 Div Commander has expressed his plan as fol:

a. **AFC Intent.**

(1) **Purpose**. Neutralize the en cbt power thus prevent them fm capturing KL and PUTRAJAYA.

(2) **Method**. To seize KUANTAN, to contain and defeat en on Central AO, to contain and des en on Southern AO, to block en on Northern AO, counter en RSI, disrupt the fol on forces projection by conducting deep ops by mean of offensive fire and manoeuvre, disrupt en along L of C to attrite his fighting capabilities, dislocate en CC along MC and ultimately shape them to series of TAI and various EA for max destruction and compel them to reach culminating point early.

(3) **Endstate**. LDF gnd forces cbt power being neutralized, en unable to manoeuvre towards KL and PUTRAJAYA thus posturing own forces for offensive op.

b. **3 Div Comd's Intent.**

(1) **Purpose**. Defend Eastern corridor thus denying the en manoeuvre ability.

(2) **Method**. Disrupt en breakout and attrit his lead ech, canalize en first ech into div EA and destroy it through conc fires and offensive manoeuvre; whilst isolating second ech, contain the en IVO KELANTAN, des the en IVO AO KUALA TERENGGANU, block en manoeuvre IVO AO MUADZAM and contain in AO

KUANTAN, counter en RSI, tgt en CS and CSS assets for destruction and reduce his ability to conc for offensive op.

(3) **Endstate**. Eastern corridor defended and fol on forces able to build up.

c. The plan will cover the following deployment:

(1) 14 Bde (Mech) is to delay en adv to KUANTAN as part of Div Covering Force.

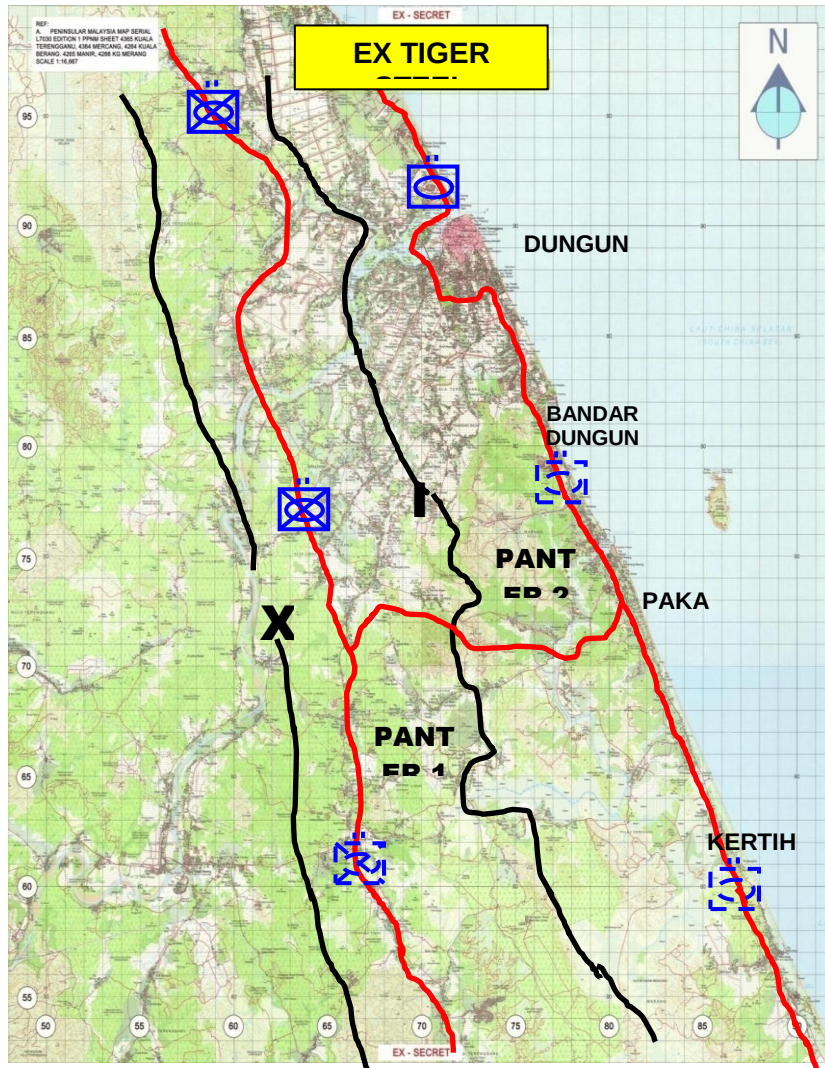
(2) 7 Bde is to delay en adv along inland route fm DUNGUN to KUANTAN.

(3) 8 Bde as a Div res to prepare Div MDP.

RESTRICTED

MP 0.5.1 TD

6. 14 Bde (Mech) broad depl as shown on figure below:



1B - 6

RESTRICTED

CHAPTER 2

INTELLIGENCE PREPARATION OF OPERATIONAL ENVIRONMENT (IPOE)

SECTION 1

GENERAL

201. The IPOE is a systematic yet dynamic process for analysing the threat and the environment. It is designed to support staff planning and prepare the foundations for informed military decision making within the MAP. IPOE is a processing medium through which intelligence staff provide an ongoing assessment of environmental effects on operations and an estimate of threat capabilities, intent, Course of Action (COA), Centre of Gravity (COG) and Critical Vulnerabilities (CV). Key outputs of IPOE include the Modified Combined Obstacle Overlay (MCOO) and the identification of critical threat vulnerabilities for further consideration in Decisive Point (DP) planning.

202. The four steps of IPOE are as follows:

- a. Step 1 – Define the Operational Environment (see Section 2).
- b. Step 2 – Describe the Operational Environment Effects (see Section 3).
- c. Step 3 – Evaluate the Threat (see Section 4).
- d. Step 4 – Determine Threat COA (see Section 5).

203. All intelligence product development should directly support planning. IPOE interaction with the MAP creates the

commander's Priority Intelligence Requirement (PIR). These are essential as they direct what the collection priorities should be.

204. The identification of a mission or likely tasks will also allow the IPOE to focus further on the issues of immediate concern and relevance to the likely mission.

205. Higher HQ is responsible for providing their intelligence assessments and products to their subordinate HQ to assist in planning. Once these are received, subordinate HQ can focus on their areas of responsibility, aided with intelligence on the wider operational environment.

206. IPOE assists the commander in applying and maximising combat power selectively in the operational environment at the decisive time and place as follows:

- a. By describing the operating environment and the effects of that environment on both friendly and threat operations.
- b. By determining the threat's likely COA including threat intelligence collection activities, the threat's COG and the threat's CV.
- c. By integrating friendly collection activities to meet the commander's decision requirements relative to gaps in knowledge or the triggering of the Commander's Decision Point (CDP).

Intelligence Preparation of Operational Environment and Decision Making

207. IPOE begins with the commencement of Step 1 of the MAP – Preliminary Analysis (see Chapter 3). It may be triggered by the receipt of orders, a change in the threat situation or a shift in operational posture.

208. All aspects of the IPOE process should be addressed prior to the conclusion of Step 2 of the MAP – MA (see Chapter 4) to enable optimal intelligence inputs to be used in DP planning and to completely inform the commander prior to the commander's guidance being delivered. Inherent in the IPOE process is the requirement to continually review, refine and understand the environmental effects on operations and the threat.

Intelligence Preparation of Operational Environment Outputs and Military Appreciation Process Inputs

209. IPOE outputs constitute the intelligence inputs to the MAP. The IPOE process is ongoing with each element being updated when there is change. Central updates are provided to all staff by the intelligence cell at predetermined stages in the MAP. The principal staff are briefed on critical issues throughout the process whenever the G2 deems it necessary.

210. The commander's decision cycle will often not allow time for the production and consideration of traditional lengthy written intelligence products. Therefore, the delivery of the IPOE outputs is becoming more graphical in nature to convey complex analysis in a simple visual form. This achieves a reduction of decision action cycles within the MAP. Detailed written analysis in the form of traditional intelligence products can be produced by the intelligence cell when time permits.

211. The symbols used for IPOE are shown in **Annex A** and an example of an IPOE briefing format is shown in **Annex B**.

SECTION 2

INTELLIGENCE PREPARATION OF OPERATIONAL ENVIRONMENT STEP 1 – DEFINE THE OPERATIONAL ENVIRONMENT

212. The operational environment includes all aspects of the environment encompassed by the Area of Operations (AO) and the Area of Interest (AI) which include oceanic, continental, aerospace, littoral and electromagnetic and the relevant aspects of society, politics, culture, religion (including gender and child protection aspects) and the economy. Definition of the operational environment identifies specific features of the environment or activities and their physical space that may influence own COA. It also determines the initial Intelligence Requirements (IR) and any assumptions required.

213. Complex terrain poses additional constraints and challenges. It is composed of physical, human and informational elements that interact in a mutually reinforcing fashion leading to extremely high density operating environments and enormous friction in military activities. Hostile forces may use complex terrain in an attempt to operate below the land force's detection and discrimination thresholds thereby creating a high level of uncertainty. In this situation, planning and tactical action may need to commence with incomplete or insufficient information. This step consists of four activities (see Figure 2–1).

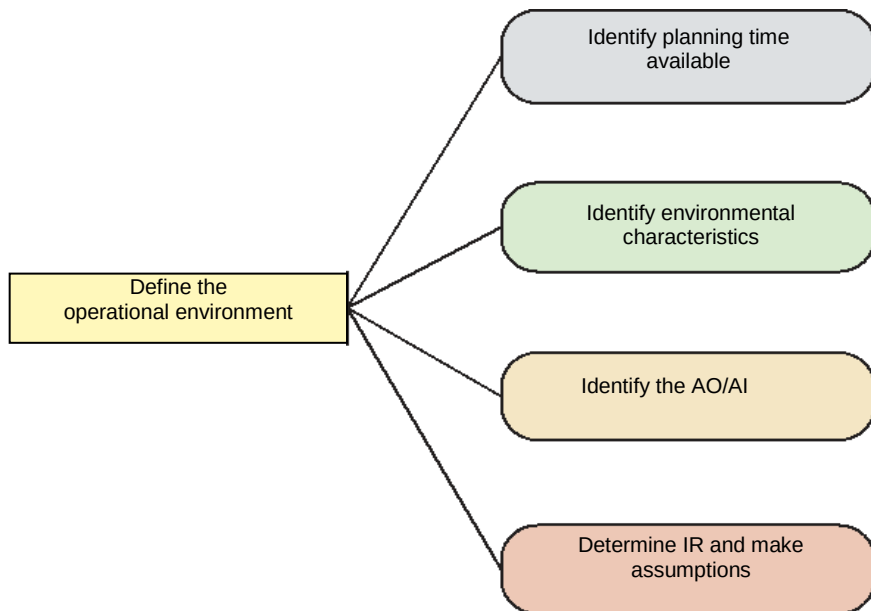


Figure 2 – 1: Define the Operational Environment

ACTIVITY 1: Identify Planning Time Available

214. A timeline is developed using a reverse planning approach to determine the time available for the IPOE process. The time allocated to the initial IPOE must relate to the time by which that information is required by the staff conducting the MA.

ACTIVITY 2: Identify Environmental Characteristics

215. Key environmental factors of the operational environment that will influence threat or friendly COA need to be identified. These include:

- a. Geography, terrain and weather.
- b. Population demographics (eg; ethnic groups, religious groups, gender and child protection aspects, ages and wealth).
- c. Political or socioeconomic factors (eg; the role of clans, gangs or tribes).
- d. Infrastructure including transportation and telecommunications.
- e. ROE, legal restrictions, treaties and agreements.
- f. General threat capability, location, mobility, weapon types and ranges.

ACTIVITY 3: Identify the Area of Operations/Area of Interest

216. The AO is the geographic area in which the commander is assigned the responsibility and authority to conduct military operations. An example AO is shown in Figure 2–2.

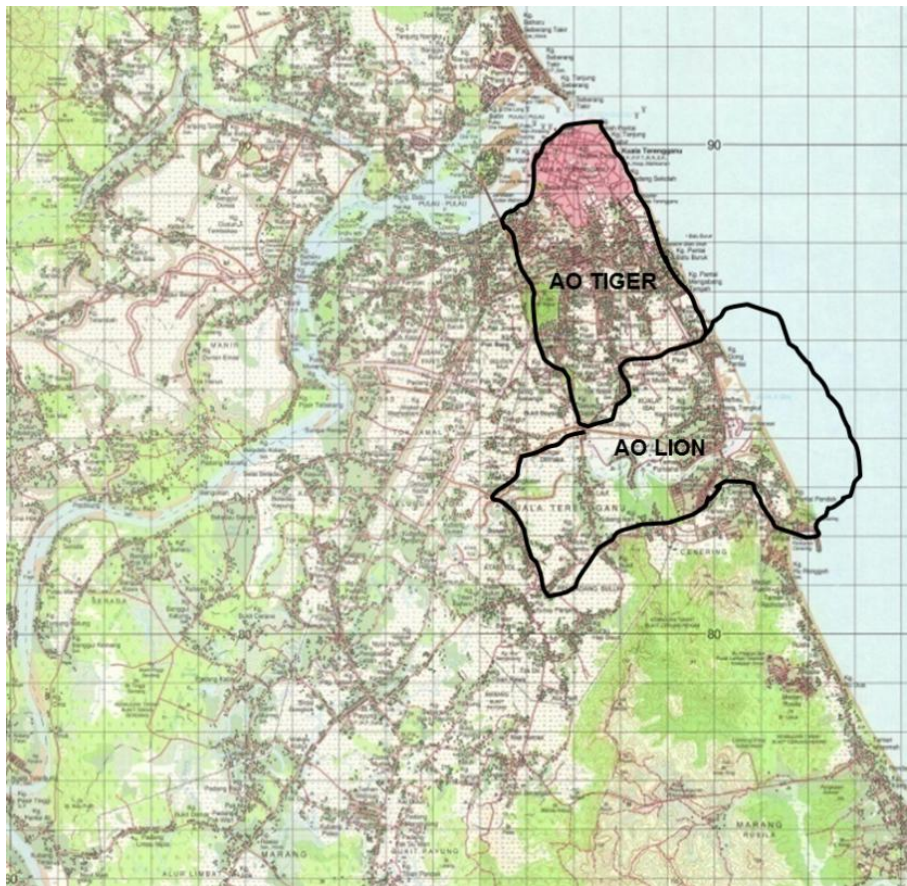
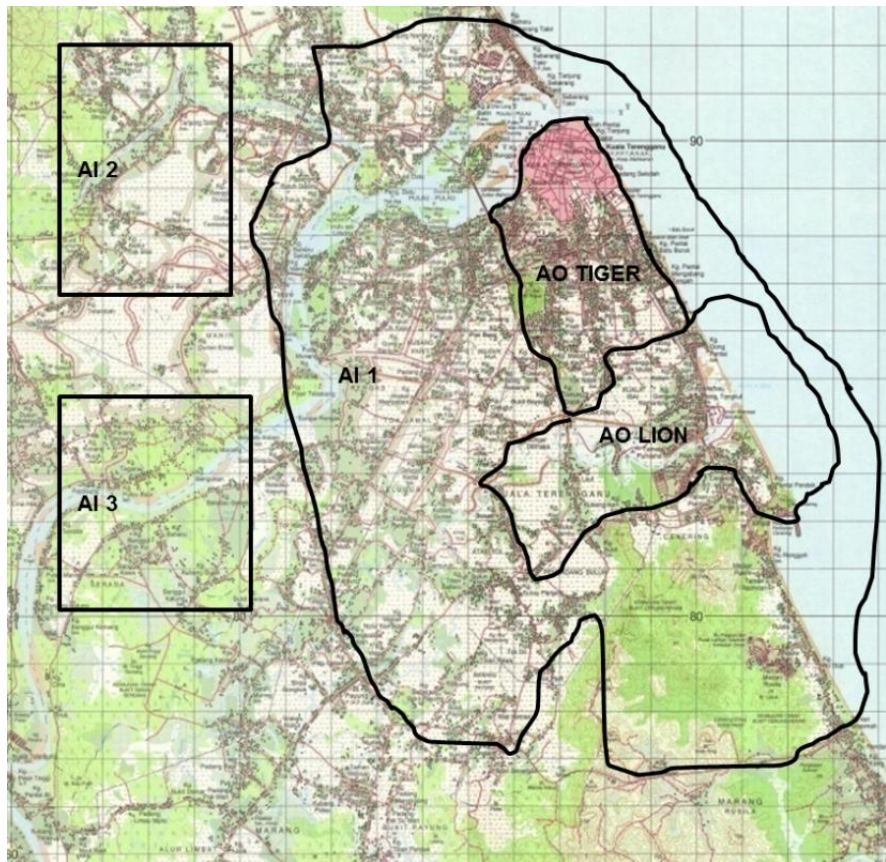


Figure 2 – 2: Example of Area of Operation

217. The AO is where the command will conduct its operations. The evaluation of the operational environment effects is generally more thorough and detailed within the AO than it is within the AI. The AO is normally confined within the boundaries specified in the OPORD or contingency plan from the higher HQ that defines the commander's mission.

218. The AI is the geographical area (including airspace) from which information and intelligence are required for the planning and conduct of operations within the AO. An example of AI is shown in Figure 2–3.



AI 1: Area of interest of 14 Bde (Mech) including population area and Br Sg Dungun.

AI 2: SSR of 3 Div.

AI 3: Point of Entry (POE) by Kuala Terengganu Highway and small port.

Figure 2-3: Example of Area of Interest

219. The AI can be larger than the AO or can consist of smaller discrete areas outside the AO. AI are characterised by the followings:

- a. Other friendly force task locations critical to achieving the higher commander's intent.
- b. Anticipated future task locations.
- c. The time frame for the conduct of operations and the location of any friendly force activities or capabilities that could influence operations during that time.
- d. The locations of threat forces able to project power or move into the AO within the time frame of friendly operations.
- e. The ability to be subdivided into sub-AI (eg; ground, air and political AI) to focus and coordinate intelligence gathering as required.
- f. The absence of restrictions other than the requirement to identify any factor that may threaten or assist in the accomplishment of the commander's intent.

ACTIVITY 4: Determine Intelligence Requirements and Make Assumptions

220. **Intelligence Requirements.** IR comprise questions about the threat or environment for which there is a need to collect information and produce intelligence. At the operational and tactical levels, IR are usually expressed as specific questions about an threat's Order of Battle (ORBAT), deployments and intentions and local environmental conditions.

221. **Information Requirements.** Once the IR are determined and prioritised by the commander the intelligence staffs decide how the commander's IR are to be met by determining what information is required. Information requirements are simply those elements of information which need to be collected and processed to meet the IR. An IR may generate multiple information requirements or if the IR itself is a simple one it may translate directly into a single information requirement. Information requirements may be identified by discussion within the HQ staff as a result of an intelligence estimate or as a result of the IPOE process.

222. Information requirements are promulgated to subordinate units and formations in the Reconnaissance, Surveillance and Intelligence (RSI) collection plan. The RSI collection plan tasks those subordinate assets most likely to be able to gain the specific information required on the operational environment and threat. It is developed and refined progressively throughout the IPOE as information requirements on the operational environment and threat are identified and answered. The RSI collection plan is managed by the collection manager who is located in the G2 cell but liaises heavily with the G3 cell. IR outside the scope of own capabilities are submitted to senior and flanking formations, units and agencies.

223. **Assumptions.** In reality it may not be possible to meet or completely answer some of the IR in the time available. The threat will be doing its best to deny or deceive friendly RSI collection efforts to answer the IR. When some IR cannot be met or are in doubt assumptions on the environment, the threat and other factors must be made to keep the planning process moving. These assumptions must be listed and the commander briefed to provide their own verification. The ongoing confirmation of assumptions where possible, forms a key part of intelligence collection operations. When an

assumption is made a method must immediately be put in place to prove the assumption true or false. Normally this involves an asset being tasked to answer the question the assumption poses. If any assumption proves to be false assessments and decisions based on that assumption must be re-examined. All assumptions must be continually reassessed as IR are fulfilled.

SECTION 3

INTELLIGENCE PREPARATION OF THE OPERATIONAL ENVIRONMENT STEP 2 - DESCRIBE THE OPERATIONAL ENVIRONMENT EFFECTS

224. Describing the operational environment effects involves evaluating and then integrating all the environmental effects that influence both friendly and threat operations. This reveals the full range of broad threat COA available and the whole character of the terrain, weather, politics, gender and child protection aspects and economics enabling the commander to quickly exploit opportunities and counter otherwise unanticipated threats. Describing the operational environment effects consists of four activities (see Figure 2–4).

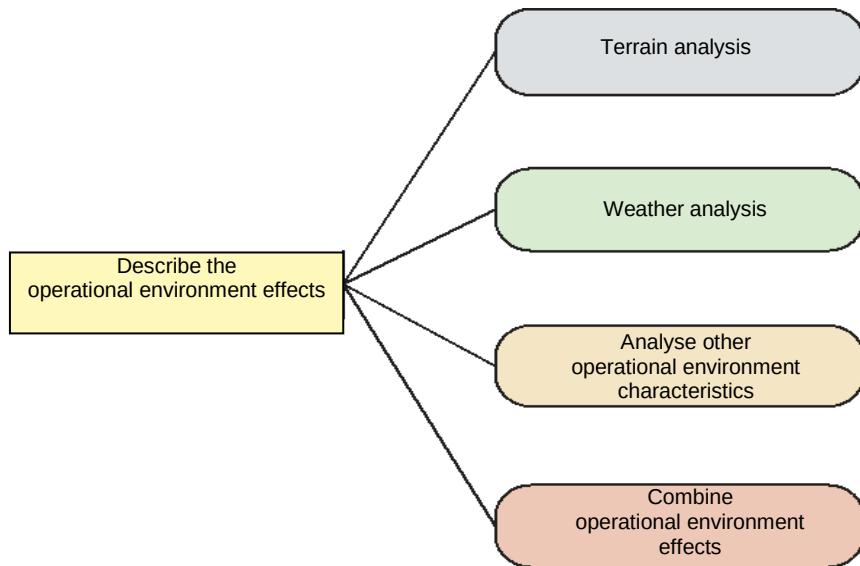


Figure 2-4: Describing the Operational Environment Effects

ACTIVITY 1: Terrain Analysis

225. Terrain analysis consists of an evaluation of the military aspects of the operational environment's terrain to determine its effects on military operations. The aspects evaluated are observation and fields of fire, cover and concealment, obstacles, key terrain and vital ground and avenues of approach (OCOKA). These aspects are then combined into one overlay known as the MCOO. The MCOO is the foundation overlay upon which all other IPOE products are based.

226. **Observation and Fields of Fire.** Observation is the ability to see the threat visually or through the use of surveillance devices. Fields of fire are the areas that a weapon system covers effectively from a given point. Areas of good observation and fields of fire are marked by parallel diagonal

lines on the observation and fields of fire overlay. This is the first step in developing the MCOO. The observation and fields of fire overlay is used to identify the following:

- a. Potential Engagement Areas (EA).
- b. Defensible terrain and specific system positions.
- c. Vulnerable areas for manoeuvring forces.
- d. Surveillance positions.

227. **Cover and Concealment.** Concealment is protection from observation but not from fire. Cover is protection from the effects of fire. Areas offering good cover and concealment are marked on the cover and concealment overlay. This is the second step in developing the MCOO. This overlay is used to identify the following:

- a. Defensible terrain and potential battle positions.
- b. Potential assembly, deployment, dispersal and hide areas.

228. An example of the analysis of observation and fields of fire, and cover and concealment overlay is shown in Figure 2–5.

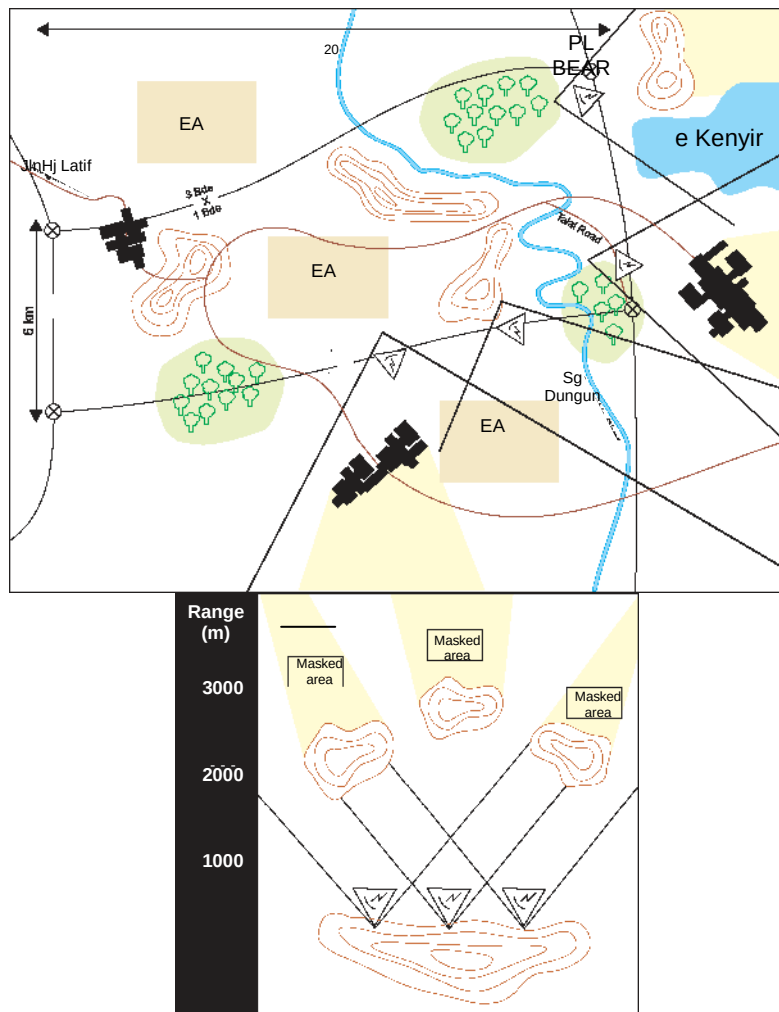


Figure 2–5: Example Overlay Showing Observation, Fields of Fire, and Cover and Concealment

229. **Obstacles.** Obstacles are natural or artificial terrain features that stop, impede or divert military movement. The effect of each obstacle on the mobility of the evaluated force (friendly and threat) should be determined. Overlays are

prepared for each type of obstacle as required. Factors to consider include:

- a. Vegetation (tree spacing and trunk diameter).
- b. Surface drainage (stream width, depth, velocity, bank slope and height).
- c. Surface materials (soil types and conditions that affect mobility).
- d. Surface configuration (slopes that affect mobility).
- e. Obstacles (natural and artificial, as well as ground and low-level air mobility).
- f. Transportation systems (bridge classes and road rating).
- g. The effects of weather and conditions such as flooding, fires or dust.

230. The effects of all obstacles are combined onto one obstacle overlay called the combined obstacle overlay. An example of this overlay is shown in Figure 2– 6 which illustrates the cumulative evaluation of all obstacles using the following three classifications:

- a. **Unrestricted.** Unrestricted terrain is that which is free of any movement restrictions and allows a wide manoeuvre of forces supported by well-developed road networks. Typically unrestricted terrain for armoured or mechanised forces is flat to moderately sloping, with widely spaced obstacles such as trees or rocks. Unrestricted terrain is not marked on the overlay.

b. **Restricted.** Restricted terrain is that which hinders movement and manoeuvre in formation to some extent but requires little effort to enhance mobility. Restricted terrain for armoured or mechanised forces typically consists of moderate to steep slopes or moderate to densely spaced obstacles such as trees, rocks or buildings. Lines of Communication (LOC) may be hindered by poorly developed roads. Restricted terrain areas are depicted by diagonal lines marked on the overlay.

c. **Very Restricted.** Very restricted terrain is that which severely hinders or slows movement and manoeuvre in formation and requires effort to enhance mobility. Very restricted terrain for armoured or mechanised forces is typically characterised by steep slopes and large or densely spaced obstacles with little or no supporting roads. It should be noted that very restricted terrain does not allow a force to deploy through the terrain in linear tactical formation. However, a force deployed in column will usually have little difficulty crossing such terrain. Additionally, terrain that is very restricted for armour would usually be considered only restricted for dismounted infantry. Historically, very restricted terrain has offered an unexpected approach that has achieved surprise despite the tactical risk involved. Very restricted terrain is depicted by cross-hatched lines marked on the overlay.

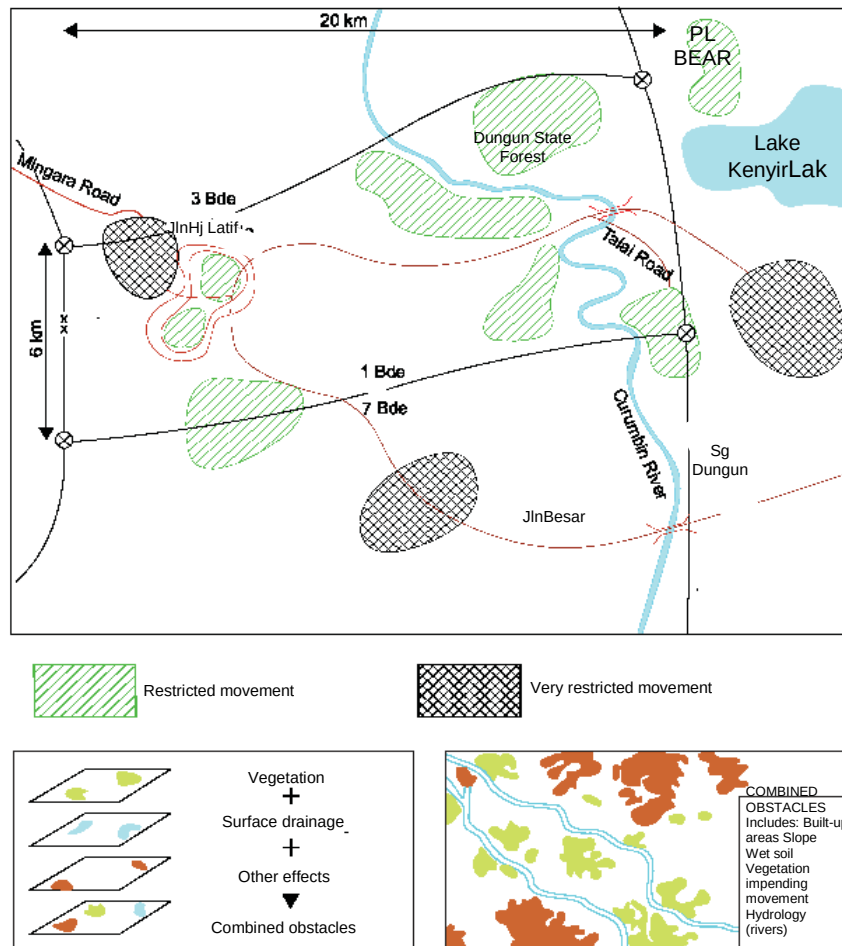


Figure 2-6: Example Combined Obstacle Overlay

231. **Key Terrain and Vital Ground.** Key terrain is any locality or area the seizure, retention, or control of which affords a marked advantage. Key terrain is often selected for battle positions or objectives. It is evaluated by assessing the impact of its seizure by either force upon the results of battle. Key terrain is depicted by a large 'K' in a circle.

232. Vital Ground is key terrain that has an extraordinary impact on the operation. The designation of vital ground implies that the success of the entire operation depends on the seizure or retention of a single piece of ground; thus it is not commonly used. Vital ground is depicted on a combined obstacle overlay by a large 'VG' in a circle.

233. **Avenues of Approach.** An avenue of approach (AA) is an air or ground route of an attacking force of a given size leading to its objective or to key terrain in its path. All COA involving manoeuvre depend on available AA. During offensive operations the evaluation of AA leads to a recommendation on the best AA for friendly forces to the objective and identification of AA available to the threat for withdrawal or the movement of reserves. During defensive operations AA that support the threat's offensive movements and allow the withdrawal and movement of friendly reserves are identified. AA are developed using the following methods:

a. **Identifying Mobility Corridors.** Mobility Corridors (MC) are areas through which a force will be channelled because of terrain constrictions. The combined obstacle overlay is evaluated to identify corridors wide enough to support manoeuvre by forces in tactical formations. If friendly and threat forces require MC of different width, perhaps due to doctrinal or equipment differences, it may be necessary to conduct two separate evaluations. MC are generally located in unrestricted terrain following the lines of roads and tracks. However, restricted terrain within very restricted terrain could also be utilised as an MC in certain situations.

b. **Categorising Mobility Corridors.** MC must be categorised according to the size and type of the tactically deployed group that can be accommodated.

Categorisation calculations are based on two levels below friendly command level (in very restricted terrain the categorisation will be lower as required). For example, at battalion level, MC are identified down to threat platoon or troop size.

c. **Grouping Mobility Corridors to Form Avenues of Approach.** An AA must provide ease of movement and enough width for the dispersal of a force large enough to significantly affect the outcome of the operation (normally one level below command level). For example, at battalion level, AA are identified down to threat company or squadron size. Unlike MC, AA may include areas of very restricted terrain (since these show the general area through which a force may move). An example showing the grouping of MC into AA is provided in Figure 2–7.

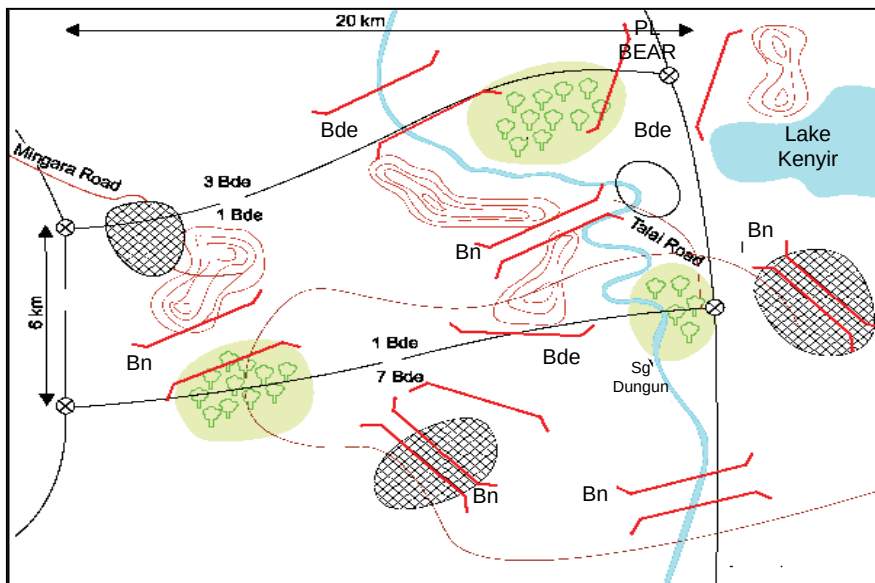


Figure 2–7: Grouping Mobility Corridors into Avenues of Approach

d. **Evaluating the Suitability of Avenues of Approach.** Each AA is assessed in accordance with its suitability for:

- (1) Access to key terrain and adjacent AA.
- (2) A degree of canalisation and movement.
- (3) The use of concealment and cover.
- (4) The use of observation and fields of fire.
- (5) Sustainability (lines of communication support).
- (6) Providing direct access to the objective.

e. **Evaluating the Effects of Avenues of Approach on Courses of Action.** An analysis of terrain must reflect its combined effects on possible broad threat and friendly COA. To achieve this, the areas are identified within each AA according to their potential for use as:

- (1) EA (defensive) and ambush sites (offensive).
- (2) Battle positions covering killing areas and ambush sites.
- (3) Immediate or intermediate objectives (key terrain dominating AA or objectives).

(4) Other areas as required (assembly and dispersal areas, observation points, artillery firing positions, Air Defence (AD) positions, intelligence and target acquisition positions, forward arming and refuelling points, landing zones, drop zones, and infiltration routes).

f. **Prioritising Avenues of Approach.** AA are prioritised in accordance with how well they support the physical ability of the threat to move along them. Most importantly, AA must not be confused with the threat's direction of attack or axis of advance, either of which may be different from AA in order to achieve tactical surprise.

234. **Produce Modified Combined Obstacle Overlay.** All terrain analysis results are combined into the MCOO. An example MCOO together with preparation notes is shown in **Annex C**. The MCOO consists of a combined obstacle overlay showing cross-country mobility restrictions with the following additional information:

- a. Key and vital ground(key terrain is grouped to correspond to likely battle positions or objectives).
- b. MC grouped into prioritised and labelled AA (friendly and threat).
- c. Objectives.
- d. EA.
- e. Defensible terrain (the terrain or area which dominates the AA, EA or objectives).

f. Counter mobility obstacle systems (friendly and threat).

g. Area, structures, capabilities and communications, organisation, people, events (known by the mnemonic ASCOPE and discussed further in paragraph 240a) or political, military, economic, social, infrastructure and information (known by the mnemonic PMESII and discussed further in paragraph 240b).

ACTIVITY 2: Weather Analysis

235. Weather analysis consists of identifying the effects of weather and producing the weather effects matrix.

236. Identify the Effects of Weather. The effects of weather are assessed by analysing the following categories:

a. Visibility. Low visibility assists in concealing manoeuvre on the operational environment. Visibility may be affected by:

(1) Extreme temperature – affects thermal sights.

(2) Cloud cover – reduces illumination for passive image intensifiers.

(3) Precipitation – reduces line of sight visibility.

(4) The available light – affected by moon phases associated with early evening, nautical twilight, sunrise, sunset, moonrise and moonset.

b. Winds. The combat effectiveness of forces downwind is adversely affected by blowing dust, smoke, sand or rain. Upwind forces usually have better visibility. CBRN operations favour upwind forces. Strong winds limit airborne, air assault and aviation operations. Wind-blown dust, sand, snow or rain can hamper radars and communication systems.

c. Rain. Rain affects soil traffic ability, visibility and the functioning of electro-optical systems. Heavy rain reduces the quality of stocks in storage. Heavy snow degrades communication systems and the effectiveness of many munitions and air operations.

d. Cloud Cover. Cloud cover limits illumination and reduces the solar heating of targets. Heavy cloud degrades the performance of many target acquisition systems, infrared guided artillery and general aviation operations.

e. Temperature and Humidity. Temperature and humidity extremes reduce personnel and equipment capabilities, require special personnel shelters and equipment and reduce aircraft payloads. Temperature 'crossovers', where background and target temperatures are almost equal, degrade thermal target acquisition systems.

237. **Produce Weather Effects Matrix**. The effect of weather on military operations is shown on a weather effects matrix and on the MCOO as appropriate. It is critical that the influence of weather is calculated on its effects on combat systems, personnel, equipment and types of military operations. Effects are graded as favourable, unfavourable and marginal. An example of weather effects matrix is shown in Figure 2–8.

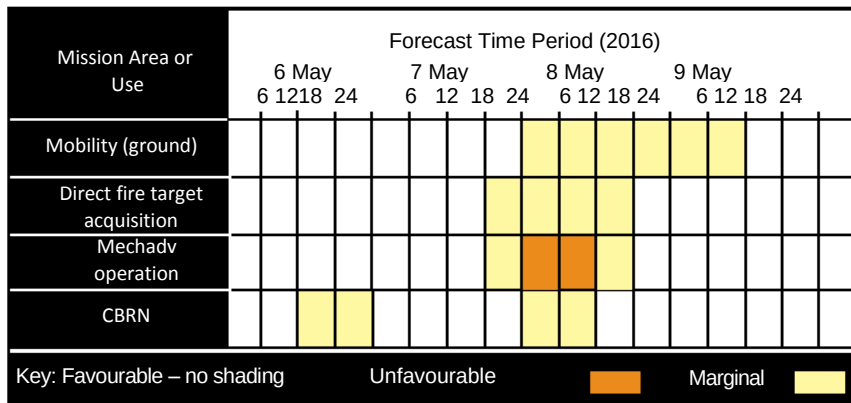


Figure 2-8: Example of Weather Effect Matrix

ACTIVITY 3: Analyse Other Operational Environment Characteristics

238. Other characteristics include any other aspects of the operational environment not addressed by terrain and weather analysis. There are two elements to this analysis namely the identification of the characteristics and the evaluation of their effect on military operations.

239. The effects of other characteristics in terms of their impact on broad friendly and threat COA need to be determined. In some situations, particularly at the strategic and operational levels and at the tactical level in military support operations these effects may be more important than terrain and weather. In particular, this will apply when a variety of limitations have been imposed on the friendly force for political reasons. As far as possible, planners should attempt to display and record the effects on an overlay and a matrix.

240. Other characteristics vary and will depend on the situation. The following two mnemonics can be useful in analysing other operational environment characteristics:

a. ASCOPE:

- (1) A = area.
- (2) S = structure.
- (3) C = capabilities and communication.
- (4) O = organisation.
- (5) P = people.
- (6) E = events.

b. PMESII:

- (1) P = political.
- (2) M = military.
- (3) E = economic.
- (4) S = social.
- (5) I = infrastructure.
- (6) I = information.

241. In some situations, particularly at the strategic and operational levels, these effects may be more important than terrain and weather. In particular, this will apply when a variety of limitations have been imposed on the friendly force for political reasons. While all human and information terrain characteristics are important, an understanding of the human characteristics of an AO/AI is crucial in asymmetric or complex environments. An analysis of other operational environment

characteristics is undertaken using the mnemonic ASCOPE (see paragraph 240a), which addresses six characteristics of the environment:

a. **Areas.** Areas are localities or aspects of the terrain within an AO that have significance to the lives of the local population. Key civilian areas include the social, ethnic, tribal, political, religious, criminal or other important enclaves. Areas may also include the locations of Malaysia or approved foreign nationals during an evacuation operation or the areas where a hostile reception is expected for friendly troops. When based on the urban model, areas depict the urban core or central business district, industrial areas, outlying high-rise areas, commercial ribbon areas and residential areas including shantytowns. Considerations includes:

(1) **City Core.** This is the downtown or central business district.

(2) **Core Periphery.** This is located on the edges of the city core with continuous fronts of brick or concrete and fairly uniform building heights.

(3) **Commercial Ribbons.** These areas are composed of rows of retail stores, offices and restaurants along both sides of major streets and built up areas.

(4) **Residential Sprawl.** These areas consist of mainly low houses or apartments that are one to three storeys tall. They are primarily composed of detached dwellings that are usually arranged in irregular patterns along streets with many smaller open areas between structures.

(5) **Industrial Areas.** These are generally located on or along major sea, rail or highway routes in urban complexes. Older complexes may be located within dense randomly constructed or close orderly block areas.

(6) **Outlying High-rise Areas.** These have a similar composition to city core areas but may be composed of clusters of more modern multi-storey high-rise buildings in outlying parts of the city.

(7) **Shantytowns.** Shantytowns do not necessarily follow any patterns and may be found in many different zones within urban areas. Building construction can range from cardboard and tin to concrete block. As this evaluation aims to determine the human terrain of an environment alien to Malaysian input from the local population as to how they divide the area is likely to support a better understanding of the AO/AI than one generated solely by a friendly force examination.

b. **Structures.** Analysing a structure involves determining how its location, functions and capabilities can support a military activity. Some important structures include government centres, security and military bases, communications infrastructure, roads, rail, power, water and sewerage infrastructures, airfields, ports, education facilities, hospitals, and places of worship. This tool can also aid in evaluating specific elements of the urban infrastructure that if damaged, may adversely affect the living conditions within an AO/AI to the detriment of the mission. These elements may include power generation plants, water purification

plants, pumping stations and sewage treatment plants. The analysis should also identify the locations of logistic resources that may contribute to mission accomplishment or assist the support activities of hostile forces in the sustainment of violent capabilities. The analysis may reveal specific warehouse sites, hospitals and medical supply locations, food stores and markets, building material locations, fuel storage areas, car or truck lots, maintenance garages, agricultural land, and appliance warehouses.

c. **Capabilities.** Capabilities can refer to the ability of local authorities, the host nation or some other body to provide a populace with key functions or services. The most essential capabilities are those required to save, sustain or enhance life. The commander can obtain a useful guide by asking what a local population can already do for itself, what it can do for the commander's force and what the commander's force is likely to be directed (as asked) to do for the local population.

d. **Organisations.** An examination of organisations should include the identification and analysis of each other government agency or non-government organisation present within an AO/AI. It should include an estimate of these agencies' ability to influence and interact with the local population, security forces and each other. These organisations generally have a hierarchical structure, defined goals, established operations, fixed facilities or meeting places and a means of financial or logistic support.

e. **People.** There may be many different kinds of people within an AO/AI. Similar to organisations, people may be indigenous or alien to an AO/AI. An analysis of

people should identify them by their various capabilities, needs and intentions. It is useful to separate people into distinct categories (hostiles, adversaries, neutrals and friendlies). When analysing people, the historical, cultural, ethnic, religious, political, economic and humanitarian factors should be considered. The key communicators and the formal and informal processes used to influence people should be identified. Friendly force activities intended to be benign or benevolent might have negative results if a population's perceptions are not first investigated and subsequently, measured or managed. Perceptions, more than reality, drive decision making and could influence the reactions of entire populations and ethnic, tribal, political, religious, criminal or other important enclaves. Females and children generally experience armed conflict very differently from men. These differences are wide-ranging and complex. They arise largely from the societal norms of the roles that they perform in their communities. Although often not engaged in combat, females and children can be disproportionately affected by armed conflict. Internal displacement is often a factor that increases vulnerability.

f. **Events.** Events are routine, cyclical, planned or spontaneous activities that affect organisations, people and military activities. They may include national and religious holidays, agricultural or livestock, market cycles, elections, civil disturbances and celebrations. For example, other operational environment effects include:

(1) **Logistics Infrastructure.** Logistics infrastructure factors encompass sources of potable water, bulk fuel storage and transport systems, canals, waterways and lochs,

communication systems, transportation means and systems, including road and rail networks, transloading facilities and airfields, natural resources, industries and technology, power production facilities, and chemical and nuclear facilities.

(2) **Population Demographics.** Population demographics factors include living conditions, cultural distinctions, religious beliefs, political grievances, gender and child protection needs and requirements, political affiliations, education levels, and languages spoken.

(3) **Economics.** The area of economics includes all sources of local, regional, national and foreign economic wealth and interests.

(4) **Politics.** Political factors range across local, regional and international government systems, treaties, agreements and legal restrictions, and gangs, mafia groups or tribes.

(5) **Electronic and Information Spectrum.** Although it is difficult to quantify and represent graphically, planning staff should consider the electronic and information spectrum of the operational environment in terms of its potential impact on friendly and threat COA.

ACTIVITY 4: Combine the Operational Environment Effects

242. The next task for planners is to integrate the evaluation of the effects of terrain, weather and other characteristics into the MCOO. Focus should be placed on the battlespace environment's total effects on the threat and friendly broad

COA that meet the commander's intent and the available force capability. For example, friendly infantry infiltration lanes should not be shown if there is no light infantry capability in the force. A recommendation is now made indicating which of the broad threat and friendly COA best support the operational environment and which least support it. Although not developed at this point, deductions should be made which support subsequent planning. This is then followed by the production of a simple narrative of broad threat COA (options) based on the effects of the environment (MCOO) only. The intelligence staff will describe the impact of the characteristics analysed on friendly and threat operations. These deductions should be expressed in terms of how they affect the following key operational aspects:

- a. Mobility.
- b. Military capability (friendly and threat including weapon systems, tactics, RSI, command, control, communications, computers and intelligence, logistics, and personnel).

SECTION 4

INTELLIGENCE PREPARATION OF OPERATIONAL ENVIRONMENT STEP 3 – EVALUATE THE THREAT

243. Threat evaluation (see Figure 2–9) initially involves identifying the level of threat command that is likely to be faced in the particular operation or situation at hand. The ORBAT and capabilities, doctrinal principles and tactics, techniques and procedures (TTP) that the designated threat prefers to employ are then determined. This provides the commander with a realistic assessment of the capabilities of the designated

threat. Most importantly, it determines the threat's CV and affects the subsequent development of DP.

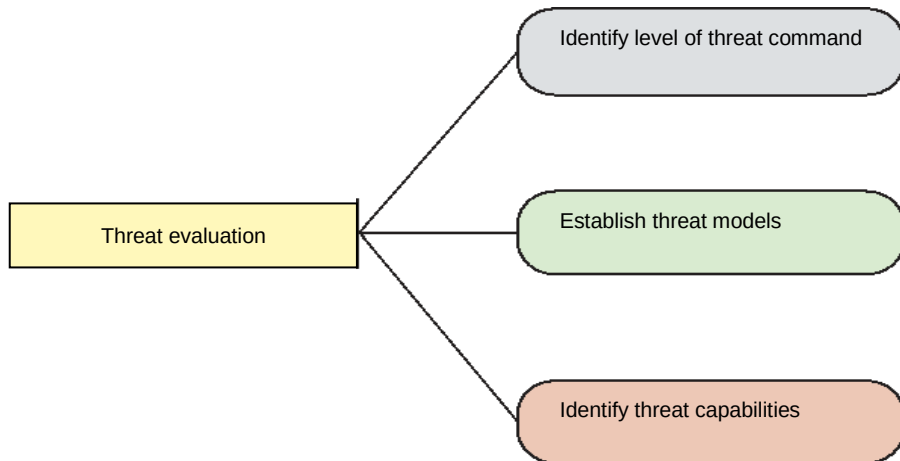


Figure 2–9: Threat Evaluation

ACTIVITY 1: Identify the Level of Threat Command

244. This provides the focus for further analysis of the designated threat and avoids wasted intelligence effort in looking at either too high or too low a level.

245. In determining the level of threat command, the commander and staff will be guided by the higher commander's intent and the assigned mission and tasks. Intelligence estimates and IPOE products from higher HQ will also assist in identifying the threat to be targeted or influenced.

246. Stakeholder groups include hostiles, adversaries, neutrals and friendly forces.

247. The four stakeholder groups have the following subsets:

- a. Insurgents.
- b. The local population (of which there may be multiple factions).
- c. Local interest groups.
- d. Other government agencies.
- e. Allied military forces.
- f. Other nations' intelligence and security agencies.
- g. Non-government organisations.
- h. Political representatives.
- i. Personnel from supporting combat arms units.
- j. Military police.
- k. Civilian police.
- l. The media.

248. The level of command of a stakeholder group is normally expressed in terms of the organising HQ. For a military stakeholder this is simple (eg; mechanised brigade), for other stakeholder groups it can be more difficult. Levels of command can also be expressed in terms of civil appointments (eg; district administrator) or the number of people the command influences (eg; can organise the responses of 5000 locals).

249. A stakeholder's intent is best expressed as their objective and its relevant time line. For military stakeholders this is straightforward (eg; the immediate objective is to seize the key bridges across the Dungun River); for other stakeholders it is more difficult (eg; to control the commercial traffic flowing into and out of a regional center within the next 14 days).

ACTIVITY 2: Establish Threat Models

250. Threat models depict how threat forces prefer to conduct operations under ideal conditions. These models are produced as follows:

- a. Produce doctrinal overlays.
- b. Describe the preferred tactics and options.
- c. Produce a doctrinal High Value Target (HVT) matrix.
- d. Produce an threat ORBAT file.

251. **Produce Doctrinal Overlays.** Doctrinal overlays graphically illustrate the deployment pattern and disposition prevalent in the threat's normal tactics when not constrained by other factors. An example conventional threat doctrinal overlay is shown in **Annex D**.

252. **Describe the Preferred Tactics and Options.** The description of the preferred TTP and options comprises information on the followings:

- a. The doctrinal Scheme of Manoeuvre (SOM) for each major threat element (one down from the level of command assessed as the threat in threat MA).

- b. The doctrinal activities of threat Battlespace Operating Systems (BOS) supporting the SOM.
- c. The time event chart describing the normal doctrinal planning timings for the operation and for synchronising BOS activities that support the SOM.

253. Produce Doctrinal High Value Target Matrix. Assets that are critical to the threat commander's successfully completing the operation are identified on the doctrinal template as HVT. HVT are ranked in order of their relative worth to the threat's doctrinal operations and in terms of any expected changes to their value during the operation. HVT are then grouped into appropriate categories or BOS in a target value matrix (see Figure 2–10). The target value matrix is continually updated throughout the planning process as the value of HVT alters according to COA developed in Step 4 of the IPOE – Determine Threat COA (see Section 3) and as the situation changes. The target value matrix forms the basis of the friendly forces targeting process. An updated HVT matrix is produced in Step 4 of the IPOE, along with Targetable Critical Vulnerabilities (TCV) that are specific to the threat COA developed.

HVT Matrix Initial (Conventional Type)

Disrupt	Delay	Limit	Target	Relative	Worth	
X			C3 (HQ, Sig Coy HQ)			
X			OS (2S3, 2S1)			
		X	Manoeuvre (I-80, LEAPORD, BMP-3)			
	X		AD (2S6M)			
X	X		MS (bridging assets)			
X			RSI (UAV, BR			
X	X		Nuclear/chemical			
		X	CSS			

HVT Matrix Initial (Asymmetric Type)

Disrupt	Delay	Limit	Target	Relative	Worth	
X			Insurgent commanders (may have some names)			
X			IED emplacements			
X			Logistics/finance facilitators			
X			Safe houses (may have some locations)			
X	X		Cache sites			
		X	Spotters, OP			
X		X	Propaganda messages			
X			Training camps (may have a location)			

Figure 2-10: Example Target Value Matrix

254. The following list contains some suggested categories for the HVT matrix:

- a. Command, control and communications.
- b. Fire support (including target acquisition, ammunition, aircraft and fire control).
- c. Manoeuvre.
- d. AD (including radar, processing centres and HQ).
- e. Engineers.

255. **Produce the Order of Battle.** Threat model data is maintained on an ORBAT file that is continually updated as intelligence is gathered on the threat. Over time, ORBAT will differ considerably from the initial doctrinal overlay as a realistic feel is developed for the threat. The ORBAT file (when developed) should reflect the actual condition of the threat's force in comparison to doctrine, organisation and equipment. The threat file should include an assessment of the combat weighting of the threat forces to allow force ratio analysis later in the MAP. An example of force ratio tables is shown in Chapter 5 - **Annex C**.

ACTIVITY 3: Identify Threat Capabilities

256. Threat capabilities are the broad COA and supporting operations which the threat can utilise to influence friendly operations. In general, military forces can conduct offensive or defensive COA which have variations such as the advance, pursuit, attack off the line of march, quick attack and deliberate attack, mobile defence, area defence and delay defence, the withdrawal or retrograde operations. Each of these broad COA can be subdivided further into a variety of more specific COA.

The attack for example, may be a single or double envelopment or a penetration.

257. Supporting operations include threat capabilities that are providing support to the broad COA or may include specific types of operation. Examples of such operations are the use of air assets, electronic warfare, intelligence collection, engineering and air assault; airborne, amphibious and psychological operations and deception.

258. The aim is to identify the threat's broad actual capability, as opposed to its theoretical capability in the situation faced. As the threat's actual capability is determined, the doctrinal COA that the threat is currently unable to execute are progressively discounted or modified. For example, the threat may have lost the capability to conduct airmobile operations, which prevents these operations becoming a distinct part of a COA. The products of this process are a range of broad and credible threat capability statements that describe what the threat is capable of executing.

259. Broad threat capability statements may be expressed in terms similar to the following:

- a. **Example 1.** Insurgent forces are capable of mounting very effective complex attacks against our key nodes within the AO using small, highly mobile forces. These attacks are preceded by extensive reconnaissance and monitoring of our forces using local nationals employed in our bases and a network of informants along known transit routes. Insurgent forces are assessed to incorporate up to 100 fighters and are capable of conducting IED, small arms and intimidation attacks supported by financiers and arms dealers across the state border. The insurgent information action campaign remains robust and dedicated to

disrupting task force efforts within the AO, targeting our perceived injustices to the local population.

b. **Example 2.** The 204 Mechanised Division is currently located in Kota Bahru, consolidating after securing the Bandar Kota Bahru. The division is at 90 per cent combat effectiveness and is capable of breaking out to resume the offensive in seven days after resupply and detailed reconnaissance. The division is capable of advancing on three axes to contact friendly force defences prior to conducting a deliberate attack using either a penetration or a single envelopment. This may be supported by deep operations using reconnaissance forces, an airmobile battalion and offensive fire.

c. **Example 3.** The threat has the capability to attack, with up to three divisions and one tank division, supported by 80 daily sorties of fixed-wing aircraft in 10 days time.

SECTION 5

INTELLIGENCE PREPARATION OF THE OPERATIONAL ENVIRONMENT STEP 4 – DETERMINE THREAT COURSES OF ACTION

260. The identification and development of likely threat COA assists in the creation and development of friendly COA. The design of an threat COG construct and identification of threat CV is the basis for subsequent development of the DP at the end of MA.

261. Information gained from Step 3 of the IPOE – Evaluate the Threat (see Section 4) is merged with the MCOO and progressively refined to develop threat COA. Threat COA are

graphically represented by situation overlays. Indications of where to detect threat COA are shown on event overlays.

262. Table 2–1 details activities and outputs during determination of threat COA.

Activities	Outputs
(a)	(b)
Identify threat likely objectives and desired endstate.	Threat objectives and endstate.
Develop full range of threat COA.	Situation overlay and event overlay for each COA.
Analyse COG and build construct.	COG construct with CV for each COA. COA specific HVT matrix.
Evaluate and prioritise threat COA.	COA listed in prioritised order.
Compile the combined COA overlay.	Completed combined situation overlay and event
	Updated RSI collection plan.

Table 2 -1: Threat Course of Action Activities Outputs

ACTIVITY 1: Identify Threat Likely Objectives and Desired Endstate

263. **Levels of Objectives and Endstate.** The designated threat commander's likely objectives and endstate are refined relative to the threat evaluation conducted in Step 3 of the IPOE – Evaluate the Threat (see Section 4). The way in which the threat views friendly forces and perceives the friendly force

COG must be defined. Friendly force planning staff should provide their assessed friendly force CV to the G2 staff in order that the threat's intent and likely objectives and the blue force vulnerability analysis can be compared by the two staffs. This will assist in the derivation of likely objectives and endstates for each of the threat command's subordinates down two levels.

264. Each subordinate level of the threat command's objective must meet the likely objective of its parent command. In reality, intelligence will rarely be able to confirm threat objectives and endstates. Therefore, assumptions are made on threat objectives and endstates to keep the planning process moving. It is critical that assumptions are discussed with and agreed by the commander and are continually reviewed.

265. **Types of Objectives.** During conflict between conventional forces threat objectives tend to be either terrain or force related. Terrain related objectives (intermediate, immediate and subsequent) often focus on key terrain. Force related objectives usually focus on rear or reserve forces.

ACTIVITY 2: Develop a Full Range of Threat Courses of Action

266. **Develop Threat Courses of Action.** To create threat COA, the consolidated list of broad and credible doctrinal COA identified in Step 4 of the IPOE – Determine Threat COA is compared against threat likely objectives. Broad COA that do not accomplish the threat's likely objectives and endstate are eliminated at this point. The remaining broad COA are then examined against the effects of the battlespace identified in Step 2 of the IPOE – Describe the Operational Environment Effects (see Section 3), and a determination is made as to how terrain, weather and other factors support (encourage), limit (discourage) or alter each COA. The broad COA which are open to the threat from Step 3 of the IPOE – Evaluate the

Threat (see Section 4) (such as deliberate attack, hasty attack, defend and delay) are then refined into a set of specific COA statements. The following factors are used to consider and develop specific COA statements:

- a. Threat intent or desired endstate.
- b. Likely attack or counterattack objectives.
- c. The effects of the operational environment on operations and broad COA.
- d. Threat vulnerabilities or shortages of equipment or personnel.
- e. Current dispositions.
- f. The locations of main and supporting efforts.
- g. Threat perception of friendly forces and friendly force vulnerabilities.
- h. Deception and threat efforts to present an ambiguous situation or achieve surprise.
- i. Threat targeting of friendly force CV.

267. Develop Threat Course of Action Description and Options. Threat COA descriptions and options are now developed. This step provides a description of the forces depicted on the situation overlay. A COA description can range from a narrative statement to a detailed synchronisation matrix depicting the activities of each threat force element (FE) and BOS in detail. The description should include the COA's earliest time lines, phases, decisions and the Decision Point (DPT) at which the threat commander will have to make key

decisions during and after execution of the COA. The COA description is used to support staff wargaming and to develop the event overlay and supporting indicators. COA description and option development involves two activities which need to be performed as follows:

a. **Identify Critical Decisive Points.** Planners must identify when and where the threat is expected to take major actions or make decisions during the COA. These are recorded as critical events in the description of the COA. Each event is linked to the Time Phase Line (TPL) and geographic features on the situation overlay.

b. **Identify Threat Decision Points.** Following the selection of critical events, threat DPT are allocated. An threat DPT is the last possible point on the operational environment, associated with critical events, at which the threat commander still has options available, such as executing a branch or sequel. Branches are options that the threat commander has to conduct a number of different COA before achieving the objective. Sequels are options that require the threat commander to conduct follow-on or exploitation COA after successfully achieving the objective. The locations of branches and sequels are identified as possible threat DPT and recorded in the COA description. The purpose of identifying threat DPT is to understand the elements that give the threat plan cohesion. This understanding allows the collection plan to be focused on the identification of indicators. The friendly force plan would focus on disrupting these nodes of cohesion.

268. **Test Course of Action Against Criteria.** Each threat COA is tested against the following criteria using the mnemonic FASSD:

a. **F = Feasible.** Does the COA have the physical means, time, and ground and air space available to accomplish the COA? The economy of effort and main effort (ME) activities that the threat could utilise to concentrate sufficient combat ratios to carry out the COA are determined.

b. **A = Acceptable.** Is the designated threat force commander willing to take the risk that this COA entails? Each COA risk (cost) versus potential gain must be determined. The reasons for and against are recorded.

c. **S = Suitable.** Does the COA accomplish the threat's likely objective or desired endstate?

d. **S = Sustainable.** The COA is assessed for sustainability by phase in deep, close and rear areas. For example, have planners allowed enough time for forces to prepare, deploy or reconstitute for subsequent operations? Are the logistics support and cost for this COA realistic or unattainable?

e. **D = Distinguishable.** Is the COA significantly different from the others? Is it a variation rather than a distinctly different COA? Differences are established by comparing the following features for each COA:

- (1) The effect on the friendly operation.
- (2) The use of reserves or the second echelon.
- (3) The location of the ME.

(4) The SOM and task organisation (TASKORG).

(5) The opportunity for or capability of the threat to break with doctrine or past operating habits or indications that it may do so.

269. **Produce the Situation Overlay.** The situation overlay is a graphic depiction of expected threat dispositions and actions for each COA. It is the doctrinal overlay modified to reflect the constraints imposed by the effects of the operational environment. The situation overlay should portray the full threat COA from start point to objective. Each situation overlay should fully represent each threat COA to be wargamed in the COA analysis stage of the MAP.

270. Intelligence staff must be prepared to provide an initial brief on the situation overlays for each threat COA during the MA brief. Detailed situation overlays are not required until COA analysis and should be developed progressively as more information becomes available to assist analysis. The commander directs which threat COA are to be developed further at the MA brief. Under the individual method, as a time-saving measure, only the most likely and most dangerous COA may be developed.

271. **Constructing a Situation Overlay.** A situation overlay is constructed as follows:

a. The doctrinal overlay is merged with the MCOO relevant to the designated phase of the operation to be described.

b. The doctrinal overlay dispositions are adjusted to fit with the reality of the operational environment effects as depicted in the MCOO and current knowledge of

threat doctrine, objectives and intent, ME, deception and surprise.

c. All relevant detail must be included on the situation overlay (eg; EA, objectives and obstacles) as well as the locations and activities of HVT.

d. TPL are drawn on the overlay. TPL are used to depict the expected movement of threat forces such as attack, advance, counterattack, reserve, second echelon and deep and rear elements. TPL are based on doctrinal movement rates modified by operational environment conditions, observed threat movement rates and the expected delay caused by friendly actions. Initially TPL timings are indicated by an anticipated time for example H-5 hours. This can be replaced with actual times as these become known.

272. An example situation overlay is shown in Figure 2-11.

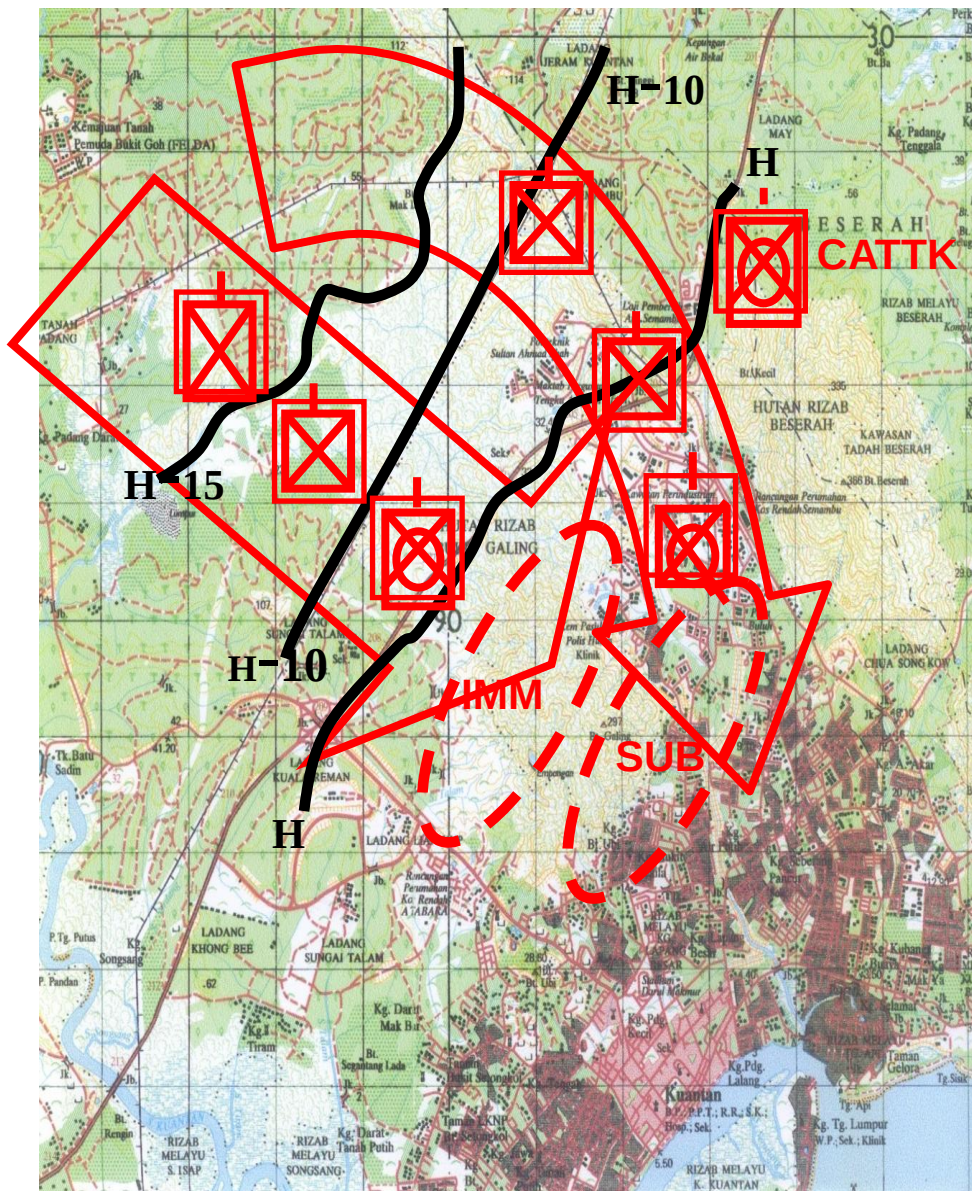


Figure 2-11: Example Situation Overlay

273. **Produce an Event Overlay.** The event overlay developed by the G2 staff, is a key tool for operational staff and planners. It forms the foundation for synchronising intelligence collection and for the commander's decision support graphics.

274. The event overlay uses the situation overlay to determine where all critical events are likely to occur, so that Named Areas of Interest (NAI) and DPT can be identified for collection by RSI platforms. The event overlay will also indicate known locations within each COA where threat assets are vulnerable to friendly targeting. These locations are depicted as Target Areas of Interest (TAI). The collection that occurs at NAI will assist the staff to confirm or deny which COA the opposing forces are conducting.

275. **Named Areas of Interest.** NAI are a geographical areas where information is gathered to satisfy specific IR. The activities sighted or not sighted in NAI will confirm or deny threat intentions.

276. NAI may incorporate a specific point, route or area and can match obvious natural terrain features. NAI should be made large enough to encompass the indicators. Sources and agencies tasked to collect in the NAI must be capable of covering the area sufficiently to answer the information requirements. NAI can be depicted as points against geographic features, along routes and as boxed areas.

277. NAI are prioritised in order to best employ the finite collection resources available to the commander.

278. **Target Areas of Interest.** TAI are geographical areas or points, usually along an MC, where CV are exposed to targeting by the friendly force. Each TAI is cross-referenced with the COA it supports and the HVT matrix. This information

can be included in the HVT matrix as an additional column once the TAI are identified. TAI identification (by number or name) is conducted jointly by the intelligence and operations staffs. The intelligence staff list the CV from the COG construct, and the operations (including Offensive Support (OS) staff consider the capabilities and availability of friendly resources to target the CV appropriately. These staff also consider the effects of targeting on the friendly force mission and prioritise the use of all available resources to achieve High Pay Off Targets (HPT).

279. The event overlay is a key tool for the effective tasking of RSI collection assets to gather information relevant to IR and for the effective targeting of key threat assets. It is reviewed and updated during staff wargaming against friendly COA in COA analysis as surveillance plans and CDP evolve. An event overlay is produced as follows:

- a. Produce the intelligence collection plan.
- b. Refine the HVT matrix.
- c. Construct the event overlay and matrix.

280. An example event overlay with DPT, TPL, NAI and TAI marked is shown in Figure 2–12.



2 - 50

<i>Where? (Named Areas of Interest)</i>	<i>What? (Indicators)</i>			<i>When?</i>	<i>Notes</i>
	<i>Most Likely Course of Action</i>	<i>Most Dangerous Course of Action</i>	<i>Course of Action x</i>		
NAI 1	Tank Coy + Mech Inf Bn	Tank Pl + Mech Inf Coy		H-30 to H-15	ME from east (single penetration)
NAI 2	Tank Pl + Mech Inf Coy	Tank Coy + Mech Inf Bn		H-30 to H-15	ME from north (single envelopment)
NAI 3	Self-propelled Howitzer Coy	Self-propelled Howitzer Coy		H-60 to H-hour	Best OS location
NAI 4	81 mm Mortar Pl			H-45 to H-hour	ME from east
NAI 5		81 mm Mortar Pl		H-45 to H-hour	ME from north

Table 2-2: Event and RSI Matrix to Support a Combined Course of Action Overlay

ACTIVITY 3: Analyse Centre of Gravity and Build Construct

282. Having ascertained the threat capabilities and COA, the staff must now focus on determining the CV for subsequent selective targeting and development of DP. The methodology used in analysing the COG to determine the CV is the COG construct.

283. The COG construct uses the terms 'Critical Capability' (CC) and 'Critical Requirement' (CR). CC are inherent abilities enabling a COG to function. CR are the essential conditions, resources and means that enable a CC to be fully operative.

284. The four elements to be determined in the COG construct are as follows:

- a. The threat COG.
- b. The CC.
- c. The CR.

d. The CV.

285. A detailed example of an threat COG construct for a **Mechanised Regiment in Advance** is provided in Table 2–3.

Threat Centre of Gravity	Ability to concentrate combat power	Comments		
CC	C2	FS	Manoeuvre	M&S
CR	Communication	Divisional Arty Gp (DAG)	Leopard Tk	Bridging assets
	Line of Communication	Regimental Arty Gp (RAG)	BRDM	
	Assy A	Gun location	Dismounted point	
CV	En resup point vuln to disruption by dir and indir fire	Location of arty are vuln to identification by RSI and targeting by counter battery fire and air assets	En manoeuvre assets and reserve vuln to detection, direct and indirect fires at en choke points in manoeuvre corridors movement	Bridging assets are vuln to FS during a breach along DUNGUN River
	Communication vuln to electronic attack	Tgt Acquisition wpn vuln to disruption by limitation of gnd and weather	Envuln to dislocation from flanking forces due to limited and targetable manoeuvre corridors.	

Table 2-3: Threat COG Construct

286. **Determine Threat Centre of Gravity.** The first requirement is to identify the threat's COG. Although this can

be difficult, a thorough analysis of the threat at the relevant level of war will indicate that there are certain characteristics or entities from which the threat draws physical strength, the will to fight or freedom of action. The key to identifying which of these becomes the COG is to relate the threat's characteristics and objectives to the constraints imposed by the operational environment.

287. Determine Critical Capabilities. Once the COG has been determined, the capabilities upon which the COG is based, namely the CC, need to be identified. This requires an analysis of the COG to determine what gives it its strength. If the threat's COG is the ability to generate superior combat power at a decisive point, then the CC that comprise that COG could include armour, mechanised infantry and fire support. As any military force comprises many capabilities, the term 'critical' is applied to those that directly support the COG.

288. Determine Critical Requirements. Having identified the CC upon which the COG is based, the requirements for those capabilities to be fully operative are identified. These are the CR. The term 'critical' is again applied to demonstrate the linkage to the COG. Each CC is analysed individually in order to identify those aspects of the capability that enable it to function as a system or entity. C2, CSS and doctrine are among the requirements common to all capabilities.

289. Determine Critical Vulnerabilities. Once the CR have been identified they should be analysed to determine whether they have any inherent vulnerabilities. Possible vulnerabilities are then listed before being examined closely to determine those that are indeed critical to the assessed COG. This produces a list of CV, which are those characteristics or key elements of a force that, if destroyed, captured or neutralised, will significantly undermine the fighting capability of the force

and its COG. At this stage it will become apparent that some CV will relate to more than one CR.

ACTIVITY 4: Evaluate and Prioritise Threat Courses of Action

290. The full range of credible threat COA must be evaluated and prioritised according to assessed likelihood. Evaluation and prioritisation consists of the following processes:

a. Identify each COA's strengths and weaknesses by:

(1) Evaluating the impact of operational environment effects on each COA (how the effects encourage or discourage the COA).

(2) Identifying the degree of risk for each COA.

(3) Identifying each COA's potential to be used by the threat as a deception plan.

(4) Identifying each COA's potential to surprise friendly forces.

(5) Evaluating the threat's current dispositions and activities to determine whether one COA is already being favoured over another (bearing in mind deception).

b. Compare the information ascertained for all COA and rank them in order of likelihood. The level of associated danger to friendly plans is assessed by the G2 staff but confirmed by the commander and planning staff. The priority list is then modified as intelligence is

updated and as the situation changes. It is important to be aware that adoption of a friendly force COA and resultant activities on the operational environment will cause a reaction amongst the threat forces that may also require the threat COA priority list to change.

291. **Compile the Combined Course of Action Overlay.** The combined COA overlay is the most useful briefing overlay to use when contributing to the MAP. For each COA it shows the combination of situation and event overlays. It enables the identification of NAI and DPT regardless of which COA is taken and contributes to friendly force development of an RSI plan. An example combined COA overlay is shown in Figure 2–13.



292. **Produce the Intelligence Collection Plan.** At the conclusion of this step, intelligence staff update the collection plan which has been ongoing from Step 1 of the IPOE– Define the Operational Environment (see Section 2). The intelligence collection plan (see **Annex E**) is developed and refined by identifying the IR required to determine which COA the threat has adopted, or will adopt, and answer the commander's PIR. These IR are additional to those already identified in operational environment analysis. An intelligence collection plan is produced as follows:

a. **Identify Indicators.** Indicators are unique threat activities or capabilities which if revealed, fulfil information requirements, thus leading to the achievement of the commander's IR. Intelligence staff will concentrate their collection efforts on those indicators that prove or disprove which COA the threat has chosen.

b. **Identify Named Areas of Interest.** Indicators can be related to collection tasks by allocating a descriptor of 'where to look, what to look for and when to look. By examining threat COA overlays, the intelligence staff identify specific areas where critical events are expected to occur. These areas are NAI. NAI confirm or deny threat COA, or indicate where specific threat FE may be logically identified within a COA. NAI can also relate to environmental information requirements. NAI are listed in order of importance to become the priority areas for intelligence collection. An NAI may incorporate a specific point, route or area and can match obvious natural terrain features. NAI should be made large enough to encompass indicators, yet of a size capable of ease of coverage by surveillance and other intelligence collection assets.

c. **Recommend Reconnaissance, Surveillance and Intelligence, Assets for Collection.**

The third step is to recommend which RSI assets are best suited to meet collection requirements. The priority list of NAI and information requirements forms an integral part of the intelligence collection plan and is promulgated as the RSI plan. RSI assets are tasked to observe NAI in accordance with the RSI plan. A detailed example of an RSI BOS planning aide-memoire is provided in Chapter 8 - **Annex A**.

293. **Refine the High-value Target Matrix.** Based on the importance of the threat BOS contributing to the success of the threat COA, the HVT priority list is revised. The following three actions are required to refine the HVT matrix:

a. **Compare Threat Operational Environment Systems with Threat Courses of Action.** Threat BOS and COA may be compared as follows:

(1) Describe how and where each threat BOS provides support for each threat COA at each critical event and possible DP.

(2) Identify any threat BOS that must be used to support an threat COA and the time, phase or circumstances in which these must be used to make the COA successful.

(3) Reorder the HVT priority list in order of the most valuable threat BOS contribution to the success of threat COA.

b. **Identify Target Area's of Interest.** A TAI is a geographical area or point, usually along an MC, where threat BOS are vulnerable to targeting by the friendly

force given anthreat COA. These areas (with probable timings) become potential TAI, which can subsequently be used as EA if required. Each TAI is cross-referenced with the COA it supports and the HVT matrix. TAI are normally linked to the relevant NAI and DPT in terms of 'where' a target is identified and 'where' it can be engaged. TAI identification is conducted by the G3, G2 and joint OS staff. The G2 staff evaluate the threat force and the impact of interdiction on threat capabilities. The G3 and joint OS staff consider the capabilities and availability of interdiction resources, the effects of interdiction on accomplishing friendly operations, and priorities for the use of available resources.

c. **Reprioritise the High Value Target Matrix.** Planners must refine the HVT matrix with a reprioritised High Value Targets List (HVTL) cross referenced to TAI and threat COA.

294. IPOE uses a series of written products, overlays and matrices to portray AA, MC, likely threat COA, timings, critical events that will help confirm or deny threat COA, likely target areas, assets and threat DPT. However, the analysis and the delivery of the product of the analysis are the most important components of the IPOE. Such analysis allows friendly COA to be wargamed against the entire range of possible events and enables the commander to be fully prepared for possible contingences. It rapidly identifies NAI, TAI and threat DPT to allow the efficient employment of RSI assets and the early detection of the threat plan. IPOE allows RSI activities to be synchronised with manoeuvre and firepower assets to defeat anthreat as it is identified in the operational environment.

295. While essentially an intelligence staff process, IPOE will require input from the commander and other staff at all stages.

A thorough IPOE can be extremely time and resource intensive. When constrained for time, intelligence staff will focus on providing the analysis of the operational environment and threat with the maximum use of graphics to convey the message.

SECTION 6

CONCLUSION

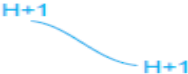
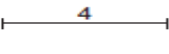
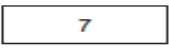
296. IPOE is the intelligence staff process designed to support operations planning. It incorporates the two broad intelligence support to planning functions of Analysis of the Operational Environment (AOE) (Steps 1 and 2) and the Intelligence Estimate (Steps 3 and 4). It also provides the basis for intelligence collection planning based on what the commander needs to know. Most importantly, it provides a list of threat CVs for consolidation with the results of mission analysis in the determination of decisive points.

297. IPOE utilises a series of written product, overlays and matrices to portray AAs, mobility corridors, likely threat COAs, timings, critical events that will help confirm or deny threat COAs, likely target areas, assets and threat DPT. However, the analysis and the delivery of the product of the analysis is the most important part of IPOE. Such analysis allows friendly COAs to be wargamed against the entire range of possible eventualities and the commander to be fully prepared for potential eventualities. It rapidly identifies NAIs, TAIs and threat DPT, to allow the efficient employment of intelligence gathering assets and the early detection of the threat plan. IPOE allows Intelligence activities to be synchronised with manoeuvre and firepower assets to defeat anthreat as it is identified on the operational environment.

298. While essentially an intelligence staff process, IPOE will require input from the commander and other staff at all stages. A thorough IPOE can be extremely time and resource intensive. When constrained for time, intelligence staff will focus on providing the analysis of the operational environment and threat with the maximum use of graphics to convey the message.

CHAPTER 2

SYMBOL USED FOR INTELLIGENCE PREPARATION OF
THE OPERATIONAL ENVIRONMENT

TERM	COLOUR	SYMBOL
Restricted going	Green or brown	
Very restricted going	Green or brown	
Man-made obstacles	Black	
Primary AA	Red (threat) Blue (friendly)	
Secondary AA	Red (threat) Blue (friendly)	
MC	Red (threat) Blue (friendly)	
Key terrain	Blue or purple	
TPL	Red (threat) Blue (friendly)	
NAI (point)	Any	
NAI (area)	Any	
NAI (linear)	Any	
TAI (point)	Any	
TAI (area)	Any	
DP	Red (threat) Blue (friendly)	

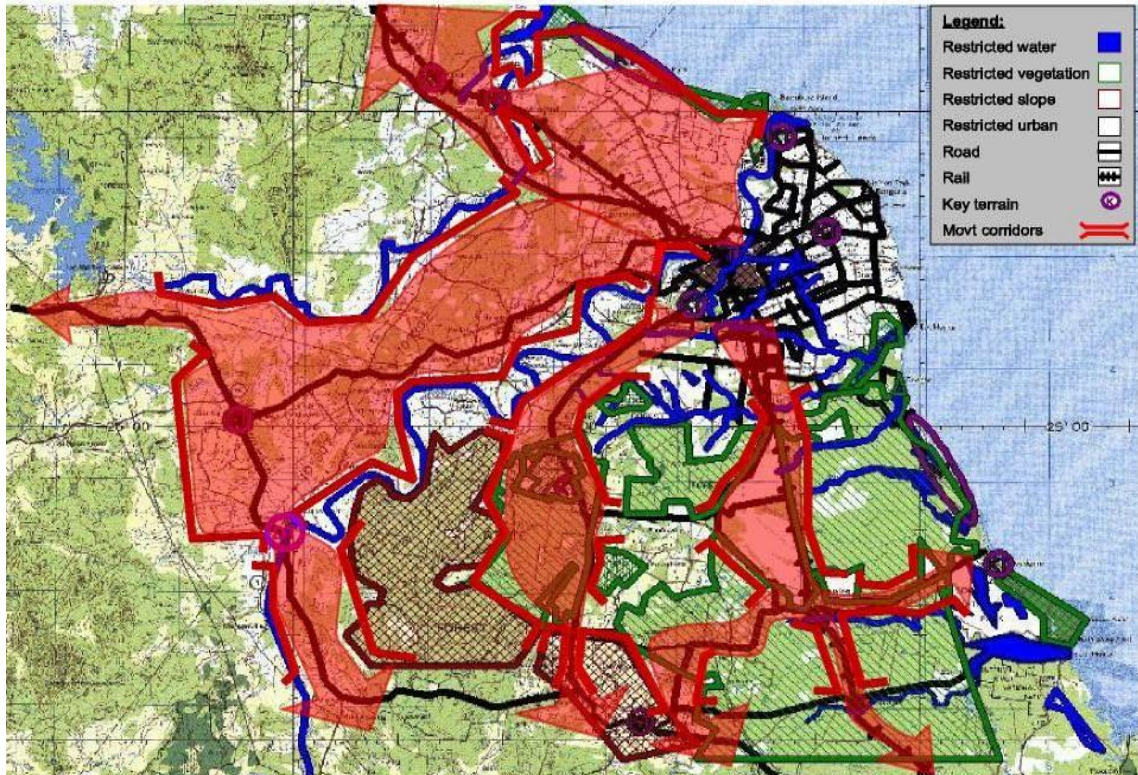
EXAMPLE IPOE BRIEFING FORMAT

Input	Activities	Output
(a)	(b)	(c)
Enemy situation update	1. Overall context of enemy situation. 2. Orientate commander to the map.	Mark incidents on map if appropriate. AO/AI, if required, boundaries and significant features.
Assumptions	3. Key deductions about operational environment and weather effects.	Comprehensive statement on the effects of the weather on personnel and equipment for the next 24 to 72 hours. Comprehensive statement on the overall effect of the terrain types to be encountered and their effect on enemy and friendly COA.
MLCOA	4. Brief mission and Purpose, Method and Endstate. 5. Brief SOM. 6. Indicate main/supporting effort by phase. 7. Brief BOS concepts by phase. 8. Describe the HVT matrix for MLCOA. 9. Brief COG focusing on the CV. 10. Brief TCV.	Use the situation overlay with time and phases marked. Detail by timings and event (see Annex E for an example SOM).

(a)	(b)	(c)
MDCOA	11. Brief mission and purpose, method, endstate. 12. Brief SOM. 13. Indicate main/supporting effort by phase. 14. Brief BOS concepts by phase. 15. Describe the HVT matrix for MDCOA if there is a change to MLCOA. 16. Brief COG focusing on the CV. 17. Brief TCV.	Use the situation overlay with time and phases marked. Detail by timings and event (see Annex E for an example SOM).
Event overlay	18. Show graphically with COA, time, phase, DPT and NAI and TAI. 19. Brief the event and RSI matrix.	NAI, indicators, timing, linked to a particular COA.
Take questions from the commander		

ANNEX C TO CHAPTER 2

EXAMPLE OF MODIFIED COMBINED OBSTACLE OVERLAY



	Colour	Restricted	Very restricted	Note
Definition		Terrain hinders movement and manoeuvre in formation to some extent but requires little effort to enhance mobility.	Terrain that severely hinders or slows movement and manoeuvre in formation and requires effort to enhance mobility.	
Symbology				500 m spacing between hatches. Hatches at 45°. Edges thicker than cross-hatching. Filter out any areas showing restrictions that are less than 200 m ² for a 1:50 000 overlay.
Vegetation	Green	Medium vegetation Vineyard Orchard	Dense vegetation Rainforest Pine plantation Mangroves	Mark road clearing as 100 m wide for single-lane roads/tracks and 200 m wide for double-lane roads/tracks.
Slope	Brown	20–30°	>30°	Mark as vegetation when both slope and vegetation restrictions apply.
Built-up areas	Black		All built-up areas	Mark as built-up area when both slope and built-up area restrictions apply.
Hydrography	Blue	Areas subject to inundation	Swamps Saline coastal flat	Mark all major watercourses and significant perennial streams. Mark areas of open water such as large lakes and dams.
Remarks	Criteria are based on the mobility of a Musorian Mechanised Division employing T72s and BTR70s as the principal A vehicles Seasonal weather effects are assumed.			

RESTRICTED

RESTRICTED

MP 0.5.1 TD

ANNEX E TO

CHAPTER 2

EXAMPLE INTELLIGENCE COLLECTION PLAN

Formation/Unit: Cav Tp																			
Period covered: fm D - 7 to D + 2																			
Intelligence Requirement: En first ech gp																			
			Source and Agencies																
Information Requirement	Indicators	Specific Orders and Request	Own Source								Other Source						Type/Form of Report	Remarks	
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(l)	(m)	(n)	(o)	(p)	(q)	(r)	(s)	(t)	
Will the lead adv guard enter the NAI 1 on the evening of D - 2?	1. Dispersal of Tk and Self Propelled Arty to fwd posn	Will the main body closing to the lead adv guard	L O H		1 4 B D E						P O L I C E								Report by fastest means to Div G2 cell
	2. Increase coms by the adv guard	En will estb firm base before NAI 1		D I V															Report by fastest means to Div G2 cell

RESTRICTED

CHAPTER 3**PRELIMINARY ANALYSIS****SECTION 1****GENERAL**

301. Preliminary analysis is the first step in the MAP and is used predominantly to focus the commander and/or planning group on an impending operations planning activity. The MAP commences with the receipt of an OpO, a Fragmented Order (FRAGO), a WngO or guidance from a higher HQ. Once the new mission is received, the commander and/or key staff must conduct an initial analysis of the situation, this is known as the preliminary analysis.

302. This initial assessment defines the purpose, the time available for planning and the desired endstate without pre-empting full MA or IPOE.

SECTION 2**OUTPUTS**

303. **Issue Commander's Initial Guidance.** The commander will issue initial guidance to the staff and/or subordinates. It should cover the following:

- a. The situation (threat, stakeholders, friendly forces, environment).
- b. The purpose and endstate.
- c. Imposed key timings.

- d. The time available for planning, including any abbreviations to the MAP or planning focus.
- e. Initial information requirements and reconnaissance effort.
- f. Initial risk guidance.
- g. Any requirement for a WngO, including preliminary movements.

304. **Issue Warning Order.** To maximise parallel planning and the time available for subordinate planning, an initial WngO may be issued to subordinates at this time. This WngO can be confirmed or refined at the end of the MA and again on completion of the MAP while the final plan is being produced.

305. **Conduct Planning Time Appreciation.** Time determines the level of detail to which the staff can plan. The commander must weigh up the desired degree of perfection in planning as opposed to the need to act before the threat does in order to seize and retain the initiative. The time plan is thus one of the most important early decisions taken by the commander.

306. The 'one-third, two-thirds' rule should be applied when developing a time plan, that is, staff should allocate one-third of the available time before an operation commences to produce and disseminate the plan. The other two-thirds are required for subordinate battle procedure.

307. Of the one-third of the time available a recommended percentage allocation to each of the steps in the process is as follows:

- a. IPOE (including ground reconnaissance) – concurrent with MA and ongoing.

- b. Preliminary Analysis – 10 per cent.
- c. MA – 20 per cent.
- d. COA Development – 20 per cent.
- e. COA Analysis – 40 per cent.
- f. Decision and Execution – 10 per cent.

308. **Identify Imposed Key Timings.** A time appreciation is conducted by determining a critical timeline and planning in reverse order. Imposed key timings are given by the superior commander and may include:

- a. The time by which the superior commander's endstate is to be achieved.
- b. H-hour and known Phase Time Lines.

SECTION 3

CONCLUSION

309. The preliminary analysis is designed to articulate the purpose of the superior commander's intent on the mission which along with the identifiable time available for the planning process of MAP. This is the first step of pre-empting full MAP or IPOE to emphasis the initial task and mission. The outcome of this step is to produce the initial WngO to the subordinates. The preliminary analysis aide memoire as in **Annex A**. If commander requires a brief which therefore the preliminary analysis briefing format is in **Annex B**.

**ANNEX A TO
CHAPTER 3**

PRELIMINARY ANALYSIS AIDE MEMOIRE

Inputs	Activities	Outputs
(a)	(b)	(c)
Commander's guidance OpO FRAGO WngO	1. Situation: a. Threat. b. Stakeholder. c. Friendly forces. d. Environment.	Initial information gathered of threat, stakeholder, friendly forces and environment.
Superior commander's guidance/orders	2. The purpose and endstate.	Commander's intent i.e purpose and endstate derive from the superior commander's guidance and mission.
OpO FRAGO Commander's guidance	3. Impose key timings	Imposed by commander
	4. The time available for planning, including any simplification to the MAP or planning focus (a) 1/3 and 2/3 available planning time.	Of the one-third of the time available a recommended percentage allocation to each of the steps in the process are as follows:

		a. IPOE (including ground reconnaissance) – concurrent with MA and ongoing. b. Preliminary Analysis – 10 per cent. c. MA – 20 per cent. d. COA Development – 20 per cent. e. COA Analysis – 40 per cent. f. Decision and Execution – 10 per cent
	5. Initial information requirements and reconnaissance effort.	
	6. Initial risk guidance.	Initial risk focus on the mission
	7. Issue initial WngO	

**ANNEX B TO
CHAPTER 3****PRELIMINARY ANALYSIS BRIEFING FORMAT**

Briefer	Subject
(a)	(b)
COS	1. Commander's initial guidance: a. Planning guidance and limitations. b. CCIR.
Intelligence (G2)	3. Intelligence update: a. Review the situation: (1) Threat, stakeholders. b. Identify significant environmental characteristic.
Op (G3/G5)	4. Commander's purpose and endstate. 5. Status of current operations. 6. Time available for planning. 7. Information requirement and reconnaissance effort.

Pers (G1)	8. Initial personnel update.
Log (G4)	9. Initial commander's logistic priorities. 10. Initial logistic planning 11. Logistic limitations.
COS/G3/G5	12. Initial risk guidance.

CHAPTER 4

MISSION ANALYSIS

SECTION 1

GENERAL

401. Mission Analysis (MA) along with IPOE, is the dynamic and continual process of review and re-evaluation of the operational situation by the commander and their staff. It is the critical part of the decision making process for extracting and deducing from a superior's orders the tasks necessary to fulfill the mission. It places in context the effect to be achieved in the overall design for operations and enables the commander to assess the assigned tasks as well as the purpose behind them. Implicit in this concept is the requirement for subordinate commanders to understand the overall intent of their commanders in order to determine the existing tasks and freedoms of action.

402. At the conclusion of the MA, the threat CV are drawn from the IPOE and analysed to determine those able to be targeted or influenced by available own forces. These TCV are then consolidated with the list of essential tasks (ET) from the MA to determine the Decisive Point (DP). These DP provide a focus for the development of own COA and the remainder of the MAP.

403. Following the MA brief, the commander provides guidance to the staff and confirms the mission, purpose, initial method (broad COA concepts based on the DP and endstate. The commander's guidance provides the basis for all subsequent decision making and planning. During this step an initial WngO is issued.

404. The activities of MA are set out in Figure 4–1.

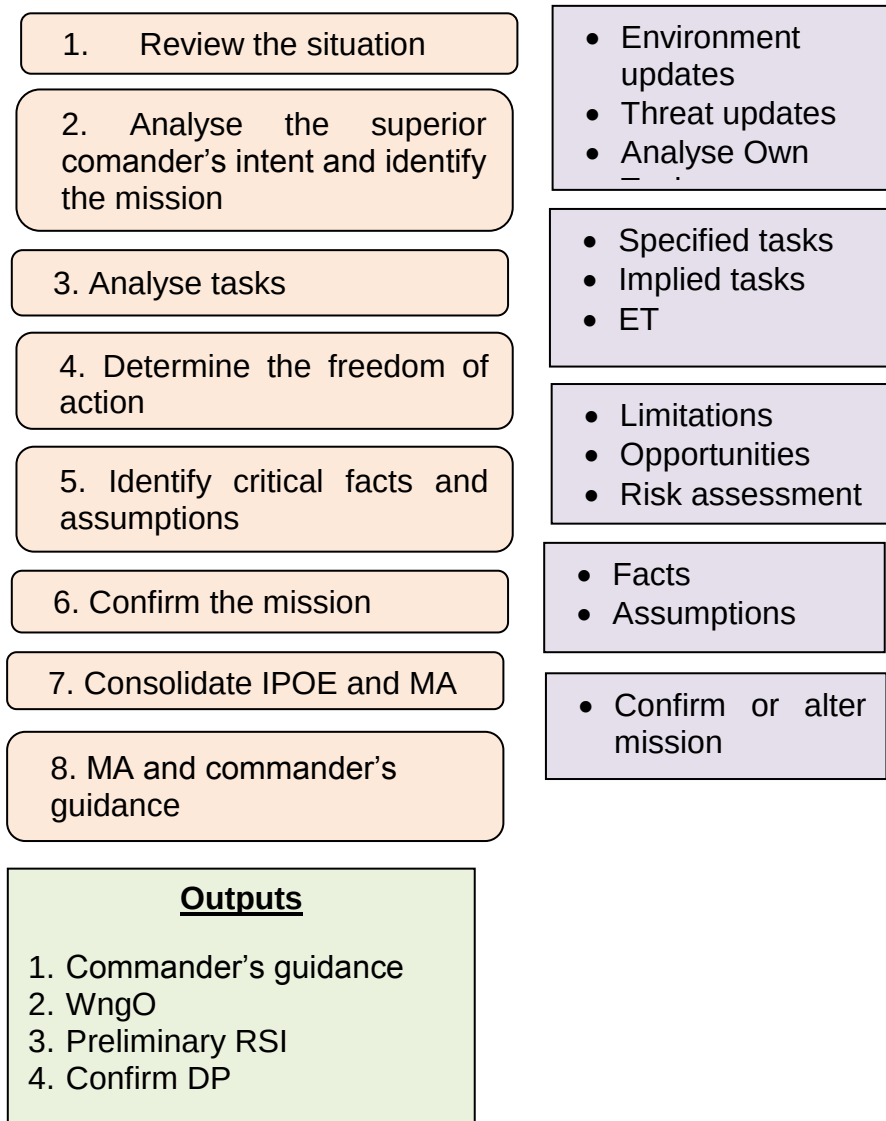


Figure 4–1: Activities of Mission Analysis

405. A detailed MA aide memoire is provided in **Annex A** and the roles and responsibilities of key staff for the MAP are detailed in **Annex B**.

SECTION 2

MISSION ANALYSIS PROCESS

ACTIVITY 1: Review the Situation

406. Reviewing the situation involves the receipt of intelligence updates through the IPOE process. These updates take the form of intelligence briefs and include products from the IPOE such as a MCOO, an threat COG construct and an HVT matrix as well as the broad Most Likely Course of Action (MLCOA) and Most Dangerous Course of Action (MDCOA). Any IPOE update should include a review of the AO, AI and the effects of the operational environment on friendly force operations. If a new operation is being conducted in an unfamiliar environment it may take some time before IPOE updates are available. However, the MA should be progressed as far as possible while the IPOE products are developed. Close and early staff integration in this regard will assist the MA.

407. **Analyse Own Task.** TASKORG are reviewed to determine the actual combat power of the force available. To achieve this, all available assets are reviewed two levels below the level of the HQ conducting the MAP, including any attachments and detachments. This analysis must also identify the friendly force COG, which must be protected and the broad options these forces can employ against the threat. At this stage the logistics staff must determine the logistic capabilities available to support the operation and identify any logistic deficiencies that would prevent an operation from being conducted. Own force combat power is determined and recorded as an ORBAT in the same manner as the threat's ORBAT in IPOE (see paragraph 255), to allow force ratio

comparison later in the MAP. Attention should be paid to the following considerations when analysing own troops:

- a. **Manoeuvre Assets and Capabilities.** All manoeuvre assets to be used for the operation and their current combat value and capability are identified. For example, a brigade may only have the combat value of a full strength battalion because of its battle losses or its lack of combat supplies and therefore may only be able to cope with battalion level tasks. Manoeuvre shortfalls and options to overcome these are identified.
- b. **Combat Support Assets and Capabilities.** All Combat Support (CS) assets with their combat value and capability, together with any CS shortfalls and options to overcome these are identified.
- c. **Combat Service Support Assets and Capabilities.** The CSS state of the force together with any shortfalls and options to overcome these are identified.
- d. **State of Morale.** Strategies to overcome any morale problems are identified.
- e. **Friendly Force Centre of Gravity (COG).** The friendly forces' COG should be analysed in a manner similar to that of the threat's, to identify CV that will be the target of threat operations (see paragraph 282 to paragraph 289). Once friendly CV are identified they are passed to the intelligence staff to aid with development of threat COA (identification or confirmation of threat objectives and endstates). The security of friendly forces' own CV must be considered during planning and may form ET. The method of constructing COG as in **Annex C**.

408. **Refine Time Appreciation.** Time appreciation needs to be refined based on current intelligence. In relation to the one-third of time available (see paragraph 306 and paragraph 307) a recommended percentage of time allocated to MA is 20 percent.

ACTIVITY 2: Analyse the Superior Commander's Intent and Identify the Mission

409. **Format of Commander's Intent.** A commander's intent is given in terms of the following:

- a. Purpose.
- b. Method.
- c. Endstate.

410. **Purpose.** The purpose determines the reason for the operation and is usually derived from the 'in order to' part of the mission statement and the higher commander's intent.

411. **Method.** The method portion is a description of the method by which the commander is to achieve their purpose explained in terms of the effects to be created on the threat. The method focuses on the achievement of DP.

412. **Endstate.** The endstate describes the commander's desired outcome for the operation or the state that the commander wishes to exist when the operation is complete. It defines the success criteria for the operation and may include descriptions of status and the locations of both threat and friendly forces. It also provides information regarding the disposition of forces for transition into the next phase of operations.

413. **Analysis of the Intent.** The commander's intent must be analysed one up and two up. An understanding of the

superior commander's intent for the entire force as well as the subordinate's specific and implied role within it is critical. At the conclusion of this analysis, the subordinate must clearly understand the part their force is to play within the higher intent.

414. **Relationship between Intent and Mission.** Mission command raises the importance of the commander's intent above that of the mission statement. In a rapidly changing situation, the overall intent of the commander will probably not change but the options available to achieve that intent are likely to vary considerably. For example, during a brigade attack, the ME may be switched from a unit that has stalled to another unit. The unit now designated ME must check its original mission and alter it, if necessary, to one that will achieve the mission of the brigade ME in accordance with the commander's intent. In this example, the commander's intent has not changed but the method employed to achieve it has.

415. **Format of Mission Statement.** The elements of a mission statement are 'who, what, where, when and why'. Combined, these elements define the overall task and purpose; for example, '14Bde (Mech) (who) is to delay en (what) at vic Bandar Dungun (where), NLT 240600H May 2016 (when), in order to facilitate the 3 Div to destroy en at MS 7564 (why)'.

416. **Identify Own Mission Statement.** The superior commander will normally assign the mission directly in verbal or written orders, or it may need to be deduced in response to a changed situation. Regardless of how the mission statement is received or derived, it must be confirmed by testing against the demands of the situation and most importantly, the superior commander's intent. When a changed situation leads to a restated mission, there is a requirement to brief the higher commander of the reorientation if the situation permits.

417. An example of commander's intent statement is shown in **Annex D**.

ACTIVITY 3 – Analyse Tasks

418. MA enables commanders at all levels to identify clearly their specified tasks, implied tasks and ET, thus ensuring that they have thought through their mission carefully.

419. **Specified Tasks.** These tasks are directed by the superior commander and are normally found in the Concept of Operations (CONOPS) tasking paragraphs. However, they may also be found in coordinating instructions (particularly in relation to timings) and support annexes. Coordination with higher HQ and adjacent units or formations can also result in additional specified tasks. All specified tasks must be clearly identified.

420. **Implied Tasks.** These tasks are not specified by the superior commander but are the tasks that are necessary to meet the superior commander's intent. The analysis of the superior commander's intent will identify the implied tasks. Not all implied tasks will be identified during MA. Some will be revealed later during COA development and COA analysis. However, an attempt to identify all implied tasks must be made under MA as this provides the basis upon which the COAs are developed. Implied tasks may include the passage of lines, obstacle crossings, breaching operations and the seizure of key terrain. They do not include routine or SOP operations such as establishing liaison with adjacent units.

421. **Essential Tasks.** ET are those tasks that must be successfully conducted to achieve the mission and the superior commander's intent. ET are identified from the list of specified and implied tasks and additionally may include protection of friendly force CV. They should be compared to the mission to ensure that it is still the most appropriate expression of the superior commander's intent. These tasks will form the basis

for the selection criteria for the planning and testing of the COA through DP.

ACTIVITY 4 – Determine Freedom of Action

422. The commander's freedom of action involves identifying the broad range of actions that can be conducted to achieve the superior commander's intent. In order to ascertain what the commander can do it is necessary to identify and rule out what the commander cannot do. This will involve the consideration of factors which limit possible actions and an analysis of the situation to identify potential opportunities for action. The limitations determine the commander's freedom of action.

423. **Limitations.** The limitations on the operation include restrictions and constraints. Restrictions are a prohibition on activities that a superior commander or another authority might impose. Restrictions may be legal (imposed by international and domestic laws) moral and ethical (these limitations are now very largely absorbed into international normalities and values) or political (which include, in the case of multinational operations, what is considered acceptable by all contributing countries).

424. **Constraints.** A constraint is an action imposed by a superior commander or another authority which must be undertaken. Constraints may be derived from specified or implied tasks. An example is the tasking of a subordinate commander to maintain a reserve force that may be employed by the superior commander upon order. Constraints may be specified or implied, but are most likely identified from ET. Constraints are actions that must be undertaken while restrictions are prohibited actions.

425. **Opportunities.** In analysing the battlespace and the superior commander's intent it is important that the commander and the staff do not overlook the consideration of potential opportunities. Opportunities can be described as the

possible ways and means open to a commander that may well extend beyond the parameters identified by specified and implied limitations. Opportunities should be viewed from the perspective of the battlefield environment, timings and each friendly BOS.

426. **Risk Assessment.** Higher HQ may specify a risk that the superior commander is willing to accept to accomplish the mission. The commander must use their own judgment and determine what risk is acceptable in order to accomplish the mission. Risk management is an integral and ongoing aspect of the MAP. The explanation of risk assessment (Acceptable Degree of Risk) is at **Annex E**.

ACTIVITY 5 – Identify Critical Facts and Assumptions

427. There are two categories of information concerning assigned tasks. These are the facts and assumptions that are identified as a result of the commander and staff using deductive reasoning to consider all the factors applicable to the situation.

428. **Facts.** Facts are statements of known data (eg, the situation, threat and friendly force dispositions, available troops, unit strengths and material readiness). The mission and the commander's intent (one and two levels up) are key facts. Facts also include staff projections and assessments of tangible and intangible factors (eg, subordinate unit fatigue levels, morale, and Class 5 stocks and replacements).

429. **Assumptions.** These are developed as substitutes for facts to allow planning to continue without delay. An assumption is only appropriate if it is valid. For example, 'assuming away' potential problems, such as poor weather or reasonable threat options and capabilities because these are too difficult to predict is an invalid use of assumptions. Valid assumptions are those that have a good chance of occurring. For example, the threat being able to concentrate sufficient

combat power at the decisive point of an attack is a valid assumption unless there is a specific reason (fact) that will prevent this from occurring (such as a deep operation against the threat reserve).

430. Assumptions critical to the planning process must be clarified as soon as possible. Any assumption made about the operational environment or the threat should be resolved by preliminary tasking of intelligence or reconnaissance assets. These tasks should be presented in the collection plan and within a FRAGO or WngO.

ACTIVITY 6 – Confirm the Mission

431. The mission statement must now be confirmed to ensure that it meets the needs of the superior commander's intent and is in accordance with the current situation. The exact wording of the mission statement, if it is to assist in achieving the superior commander's intent, must clearly reflect the unit or formations primary purpose. All factors relevant to the design of the mission statement must be considered. The staff confirms or changes the mission in accordance with current analysis and briefs the commander on any proposed changes during the MA briefing, or sooner if practicable. Changing an assigned mission should not be undertaken lightly. The commander must seek the approval of the superior commander as soon as possible.

ACTIVITY 7 – Consolidate Intelligence Preparation of the Operational Environment and Mission Analysis

432. **Derivation of Decisive Points.** Having determined the tasks and freedoms during previous activities, the staff consolidates all work undertaken thus far in the MAP to derive the DP. DP are derived from ET and/or TCV which are critical to achieving the endstate. Their sequencing forms a Line of Operation (LOO). Some DP may be achieved concurrently.

433. Derivation of DP is an important activity as they form the basis of development of the friendly force COA and are a key element of the commander's guidance issued at the end of the MA brief. Creating COA concepts using DP ensures that the COA developed will defeat the threat through the CV identified by the commander while achieving their mission and the higher commander's intent.

434. It should be noted that the involvement of the staff in the derivation of the DP is very much influenced by the commander's style, the available planning time, the operational situation, and the number and experience level of the staff. In an Staff MAP, conducted by a large and experienced HQ, the commander may be well served in directing the staff to draft the DP for confirmation in their guidance following the MA brief. This is not to suggest that the commander is divorced from a key element of the planning process, but rather that the staff can greatly assist a busy commander in deriving the DP. In most cases, the commander will determine the DP and other key elements of their guidance during their own concurrent MAP and direct the staff accordingly. Alternatively and time permitting, the commander and staff may refine the DP during the MA brief. If this is unclear, clarification of the degree of staff input required should be sought by the COS during the initial guidance given by the commander on receipt of the mission.

435. **Determine Threat Targetable Critical Vulnerabilities.** The first step in deriving DP is to review the threat CV identified in COG analysis during IPOE. The planner then determines which of these CV can be influenced or exploited by the organisation planning the operation using existing capabilities and resources. These CV are referred to as TCV. This consideration will be based upon the review of the status and combat power of own troops in the first part of the MA. Staff should be careful not to discard CV as being untargetable too early therefore prematurely reducing the numbering of options available to the commander. In some cases a CV may become targetable with the allocation of additional capabilities

from the higher commander. For example, the threat's reliance on the integrity of C2 structures may be regarded as a TCV should the allocation of an electronic attack capability be a reasonable request to a higher commander.

436. **Consider Essential Tasks.** The next aspect to be considered involves the ET drawn from the MA. By definition, these tasks should be considered essential to the achievement of the mission and the higher commander's intent.

437. **Merge Targetable Critical Vulnerabilities with Essential Tasks.** The planner should now merge the two TCV and ET lists. It is not necessary to prioritise or sequence these at this stage. An example TCV and ET list is shown in **Annex F**.

438. **Determine the Decisive Points.** Determination of DP involves a combination of synthesis of the analysis from the IPOE and MA and intuitive thinking to identify major events that will form the basis of COA concepts. The planner must review the TCV and ET and determine the activities, in terms of targets and effects which will achieve decisive outcomes against the threat and in pursuit of the mission's purpose. They must then determine how these activities may be grouped into major events. These major events are then tested to confirm that each of them will contribute to the disruption or dislocation of the threat COG achievement of the commander's intent and preservation of own forces. If the major events achieve those outcomes, they are considered decisive. It should be noted that DP should not be sequenced at this point, nor should the major events dictate the forces involved or the methods employed. These activities take place when COA concepts are created.

439. The resultant list of DP should be refined to aid clarity in the next step, which is COA development. More than one TCV or ET may be encompassed in a single DP. Some DP may be purely task related, while others may be entirely CV. Some DP

may achieve ET and also have a concurrent or subsequent effect upon CV. The refined list of DP does not need to be sequenced or prioritised yet, as this will occur in the first stage of the COA development. The refined DP method matrix records those DP which must be achieved to meet the ET and undermine the threat through CV. An example DP method matrix is shown in **Annex G**.

440. The IPOE and MA are consolidated to determine the DP prior to the MA brief. This is a critical step in the MAP. DP focus the planning effort on developing COA that will defeat the threat through TCV while achieving the mission and higher commander's intent. The activities involved in DP planning in the MAP are shown sequentially in Figure 4–2.

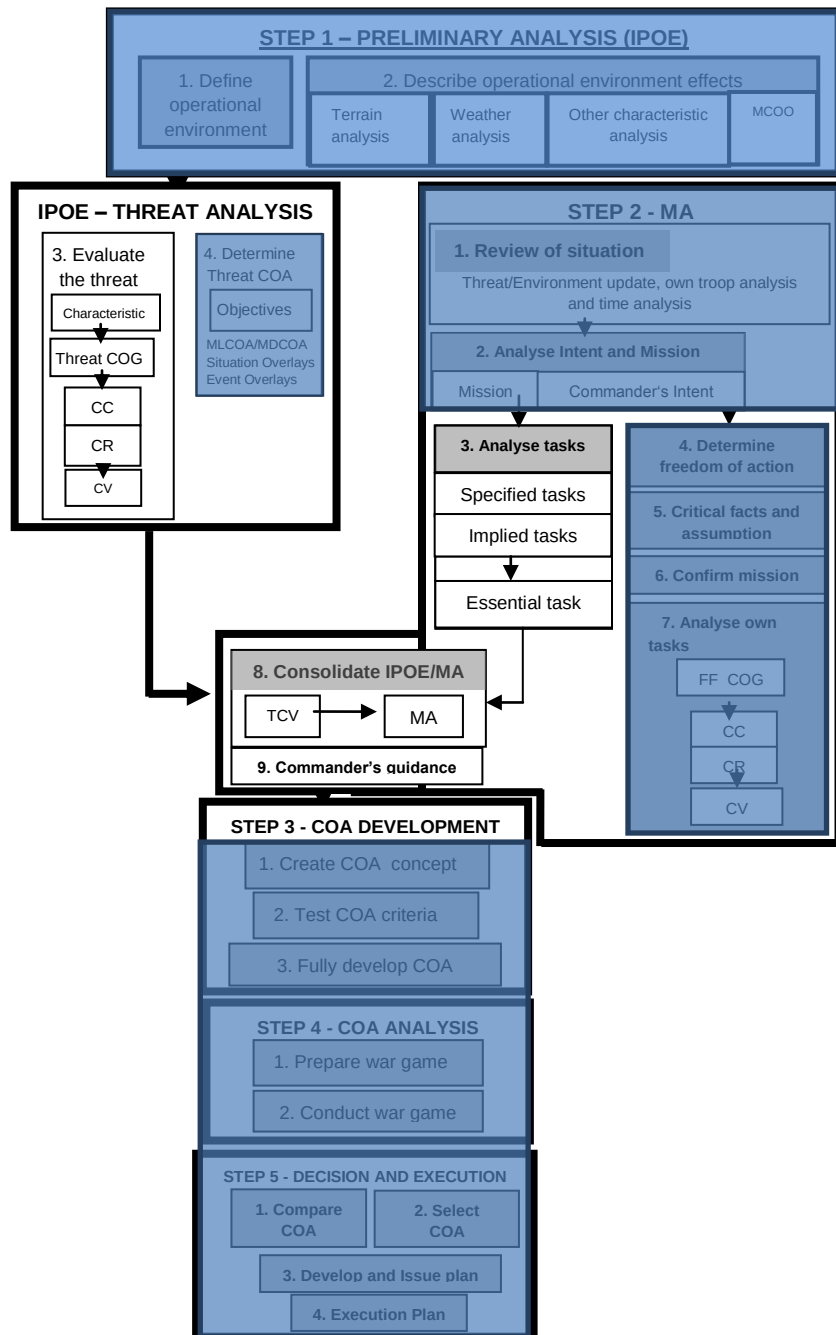


Figure 4–2: Decisive Point Planning in the Military Appreciation Process

ACTIVITY 8: Mission Analysis and Commander's Guidance

441. The conclusion of MA is marked by the delivery of the MA brief to the commander. This brief is designed to ensure that all areas of MA and IPOE have been thoroughly investigated and that the commander's intent and concept are understood. The MA brief should not be a unit readiness briefing. Staff officers must know the status of subordinate and supporting units and include relevant information as it applies to the situation. The MA brief is not just for the benefit of the commander but for the staff including subordinate commanders when possible. Often this is the only time the entire staff is present and affords the only opportunity to ensure a thorough understanding of the task and subsequent planning.

442. Guidelines for the staff officer MA briefing format are detailed in **Annex H**.

SECTION 3**MISSION ANALYSIS OUTPUTS**

443. **Commander's Guidance.** The products of MA are the commander's guidance and the issuing of a FRAGO or confirmation of an initial WngO. The use of WngO maximises concurrent activity and the efficient use of available time. The commander's guidance is critical as it focuses the staff on the commander's intent and the timely effective development of COA. At times the commander's guidance may be at variance with the general direction taken by the staff during MA. If this occurs, the staff will need to reorientate their focus prior to COA development to align their thinking with that of the commander.

444. **Development of Guidance.** The commander will normally develop their guidance based on their own analysis of the situation or they may refine the guidance during or after the

MA brief. As with DP, the level of involvement of the staff in framing elements of the commander's guidance is heavily influenced by the commander's style, the available planning time, the operational situation, and the number of staff and their levels of experience. If this is unclear clarification of the degree of staff input required should be sought by the COS during the initial guidance given by the commander on receipt of the mission.

445. The detail of the guidance will also depend on the variables listed in paragraph 444. The commander's guidance can be broad and general in nature, which will give the staff maximum latitude and allow a proficient staff to develop flexible and effective COA. As time becomes more constrained, the commander's guidance must become more specific and directive. The more detailed the elements of the guidance, the more quickly the staff can complete the plan but the greater the risk of overlooking or insufficiently examining aspects that might affect mission execution.

446. **Essential Elements of Guidance.** Regardless of the situation, the commander should give their personal guidance on the confirmed mission their intent and the DP. These essential elements will provide the minimum guidance required for staff to develop COA without nugatory or wasted effort. The level of detail specified in the method element of the intent statement will normally be minimal. This is because the commander may not be able to completely detail the effects anticipated on the threat until each COA has been fully developed in the next step (see Chapter 5). To do so may pre-empt COA development by the staff. The effect of the operation on the threat will not be fully articulated until the commander selects the plan. However, should the commander wish to focus the staff on planning for specific effects, more detail on the method element of the intent should be provided.

447. Ideally, the commander's guidance should address the following 10 elements, which can also form the basis of the WngO:

- a. Confirm the mission.
- b. The commander's intent.
- c. DP.
- d. The threat COA to be developed.
- e. The higher commander's deception objective.
- f. The commander's critical information requirements (CCIR).
- g. The time plan.
- h. The time, location and type of orders.
- i. Broad COA concepts based on DP.
- j. Rehearsal details.

448. **Confirm the Mission.** The commander confirms the mission statement as being a correct reflection of the overall task and purpose of the force in accordance with the superior commander's intent.

449. **Commander's Intent.** During the MA process the commander develops their intent for the operation. After reviewing the MA briefing and the confirmed mission, they express their intent statement. The commander's intent is the commander's personal expression of why an operation is being conducted and what they hope to achieve. It is usually expressed in terms of the following three elements:

a. **Purpose.** The purpose explains why an operation is being conducted and is usually derived from the 'in order to' element of the mission statement and the higher commander's intent. It explains the contribution of the operation to the higher commander's plan.

b. **Method.** The commander gives a description of the method by which they plan to achieve their purpose explained in terms of effects created on the threat. The method focuses on the threat rather than the ground or friendly troop SOM. While it is inextricably linked to the SOM, it does not provide detailed tasks or actions. Rather it uses such verbs as 'dislocate', 'disrupt' and 'pre-empt' to describe the desired effects on the threat. It can include a description of the threat COG and the DP that will be achieved. The level of detail specified by the commander in the method element will depend on the desire or requirement to focus the staff on planning COA with specific effects on the threat.

c. **Endstate.** The endstate describes the commander's desired outcome for the operation or the state which the commander wishes to exist when the operation is complete. It defines the success criteria of the operation and may include descriptions of the status and locations of both threat and friendly forces. It also provides information regarding the disposition of forces for transition into the next phase of operations.

450. **Decisive Points.** It is critical for the DP to be confirmed prior to the COA development in order to focus all subsequent staff effort.

451. **Threat Courses of Action to be Developed.** The commander directs which threat COA are to be developed to support the next two steps of the MAP. As a minimum this will include the MLCOA and MDCOA.

452. **Higher Commander's Deception Objective.** The commander can choose to state their general concept for their deception objective and how it must support their higher commander's concept.

453. **Commander's Critical Information Requirements.** The commander alone decides which information is critical, based on their experience, the mission, the higher commander's intent and input from the staff. The staff nominates information requirements to become the CCIR. The CCIR are situation dependent and specified by the commander for each operation. The commander must continuously review the CCIR during the planning process and adjust them as situations change or as assumptions are confirmed or proven otherwise. During the MAP, the CCIR most often arise from IPOE and wargaming.

454. The CCIR are normally expressed as the following:

- a. PIR – questions about the threat or the environment for which there is a priority need to collect information and produce intelligence.
- b. Essential Elements of Friendly Information (EEFI) – information regarding friendly forces that needs to be denied to the threat's information-gathering systems for the success of the operation (eg, the location of own reserves).
- c. Friendly Forces Information Requirements (FFIR) – information about the activities or capabilities of own or adjacent units.

455. **Confirmatory Warning Order.** Immediately after the commander gives their guidance, the staff will send subordinate and supporting units a confirmatory WngO to initiate timely battle procedure. If an initial WngO was issued

after the commander's initial guidance on receipt of the mission, this should be confirmed or altered as required. A full WngO, however, cannot be issued until after the commander's decision is made. The initial WngO should contain, but is not limited to the following:

- a. The confirmed mission.
- b. The commander's intent.
- c. The possible tasks.
- d. Deception guidance (where applicable).
- e. Specific priorities.
- f. The time plan.
- g. Reconnaissance to be initiated by subordinate units.

456. Broad Course of Action Concepts Based on Decisive Points. At the conclusion of the MA, COA development commences. The commander (and preferably their subordinate commanders with their principal staff officers) begin developing the broad COA that are to be developed in detail in the COA development.

457. Rehearsals. Rehearsals are a key aspect of the execution phase. Rehearsal techniques, detailed in Chapter 7, provide options for employment depending on how much time is available and whether or not the commander can be involved completely in the rehearsals. Details regarding the location, timing and nature of rehearsal may be disseminated by the commander.

SECTION 4

CONCLUSION

458. Mission Analysis process is the most crucial part in the planning process whereby the actual problem or task assigned by superior commander is identified or deduced here. All the relevant factors related in solving the problem statement will be analysed here to deduce all the possible actions available to solve the problem.

459. The ultimate purpose of the Mission Analysis process is to derive the mission statement before developing as many options available to achieve the mission in the next step or activity. The result from the IPOE in the process should deduce all the Recommended DPs and Broad COA to achieve the mission. This will provide focus for the development of own COA and the remainder of the MAP process.

MISSION ANALYSIS AIDE MEMOIRE

Inputs	Activities	Outputs
(a)	(b)	(c)
Intelligence updates Situation overlay IPOE	1. Review the situation: a. Environment updates. b. Threat updates. c. Analyse own tasks: (1) State of manoeuvre, CS and CSS assets. (2) State of morale. (3) Own COG and CV. d. Time appreciation (1/3, 2/3 preparation).	Most likely threat COA Most dangerous threat COA Initial time plan Manoeuvre, CS and CSS deduction/shortfall identified

(a)	(b)	(c)
Superior commander's guidance/orders	2. Analyse the superior commander's intent and identify mission.	2up in outline 1up in detail Determination of planner's part in the superior commander's intent
	3. Analyse tasks: a. Specified tasks. b. Implied tasks. c. Essential tasks.	Priority of tasks
	4. Determine freedom of action: a. Limitations: (1) Constraints (imposed action). (2) Restriction (prohibited action). b. Risk assessment (acceptable degree of risk).	Limitation Acceptable degree of risk (operational risk management)

RESTRICTED

MP 0.5.1 TD

(a)	(b)	(c)
	5. Identify critical facts and assumptions. a. Facts (known/measurable data). b. Assumptions (must be substitute for facts).	Critical fact and assumption
Changes to situation	6. Confirm mission.	Confirm mission Back-brief to superior commander
	7. Consolidate IPOE and MA. a. Determine threat TCV. b. Consider ET. c. Determine DP.	DP listed

(a)	(b)	(c)
	8. Receive commander's guidance. a. Confirm mission. b. Commander's intent (purpose, method and endstate). c. DP. d. Threat COA to be developed. e. Broad COA concept based on DP. f. Deception objective (if applicable). g. CCIR. h. Time plan (when orders to be issued). i. Time, location and type of orders. j. Details of rehearsal (what, when and where).	WngO issued Commander's guidance DP must be determine and confirmed before COA development

ANNEX B TO

CHAPTER 4

ROLES AND RESPONSIBILITY OF KEY STAFF

The Commander

1. As the commander is responsible for the direction of the decision making process, it follows that they must be fully involved in the MAP, providing guidance during the MA and that as they make the decisions, they must be involved in the decision and execution. The extent to which the commander is involved in the detailed development and analysis of the COA will depend on a number of considerations including:

- a. The prevailing situation (in particular, the time available to make a decision).
- b. The state of training and experience of the staff.
- c. The level of decision making required.
- d. The potential complexity of the required decision.
- e. The style and personality of the commander.

2. The commander may also undertake their own individual MAP while their staff enhance situational awareness and conduct the MA. The commander's individual MAP allows the development of their own commander's intent and provides guidance to their staff. It drives the MAP and results in a command decision that allows the commander to influence the direction that the staff will take when solving the problem.

3. While the format for the commander's MAP is largely their choice, it should adhere to the format for an individual MAP. The commander integrates their personal knowledge of

the situation (including the results of any reconnaissance and personal discussions with higher commanders) with their intuition and experience. The commander may choose to draw upon those products from higher HQ and from their own staff in the conduct of their analysis. They will normally need to complete an initial IPOE and MA to be in a position to issue their guidance for COA development.

4. The commander is also responsible when the plan is finalised, for reporting back to their superior to ensure that the plan is coordinated and meets the senior commander's intent. This back-brief should follow an SOP format.

The Staff

5. The staff are responsible for completing the bulk of the MAP under the direction of the commander or their principal staff officer/COS. (A graphical overview of the staff appreciation process and outputs is shown in Chapter 1 - **Annex A**). At lower tactical levels, the staff is concerned with the detailed evaluation of information and the conduct of checks on behalf of the commander. At the higher tactical levels and at the operational level (particularly in joint and combined operations) staff members will be required to conduct their own planning in their BOS specialities which will contribute to the core MAP. In addition, they will often be required to develop options or COA, for the commander to compare and decide upon. However, while members of the staff may recommend a COA to the commander, they do not make the decision.

6. BOS planning and analysis supports each step of the MAP, and should form the basis for staff and BOS briefings and annexes to orders and plans. Staff officers and BOS advisers are required to support ongoing planning by providing staff checks, facts and staff conclusions. BOS analysis must be used to validate MAP assumptions or to replace assumptions with facts. It must also be used as the basis for the comparison

of viable COA during Step 3 of the MAP – COA Development (see Chapter 4) and Step 4 of the MAP – COA Analysis (see Chapter 5).

The Chief of Staff

7. The COS synchronises the staff effort. They manage, coordinate and discipline the staff's work while providing quality control over the MAP process. They must thoroughly understand the commander's intent and guidance so that they can supervise the entire MAP in the commander's absence. They ensure that the staff has the information, guidance and facilities it needs. They provide timelines to the staff, establish back-brief times and locations, and provide any unique instructions that are required. Most importantly, they ensure that each of the functional areas within the staff continually liaises with the others to ensure that their work remains coordinated and not tangential to the direction of the problem solving process.

8. While the commander allows the COS to direct the staff effort on their behalf, the COS does not have a command function and can only implement command decisions on behalf of the commander after consultation or direction.

9. The SMAP is a dynamic group decision making process. As such, it is prone to the strengths and weaknesses evident in a social environment. It requires continual development of both the individual BOS expertise and the collective staff effort. Tendencies by sub-groups and individuals towards fragmentation and misaligned priorities must be moderated through strong leadership and an emphasis on the commander's intent.

**ANNEX C TO
CHAPTER 4****THE CENTRE OF GRAVITY (COG) CONSTRUCT
AND ANALYSIS**

1. **Centre of Gravity Analysis.** Analysis of friendly, threat and other relevant actors' COG is a key component of operational design. It is enabled by IPOE and work done in Preliminary Analysis to understand the threat's system. The commander and planning staff determine how to undermine threat COG while protecting friendly COG and influencing other factor COG to suit the desired outcomes. Understanding the relationship between COG compels greater precision of thought and expression in operational design. Each COG comprises the sum of its critical factors—capabilities, requirements, and vulnerabilities—and staff should base their analysis around this hierarchical framework.

a. **Critical Capabilities.** CC are the primary abilities that enable a COG to achieve its desired end state or prevent friendly forces from accomplishing their objectives. In essence, they are what the COG does (verb)—they can destroy something, seize ground, or deter friendly forces.

b. **Critical Requirements.** CR are the crucial enablers, means and resources (noun) that allow a COG to perform its CC. They equip the CC to function, and so support the COG, and are essential to the achievement of the threat's objectives. A system may consist of many things, but not all will be critical to the threat's desired end state.

c. **Critical Vulnerabilities.** CV are those critical factor that are inherently targetable and open to direct or indirect attack in a way that will contribute to a threat failing to achieve its objectives, whilst protecting friendly force CV. CV are often more detailed elements

or components of CR that support and enable CC to function. Careful analysis of CV will reveal linkages and commonalities which, if targeted or exploited, can achieve an efficient and expeditious indirect effect on the COG.

2. **Deriving The Centre of Gravity.** While there may be times when the COG is clearly obvious to the commander or planning staff, often true COG will be difficult to determine, particularly in complex environments. Misidentifying COG poses the very real danger of skewing planning and so raising operational risk during execution. Although there is no preeminent methodology to determine COG, what is suggested here is one logical path.

3. The aim of COG/critical factors analysis is not to put a name to the COG first and foremost; it is to identify and scrutinise those strengths and weaknesses (in other words, the critical factors of a threat that staff can protect against or target and exploit. If this is achieved then the COG, whether specified or not, will still be impacted in favour of friendly forces. **Figure 4C -1** illustrates this principle by showing analysis 'to the right' of a yet-to-be identified COG occurring first, which subsequently lets the COG emerge.

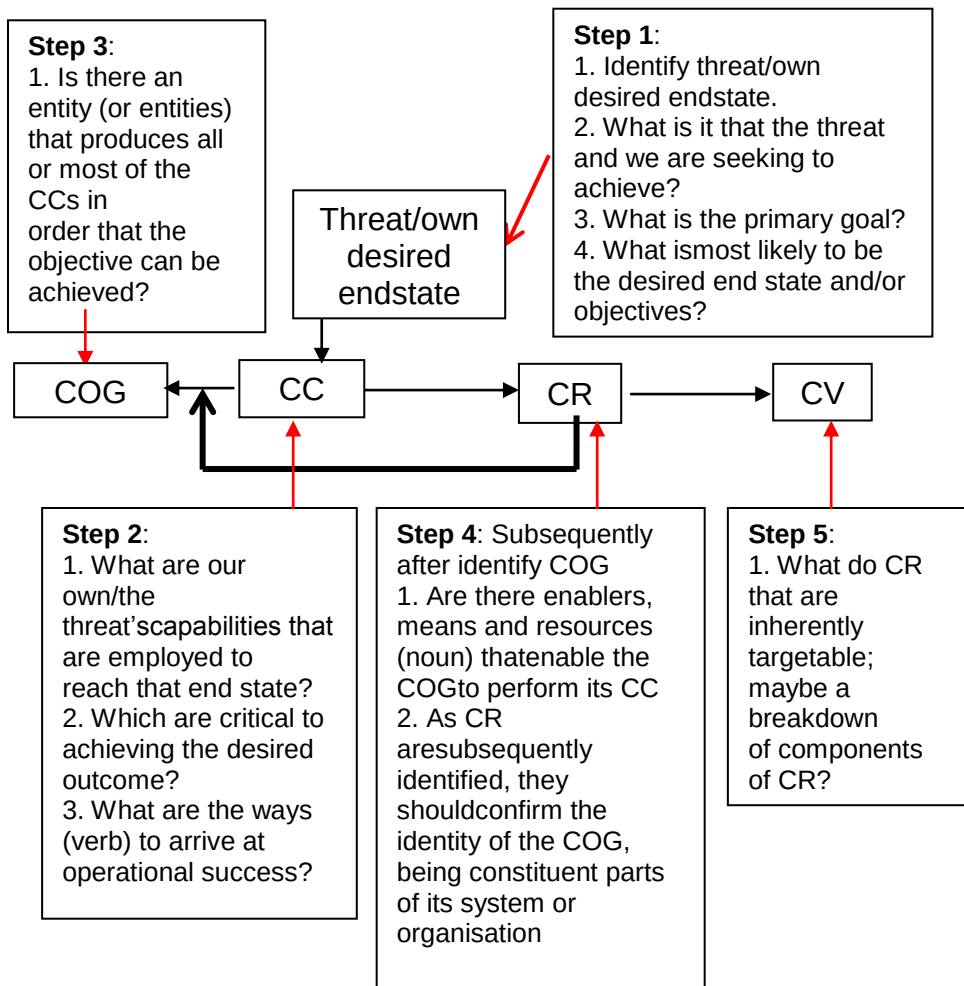
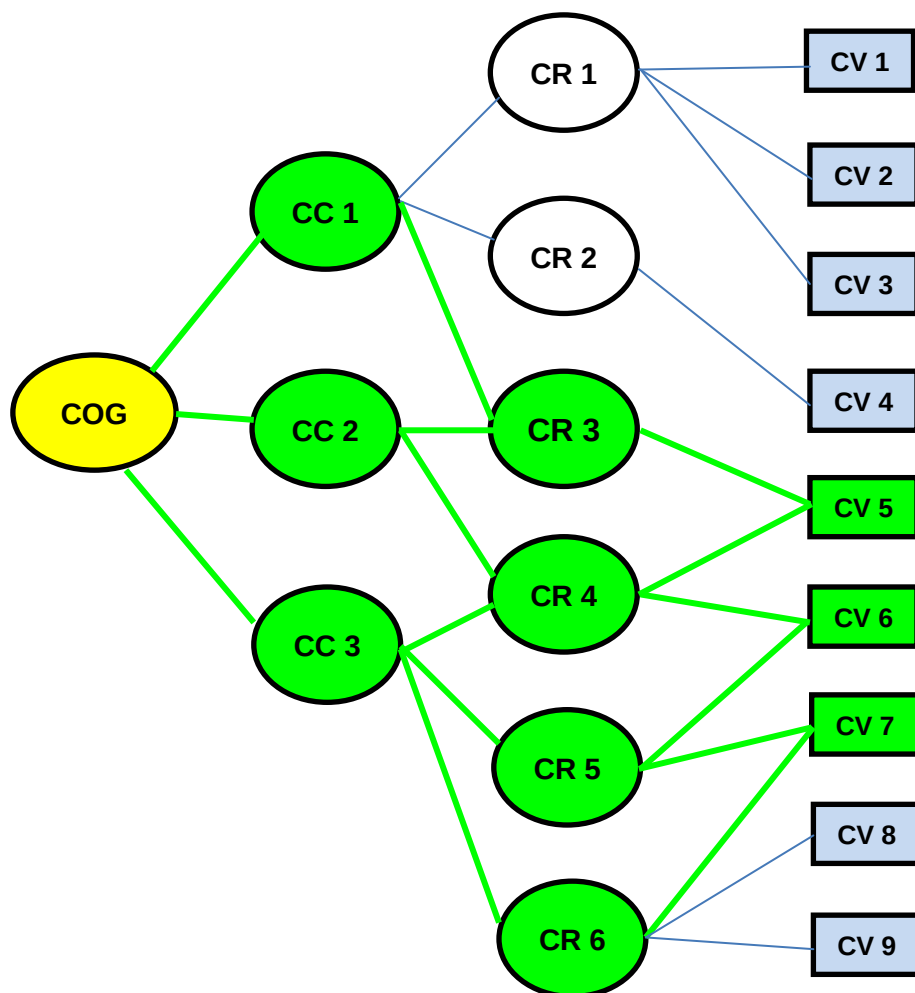


Figure 4C – 1

4. **COG Analysis Construct.** Planners will understandably want to focus their efforts against those CV that provide the greatest support to an threat's COG. However, in their selection staff must also compare the CV's criticality with its accessibility, vulnerability, redundancy, ability to recuperate, and impact on the civilian populace, and then balance those factors against friendly capabilities to affect the vulnerability. Planners should also ensure that while they are seeking to, say, neutralise, defeat or destroy threat CV, they also take appropriate

measures to protect friendly force CV from adversaries attempting to do the same.

5. The relationship between critical factors can be diagrammatically represented by a COG construct. A very simple generic example is shown in **Figure 4C -2**. Here, analysis reveals that the connections between **CV 5, 6 and 7** are sustainment factors (for instance fuel, workshops and personnel). Focusing friendly force targeting and effects on these specific CV will have the best chance of affecting the threat.



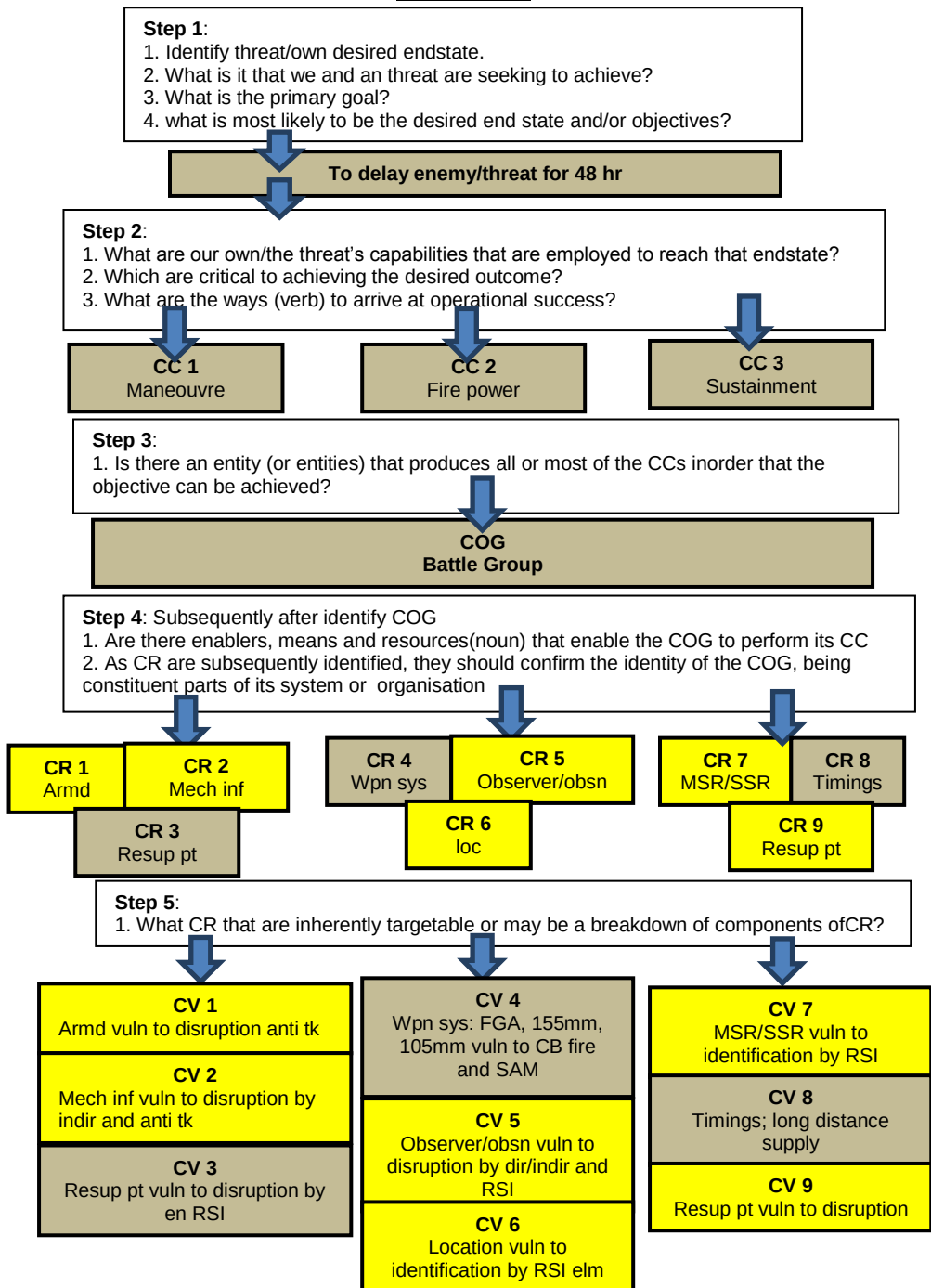
4C - 4

6. **COG Analysis Matrix.** In similar vein to the construct above, planners may need to develop a COG analysis matrix for each actor. This matrix is used to present an actor's COG and critical factors alongside their objectives and/or desired end state, and the conclusions that may be drawn from COG analysis that impact subsequent planning. These additional elements of information are included in the matrix for ease of reference. An example of a COG analysis matrix is in **Table 4C – 1**.

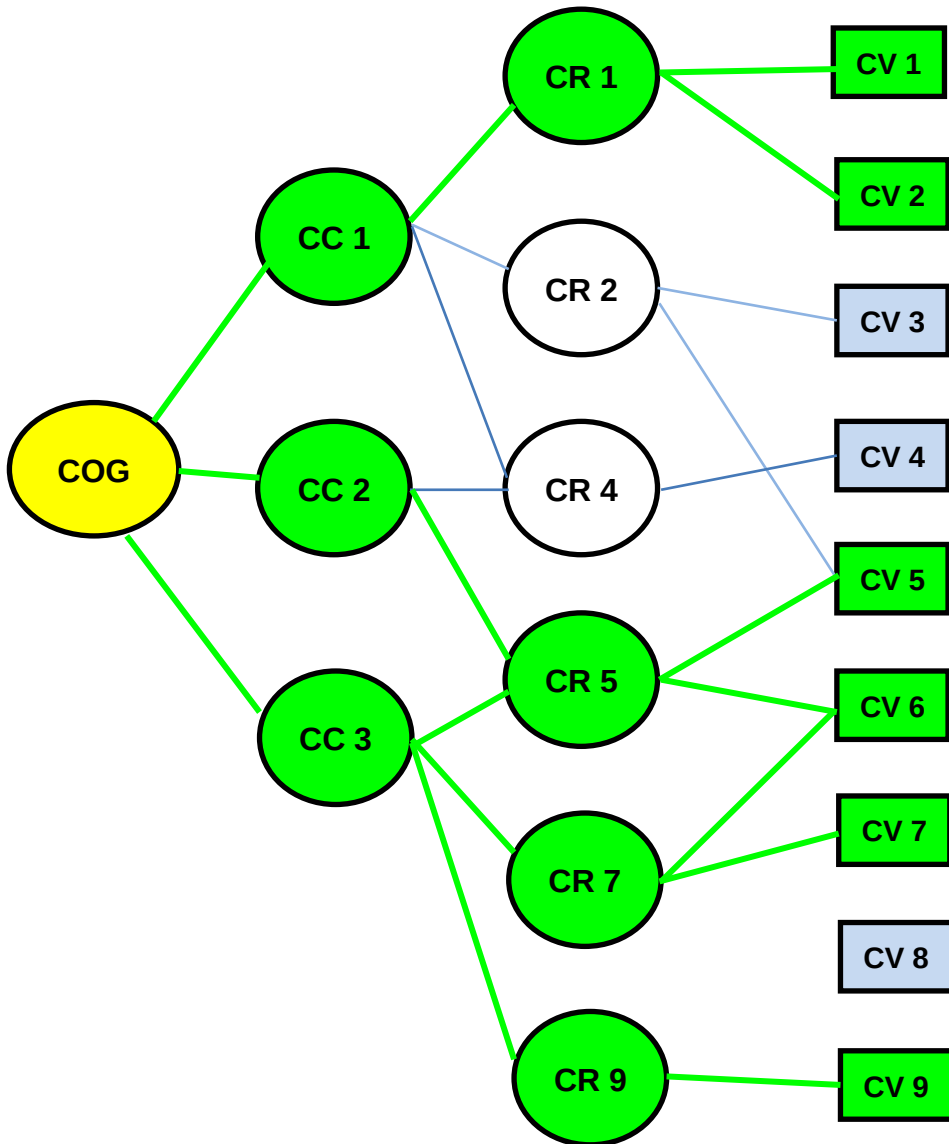
Assessed operation objectives and/or desired operation endstate (List here)			
COG	CC	CR	CV
(the primary entity that possesses the Inherent capability to achieve an objective or the desired end state)	(what the COG does (verb); enables the COG to achieve the desired end state)	(enablers, means and resources(noun) that enable the COG to perform its CC)	(those CR that are inherently targetable; maybe a breakdown of components of CR)
(State here)	(List here)	(List here)	(List here)
Conclusions (List the 'so what' aspect of COG analysis here—for example, which weaknesses, gaps, deficiencies, conditions, characteristics, relationships, resources or influences may be exploited to influence, support, protect or defeat the actor. These conclusions should be factors that may subsequently contribute to deriving DP.)			

Table 4C - 1

EXAMPLE OF COG ANALYSIS CONSTRUCT (FRIENDLY FORCES)



COG CONSTRUCT



COG ANALYSIS MATRIX

Operational Objective: To delay enemy adv to using KOTA BAHRU – TERENGGANU – PAHANG line Operational endstate: Enemy delay for 48 hr			
COG	CC	CR	CV
Battle group	Maneouvre	Armd	- Tank vuln to destruction by anti tk - Tank vuln to disruption by dir and indir fire
		Mech Inf	- vuln to destruction by anti tk
		Delay posn	- Delay posnvuln to identification by RSI elm
		CMob	- Obstacle vuln to breaching assets - Obstacle vuln to disruption by dir and indir
		Resup point	- Vuln to disruption by en RSI
	Fire power	Wpn system	- Wpn system vuln to disruption by dir and indir - Wpn system vuln to dislocation by out range
		Obsn	- Observer/obsnvuln to disruption by dir and indir (smk)
		Location	- Location vuln to identification by en locating bty.
	Logistic	MSR/SSR	- MSR/SSR vuln to identification by RSI elm
		Timings	- Timings vuln to long distance supply
		Resup point	- Vuln to disruption by en RSI
	Morale	Duration of op	- Vuln to prolong duration of op
		Log sp	- Vuln to disruption by endir and indir or ensy elm
		Res	- Vuln to deployment for CAttk or insufficient troop

**ANNEX D TO
CHAPTER 4**

THE COMMANDER'S INTENT STATEMENT

1. The expression of a commander's intent is very much a personal process that reflects the style of the particular commander who is issuing it. Notwithstanding, there are certain conventions that should be followed to ensure uniform understanding by subordinates.

2. An intent is normally expressed in the form Purpose, Method and Endstate:

a. **Purpose.** The purpose explains why an operation is being conducted and is usually derived from the "in order to" element of the mission statement and the higher commander's intent. It explains the contribution of the operation to the higher commander's plan.

b. **Method.** A description of the method by which the commander achieves his/her purpose explained in terms of effects created on the threat. The method focuses on the threat rather than the ground or friendly troop schemes of manoeuvre. Whilst it is inextricably linked to the scheme of manoeuvre it does not give detailed tasks or actions. Rather it uses verbs like dislocate, disrupt and pre-empt to describe effects desired on the threat. It can include a description of the threat COG, the critical vulnerabilities that will be targeted to undermine this COG, and the decisive events that will be achieved.

c. **Endstate.** The endstate describes the commander's desired outcome for the operation or the state, which the commander wishes to exist when the operation is complete. It defines the success criteria of

the operation and may include descriptions of status and locations of both threat and friendly forces. It will also provide information regarding the disposition of forces for transition into the next phase of operations.

3. An example of a Commander's Intent appears below:

a. **Purpose**. 14 Bde (Mech) is to delay and secure vic DUNGUN TOWN through the COASTAL corridor. The speedy capture of DUNGUN TOWN should lead to the positional dislocation of the threat's divisional counter attack force in relation to the Div main effort on the KUANTAN.

b. **Method**. I assessed the threat's COG to be his remaining tank forces. With these he can generate powerful reserves capable of either mounting spoiling attacks against my advancing forces or establishing clean break for delay forces which have been decisively engaged. These actions would reduce the tempo of my advance. The critical vuln I intend to exploit are the relative superiority of my AArmd Systems at night and the weakness of his command and control capacity to effectively direct his reserves when denied reliable intelligence. Decisive points in my plan are pre-empt his ability to establish a delay intercept line on the SUNGAI DUNGUN by seizing the crossing point early. Decisively engage the bulk of his delay forces on his first intercept line, while simultaneously threatening his flank and line of withdrawal. Hence to draw his armoured reserves into ground of my choosing where they will be fixed and destroyed. This will facilitate a quick advance and capture of KUANTAN.

c. **Endstate**. My endstate is to have established a delay def, destroyed at least 60% of the threat 202 Inf Div, established secure logistic Lines of Communications and be poised to conduct further

offensive operations in support of the Div secure KUANTAN.

4. From paragraph 3, 14 Bde (Mech) Commander's Intent should be stated as follows:

a. **Purpose**. To delay en NORTH of DUNGUN in order to support of the Div def KUANTAN.

b. **Method**. En command and control capacity to effectively direct his reserves denied by exploiting AArmd Systems at night. En ability to establish a delay intercept line on the SUNGAI DUNGUN pre-empted by seizing the crossing point early. En delay forces on his first intercept line engaged while his flank and line of withdrawal threatened. En armoured reserves will be fixed and destroyed.

c. **Endstate**. A delay of NORTH of DUNGUN established at least 60% of the threat 202 Inf Div destroyed, secure logistic Lines of Communications established and be poised to conduct further offensive operations.

5. In the example, the reader should be able to determine the threat's perceived weakness (Critical Vulnerability) and how the commander's intent exposing it. The critical activities (Decisive Points) that need to occur to achieve the commander's shaping effect should also be evident.

6. The link between the commander's intent and the scheme of manoeuvre is a critical one in the understanding by subordinates of a commander's plan. While the intent describes how the threat will be shaped, the scheme of manoeuvre details how own forces will be used to achieve the shaping effect.

**ANNEX E TO
CHAPTER 4**

ACCEPTABLE DEGREE OF RISK (OPERATIONAL RISK)

INTRODUCTION

OPERATIONAL RISK MANAGEMENT

1. The key terms to be identified are 'hazard', 'threat' and 'risk'. For the purposes of this annex, a hazard is a situation or thing that has the potential to inflict harm a threat possesses deliberate intent to inflict harm risk refers to the uncertain effect from a hazard or threat on the mission or ability to achieve desired objectives. The aim of operational risk management (ORM) is force preservation and operational success through the identification, control, treatment and monitoring of threats and hazards relative to the commander's plan and execution of the mission. ORM should allow the commander to maximise operational potential through an objective risk matrix balanced by intuition and experience. The principles can be used at all levels of planning and applied from combat operations through to off-duty non-operational activities.

2. The broad focus for planning staff at all levels is articulating risk to mission, personnel, capability/equipment, reputation and environment. Overall operational risk can be captured in a risk management plan and each Decisive Point (DP) matrix. Other tables, spreadsheets and diagrams can be used to support the articulation of risk. Risk awareness begins in Preliminary Analysis and increases in fidelity and detail as the planning process unfolds. Generally, hazards and threats are identified and risk analysed in Mission Analysis (MA) risk mitigation strategies developed and outlined in the matrices during Course of Action (COA) Development and after further refinement in COA Analysis residual risk in the selected COA is framed for the commander to either accept or elevate higher for approval. Essentially, dealing appropriately with threats,

hazards and risks to ensure objectives are achieved is an intrinsic part of joint planning.

3. Throughout every stage of planning, staff must consider the various risks attached to apportioning capabilities and rates of effort to carry out tasks and achieve objectives. By assessing hazards and constantly evaluating the operational environment, the level of risk for each COA can be determined and control measures identified to protect the force whilst ensuring mission and operational success. However, with the application of more formulaic and structured risk management processes, comes a paradox that an adversary can apply the same principles to more easily reveal likely friendly decisions in response to their actions knowing that commanders will mostly seek the lowest risk decision.

4. Planning is invariably based on the premise that things will, as a rule, go according to plan, and planned activity will have (at least) the favourable effects intended. Consequently, risk analysis and management tends to focus on the 'what if things do not go to plan', or create an unfavourable effect. An equally important consideration is how best a commander can capitalise on activities or events whose effects are more favourable than anticipated. An appetite for risk is as much to do with seeking fleeting opportunities as it is about preparing for possible setbacks.

OPERATIONAL RISK MANAGEMENT PRINCIPLES

5. Planning for operations at all levels involves careful consideration of risks, threats and hazards. Identification, analysis and treatment of risk on operations needs to be framed within the achievement of an end state in which an adversary is actively creating potentially harmful conditions, rather than contextualised by the relatively static and benign environment of a non-deployed, day-to-day setting. Nevertheless, in the absence of a discrete and formally approved approach to risk on opposed operations, the conventional risk management model provides a logical path

that can be adapted to suit operational planning requirements. Consequently, effective ORM requires adherence to the following principles:

- a. **Risk management creates and protects value.** ORM contributes to the demonstrable achievement of objectives and may contribute to improvements in force protection, security, legal compliance, public acceptance and reputation management, operations management, and operational efficiency.
- b. **Risk management is an integral part of planning.** ORM should not be considered a stand-alone activity that is separate from the Military Appreciation Process (MAP). ORM is part of the MAP and should be considered during each MAP step.
- c. **Risk management is part of decision making.** ORM assists commanders to make informed choices, prioritise actions and distinguish between alternative COA.
- d. **Risk management explicitly addresses uncertainty.** Uncertainty is prevalent in all operations. ORM takes account of uncertainty, the nature of that uncertainty and how it can be addressed.
- e. **Risk management is systematic, structured and timely.** A systematic, structured and timely approach to ORM contributes to efficiency and to consistent, comparable and reliable results when planning joint operations.
- f. **Risk management is based on the best available information.** The inputs to the process of managing risk are based on information sources such as historical data, lessons learned, experience, observation and Intelligence Preparation of Operational Environment (IPOE) outputs. The Commander's Critical

Information Requirements (CCIR) should be used as required to validate uncertainties and assumptions.

g. **Risk management is tailored.** The ORM process applied to planning should be considered in concert with single service and capability ORM processes.

h. **Risk management takes human and cultural factors into account.** ORM recognises the capabilities, perceptions and intentions of personnel external and internal to the operation that can facilitate or hinder achievement of operational objectives.

i. **Risk management is transparent and inclusive.** Appropriate and timely involvement of stakeholders and in particular, decision makers across all levels, ensures that ORM outcomes remain relevant and up to date. Involvement also allows stakeholders to be appropriately represented and to have their views taken into account in determining among other ORM issues risk criteria.

j. **Risk management is dynamic, iterative and responsive to change.** ORM continually responds to change. As external and internal events occur, context and knowledge change, monitoring and review of risks takes place, new risks emerge, some change, and others disappear.

OPERATIONAL RISK MANAGEMENT PROCESS

6. Although this annex is based on MD 0.3.1 TD Risk Management Principles and Guidelines, operational imperatives should derive the framing of acceptable risk tolerance during planning.

7. It is worth restating that ORM should be an integral part of planning. It identifies threats and hazards, analyses their

consequences and likelihoods, evaluates overall risk and then details treatment and mitigation strategies. The outcomes of ORM are informed decisions and an ORM plan.

8. Complex operations can be broken down into a number of activities clustered according to the level at which risk is being described. These are similar to mission essential task lists and form a straight forward methodology of analysing the risks attached to the most tactical of activities to the highest strategic desired endstates. Through the summation of risk related values the most hazardous missions, operations or tasks can be clearly highlighted and transferred to the appropriate commander for approval.

9. **Main Elements.** The main elements of ORM are detailed in the following paragraphs and shown in Figure 4E -1:

- a. Communication And Consultation.
- b. Establishing The Context.
- c. Risk Identification.
- d. Risk Analysis.
- e. Risk Evaluation.
- f. Risk Treatment.
- g. Monitoring And Review.

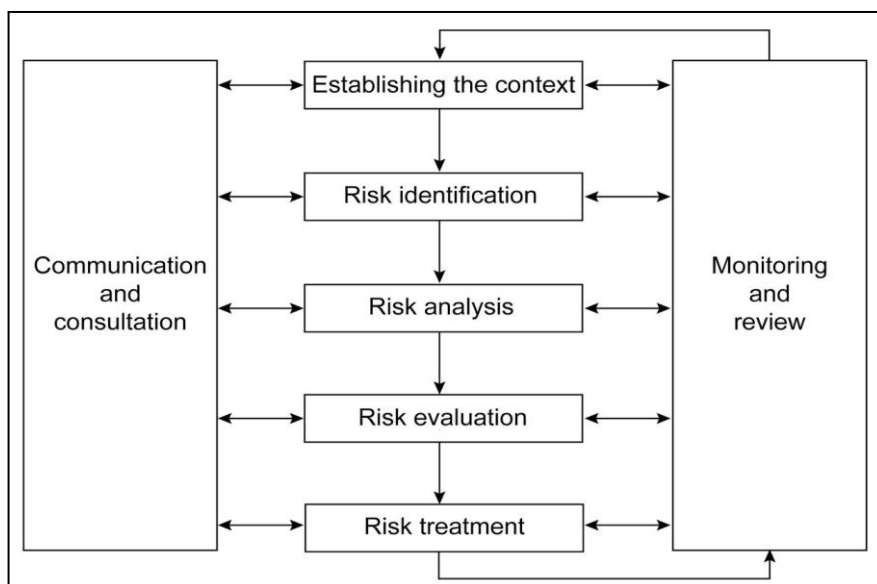


Figure 4E-1: Operational Risk Management Process

10. **Communication and Consultation.** To maximise the benefit of ORM, communication and consultation with stakeholders, both internally within a headquarters (HQ) and externally including other government departments and non government organisations both nationally and internationally, should occur continually. As the ORM process progresses, perceptions of risk by stakeholders may change with refinement in the identification and analysis of risks. Communication and consultation allows the appreciation of the benefits of particular controls and the need to support and endorse a risk treatment plan.

11. **Establishing The Context.** Context establishes the terms of reference for the application of ORM within planning. It sets the parameters within which the other elements of ORM are applied and establishes the basis for the risk decision. The strategic, operational and tactical significance of the task must be understood, stakeholders identified, the task analysed and the risk criteria established, including the setting of risk levels

for subordinate commanders. Indicative risk levels and associated criteria are discussed later in this annex.

12. **Defining Risk Criteria.** Planning teams should define criteria to be used to evaluate the significance of risk. Some criteria can be imposed by or derived from, legal and regulatory requirements for example, rules of engagement. Risk criteria should be defined at the commencement of planning and be continually reviewed. When defining risk criteria, factors to be considered should include the following:

- a. The nature and types of causes and consequences that can occur and how they will be described.
- b. How likelihood measures will be defined.
- c. The timeframe(s) of the likelihood and/or consequence(s).
- d. How the risk level is to be determined.
- e. The views of stakeholders.
- f. The level at which risk becomes acceptable or tolerable.
- g. Whether combinations of multiple risks should be taken into account and if so, how and which combinations should be considered.

13. **Risk Identification.** A systematic risk identification process appropriate to the nature of the task is essential to ensure risks are not overlooked. A planning group should identify sources of risk, who or what is impacted, events, their causes and potential consequences. The aim of this element of the ORM process is to generate a comprehensive list of risks based on those events that might create, enhance,

prevent, degrade, accelerate or delay the achievement of objectives.

14. Risk identification should be conducted throughout the planning and execution phases of any operation. As far as possible, risks owned by those not under the control of the commander should be understood. All aspects must be considered, particularly those factors associated with the mission, equipment, personnel, environment and politics, and any risks are identified, analysed, and treated throughout joint planning to leave the residual risk component. Relevant and up to date information from the JIPOE and CCIR data is important in identifying risks. Moreover, historical problem areas and risks should be identified from reliable sources.

15. Risk Analysis. Risk analysis is concerned with developing an understanding of the risk in order to separate acceptable risks from those requiring treatment. This involves consideration of sources of risk, consequences and the likelihood that those consequences will occur. In most circumstances existing controls are taken into account.

16. There are many approaches available to analyse risk including the following (any or all approaches may be employed):

- a. Review of past operations.
- b. Assessment based on the experience of stakeholders and/or the assessment team.
- c. Review of wider Service practice and experience.
- d. Conduct of experiments or trials.
- e. Modelling or fault/decision analysis.
- f. Engaging external specialists and accessing expert analysis.

An Approach To Analyse Risk

17. Risk analysis aims to establish an understanding of the level of risk and its nature. Aside from determining the absolute level of risk, this will help to set treatment priorities and options. The level of risk is determined by combining consequence and likelihood. Suitable scales and methods for combining them should be consistent with the criteria defined when establishing the context. For more technical analysis, the nature of the data and required output will dictate the required analysis methods.

18. The process of analysis often commences with a simple qualitative approach that gives a general understanding. Where greater detail or understanding is required, more focused and robust investigation may also be needed. It is inappropriate to assume that quantitative is superior to qualitative analysis. It is more appropriate to ensure the best approach fits the task.

19. Risk analysis can be conducted at various points, such as at the commencement of operational planning, as part of ongoing operations, or as a study of what may occur after risks have been treated. Risk analysis usually begins with a consideration of the current level of risk with existing controls.

20. The way that the level of risk is described will depend on the type of analysis undertaken. A qualitative approach can only describe risk in qualitative ways and this is usually done with descriptive terms. Quantitative analysis is a single figure, datum or value or a mass of detailed data. Where this is the case, great care needs to be taken to ensure the units of risk are expressed and understood. Particular care should be taken with quantitative analysis when examining consequences that are intangible or difficult to quantify regarding issues such as the environment, safety or reputation.

21. **Risk Evaluation.** The purpose of risk evaluation is to assist in gathering data on which the commander can make

informed decisions based on the outcomes of risk analysis and about which risks need treatment and the priority for treatment implementation. Risk evaluation involves comparing the level of risk found during the analysis element with risk criteria established when the risk context was established.

22. Each risk is evaluated against the established risk criteria for example, consequence and likelihood parameters, and the output is a list of risks in approximate priority order. At one end may be risks that are negligible or so small that no risk treatment measures are needed. At the other end may be intolerable risks which must be treated whatever the cost. In between these extremes lie risks with a range of consequences and likelihoods.

23. Since it is unlikely that there will be sufficient resources available to reduce all risks to the absolute lowest level, the evaluation process will consider the benefits and costs associated with each risk and decide how each is to be addressed.

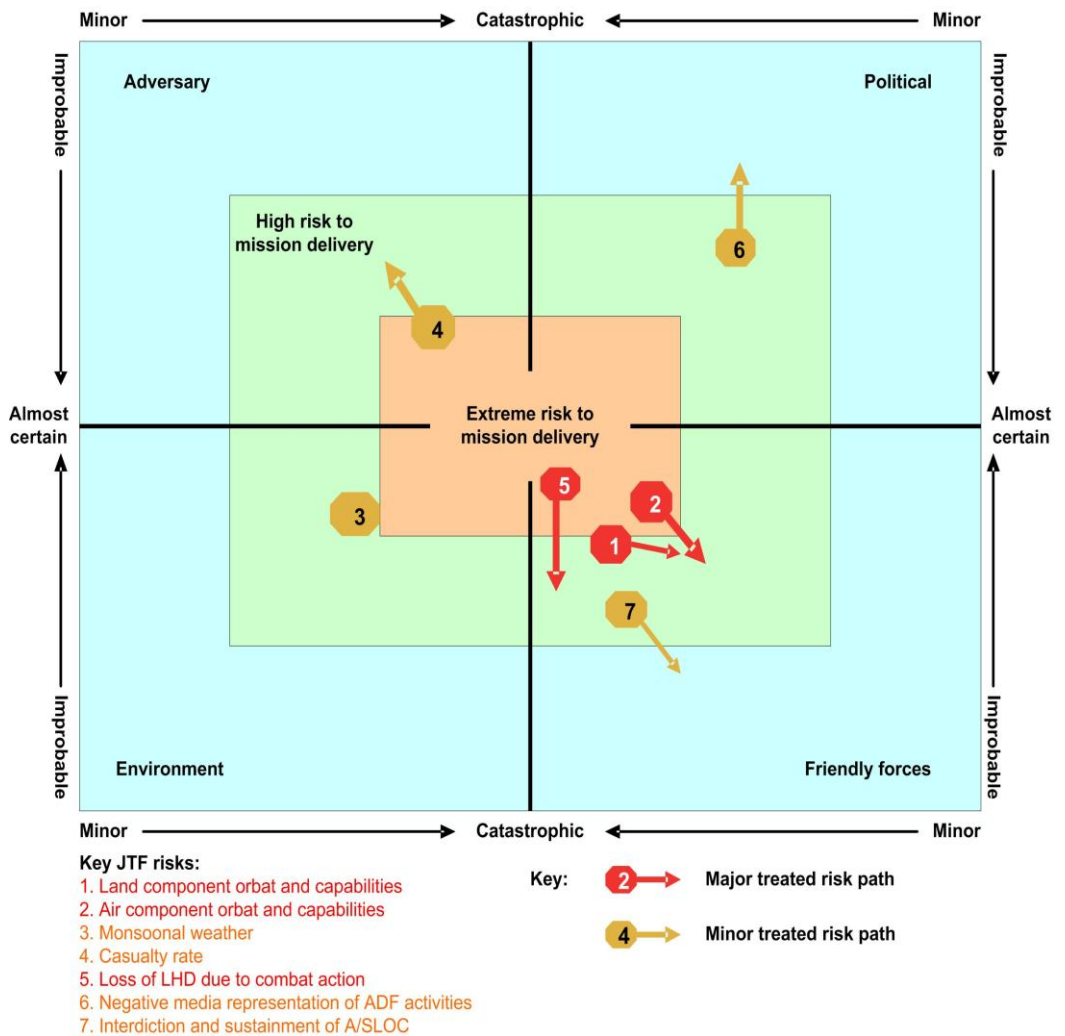


Figure 4E-2: Example Diagram Of Treated And Untreated Risk

24. **Risk Treatment.** Risk treatment is the selection and implementation of risk controls to modify risk. Risk is modified by changing either the consequences of an event or its likelihood or both. Selecting the most appropriate option involves balancing the costs of implementing each option

against the benefits derived from it. Figure 4E-2 illustrates how the planning staff could present risks to significant events if left untreated and after mitigation measures have been implemented. The example assists the commander to visualise operational success or failure given the progress of risk mitigation strategies.

25. Risk treatment options are not necessarily mutually exclusive or appropriate in all circumstances. The options available may include:

- a. Avoiding the risk by deciding not to start or continue with tasks that give rise to the risk.
- b. Taking or increasing the risk to pursue an opportunity.
- c. Removing the risk source.
- d. Changing the likelihood.
- e. Changing the consequences.
- f. Sharing the risk with another stakeholder.
- g. Elevating the risk to a higher authority for approval.
- h. Retaining the risk by informed decision.

26. **Monitoring and Review.** Ongoing monitoring and review of the identified risks against the treatment plan for each risk is essential to ensure that the ORM plan remains relevant. Some risk treatments may have unintended consequences or may be applied incorrectly and there may be changes to assumptions in the plan. Monitoring and reviewing the ORM plan against the task ensures continual improvement in the management of risk.

27. **Risk Level Descriptions.** Risk levels may be expressed in the form of a set of qualitative descriptions determined in the planning phase for a specific activity and are derived from combinations of consequence and likelihood. Risk levels such as these should be assigned to subordinate commanders to enable a clear understanding of when risks are to be referred to a higher authority. An example of indicative risk levels for a qualitative risk assessment is in Table 4E-1. Alternative descriptors may be used but these are the more common risk level terms.

Risk Level	Description
Extreme	A considerable potential for loss of capability, multiple fatalities, mission failure of strategic significance or serious long-term degradation of reputation/morale.
High	A considerable potential for serious degradation of an MAF capability, fatal injury, major asset loss, mission failure of operational significance, or significant degradation of reputation /morale.
Substantial	A moderate potential for serious degradation of an MAF capability, fatal injury, major asset damage/loss, mission failure of tactical significance, or short-term impact to reputation /morale.
Medium	Has the potential to degrade capability, injure personnel, damage equipment or compromise the mission.
Low	Minimal potential for impact to capability, personnel, equipment, the mission or public image/morale.

Table 4E-1: Indicative Risk Levels And Descriptions

28. **Consequence.** Consequence is described in terms indicating the significance to the organisation of the potential adverse effects of events associated with operations. Consequence should be measured in a range of dimensions, such as mission, personnel, capability, reputation and environment. These consequence measures need to be

determined during the planning for an operation. The selection of the dimension depends on the nature of the risk, mindful of the existing controls that are already present. An example of indicative consequence levels and their descriptions is in Table 4E-2. Other descriptors may be used as appropriate to the circumstances.

Consequence	Description
Catastrophic	Mission: Failure to achieve a mission that is essential to achieve a strategic objective.
	Personnel: Mass casualties. Multiple fatalities and major injuries resulting in permanent disability.
	Capability: Indefinite loss to MAF Capability. One or more major platform/asset(s) in a core system lost.
	Reputation: Widespread public condemnation of MAF Long term media condemnation or formal Government inquiry.
	Environment: Damage that may be irreparable or take more than two years to remediate at major cost.
Critical	Mission: Failure to achieve an essential operational objective with significant strategic implications.
	Personnel: Mass casualties. Limited fatalities (less than X) and/or major injuries resulting in permanent disability (greater than X).
	Capability: Long-term degradation to MAF capability. A single major platform/asset in a core system lost or ineffective.
	Reputation: Widespread public discontent with MAF or service prolonged adverse national media attention or coronial inquest.
	Environment: Damage that can only be remediated over an extended period (greater than six months) or significant cost.

Serious	Mission: Failure to achieve an important operational objective with serious unit/tactical implications.
	Personnel: Serious injuries that could result in temporary disability (less than XX days).
	Capability: Temporary loss or severe degradation to MAF capability. Major damage to a platform/asset in a core system.
	Reputation: Negative reaction by public defence interest groups and short-term national media attention. Force Element (FE) morale seriously affected, but recoverable.
	Environment: Damage that requires significant remediation over a defined period (three to six months) and at a moderate cost.
Disruptive	Mission: Failure to achieve an important operational objective with significant unit/tactical implications.
	Personnel: Injuries that could result in temporary disability.
	Capability: Substantial temporary degradation to MAF capability. Moderate damage to a platform/asset(s).
	Reputation: Local prolonged media attention and negative public reaction. FE morale slightly affected.
	Environment: Damage requiring some short-term remediation at a minimal cost.
Minor	Mission: Partial achievement of a mission with significant unit/tactical implications but does not affect an operational objective.
	Personnel: Minor injuries requiring medical attention.
	Capability: Temporary degradation to MAF capability. Minor damage to platform/assets(s) in a core system.
	Reputation: Local short term media attention and negative public reaction. Unit morale slightly affected.
	Environment: Damage can be repaired by natural action.

Table 4E-2: Indicative Consequence Levels and Descriptions

29. **Likelihood.** Likelihood is a measure of the probability that an event will have a given consequence together with the degree of exposure to the event during the period of the task. Exposure can be considered in terms of how often the event

would occur and the duration of occurrences within the scope of the activity under consideration. In an operational context, quantitative evaluation will not usually be possible or feasible in the time available and a qualitative description of likelihood will usually be appropriate. The assessment of likelihood is therefore based upon generic definitions in Table 4E-3. As with the other risk terms, these likelihood descriptors are for example only and others can be used as appropriate for each environment or situation.

Likelihood	Definition
Almost certain	Occurrence is expected to occur during the activity being planned.
Likely	Occurrence could occur during the activity being planned.
Occasional	Occurrence conceivable but only expected infrequently during the activity being planned.
Rare	Occurrence conceivable but not expected to occur during the activity being planned.
Highly improbable	Occurrence is unlikely to occur during the activity being planned.

Table 4E-3: Indicative Likelihood Measures and Definitions

30. **Indicative Risk Level Matrix.** Table 4E-4 may be used to compare the consequence and likelihood of risks to determine a pre-treated assessment level of risk in terms of those risks described in Table 4E-1. For example, a risk that has a consequence level of 'serious' and likelihood measure of 'likely' may be described as having a risk level of 'substantial'.

	CONSEQUENCE				
LIKELIHOOD	Catastrophic	Critical	Serious	Disruptive	Minor
Almost certain	1 - Extreme	2 – Extreme	5 – High	9 – Substantial	16 - Medium
Likely	3 – High	4 – High	8 – Substantial	14 – Medium	21 - Low
Occasional	6– Substantial	7– Substantial	12 – Medium	15 – Medium	21 - Low
Rare	10 – Medium	11 – Medium	13 – Medium	20 – Low	24 - Low
Highly improbable	17 – Low	18 – Low	19 – Low	22 – Low	25 - Low

Table 4E-4: Indicative Risk Level Matrix

31. **Risk Level Matrix Post Treatment.** Clearly, this matrix indicates the level of risk before any treatment or mitigation strategy has been implemented. The matrix should be developed further in line with paragraphs 26 and 27 above, to include how risk for each activity or event will be reduced or controlled (if possible). These measures should lower either the likelihood, consequence or both such that a new risk level is achieved. A lower risk level may well negate the need to elevate a risk higher for approval so retaining local ownership.

32. **Standing Risk Profiles.** Although not suited to immediate or crisis planning, as part of deliberate planning, the concept of Standing Risk Profiles (SRP) in particular alleviates the need for detailed risk assessments prior to most commonly conducted activities and enables the commander to focus on extraordinary or unusual aspects that may generate additional risks not addressed by normal operational procedures, training or equipment. Not with standing their enduring nature these SRP can help inform dynamic planning phases and will still require refining and updating as the environment within which they are employed changes.

33. **Employment Of Standing Risk Profiles.** SRP obviate the need to complete a full risk analysis for most operations where they are conducted within normal parameters such as extant mission context, weather, sufficient trained people and serviceable equipment. An SRP can only be effectively employed where the FE is already at some known level of competence. For example, a ship sailing for the first time after

an extended maintenance activity has an entirely different level of competence to a ship that has recently completed a unit readiness evaluation.

34. **Risk Culture.** The effective use of risk management to improve operational effectiveness depends on a shared understanding by commanders and subordinates of the importance of risk treatments. Active supervision is fundamental to avoid complacency and ensure compliance with treatment and mitigation procedures. Incidents where risk treatments are circumvented or ignored for reasons of apparent expedience are to be investigated. Where appropriate, adverse administrative or disciplinary action should be considered. Early and firm action to deal with such incidents is likely to avoid the development of poor practices. In reviewing incidents related to poor practice close attention should be paid to any failure of supervision or leadership as the direct participants may not be the only ones accountable.

35. **Risk Tolerance, Ownership and Opportunity.** Each risk analysis outcome describes the level or value of risk attached to the particular planned task, activity or event. That value or threshold has a concomitant approval authority with higher authorities required to sanction more hazardous activities. However, no matter what the nature of the operation the threshold should not be set to such an extreme that the plan itself becomes risk averse. Casualties are an operational reality and the desire to avoid them totally may well impact adversely on the achievement of the mission; a commander should always balance the level of acceptable risk with the context of the campaign or operation. Table 4D-4 provides a generic illustration of risk tolerance levels and authorisation necessary.

36. While analytical approaches predominantly treat risk as a threat to success, these approaches can also be used to present risk as an opportunity. Each risk can be expressed both in terms of adverse consequences and the ways to militate against them and favourable outcomes and the

advantages over an adversary that might be exploited. For example, weather might present a risk to a particular operation which could be a far greater restriction to adversaries; this provides an opportunity for decision makers.

37. Risk tolerance thresholds are allocated to subordinates by commanders in orders. A commander cannot delegate a higher risk tolerance threshold than the default threshold detailed for their appointment in Table 4E-5. If delegating tolerance thresholds to subordinates, commanders should record the rationale at the time of delegation for example, in written orders.

Risk Index	Risk Level	Specification Authorities	Risk Tolerance Description
1-2	Extreme	Chief of Defence Force	Intolerable Without Treatment. Exposure to these risks would normally be immediately discontinued except in extreme circumstances. The decision to tolerate residual risk at this level must be made by the relevant endorsing authority. Risk controls must be applied as part of a documented risk management plan for example, orders/ instructions/ directives with JMAP notes/risk appreciation summary, that is continuously monitored and risk controls adapted as required to accommodate changing risk levels.

3-4	High	Formation Commander / Commander Joint Task Force	Intolerable Without Treatment. Exposure to these risks should be discontinued as soon as reasonably practicable. The decision to tolerate residual risk at this level must be made by the relevant endorsing authority. Risk controls must be applied as part of a documented risk management plan for example, orders/ instructions/ directives with JMAP notes/risk appreciation summary, that is continuously monitored and risk controls adapted as required, reviewed.
6-9	Substantial	Commanding Officer	Tolerable With Continual Review. Unnecessary exposure to these risks should be discontinued as soon as is reasonably practicable and continued exposure would only be considered in exceptional circumstances. The decision to tolerate residual risk at this level must be made by the relevant endorsing authority. Risk controls must be applied as part of a documented risk management plan for example, orders/ instructions/ directives with MAP notes/risk appreciation summary, that is continuously monitored, reviewed and risk controls adapted as required.

10-16	Medium	Company Commander	Tolerable With Periodic Review. Exposure to these risks may continue provided it has been appropriately assessed, has been mitigated to As Low As Reasonably Practicable (ALARP) and is subject to periodic review to adjust risk controls if the risk level increases. Long-term measures to reduce the risk are appropriate (changes in Standard Operating Procedure, doctrine, etc). The decision to tolerate residual risk at this level must be made by the relevant endorsing authority with rationale required to be documented (orders will suffice).
17-25	Low	Platoon Commander	Tolerable With Periodic Review. Exposure to these risks is tolerable for the relevant endorsing authority without additional risk controls but is subject to periodic review to ensure the risk does not increase. ALARP guidance defaults to low for the relevant endorsing authority at this level unless otherwise stipulated by a higher commander with rationale required to be documented (orders will suffice).

Table 4E-5: Indicative Risk Tolerance Descriptions and Endorsing Authorities

38. Identifying where risk consequences are likely to be felt and the most appropriate level of ownership and management is important but not straightforward. A

commander should gain an understanding of the relationship between risks at the tactical, operational and strategic level, and how the impacts of each may affect operators in the chain of command. Tactical risks generally deal with the physical cost in terms of life and equipment. While these risks clearly impact upon component commanders and their subordinates, they may also have operational or indeed strategic, implications. Military operations are necessarily linked to political decisions with a natural tendency for risk to migrate upwards, particularly in complex, multinational operations. Such political risks are owned by the government but their impact may well percolate down to a commander who may not necessarily be able to exercise control of events associated with them.

Risk Management and Decisive Points

39. During MAP, DP are derived in order to create the commander's operational approach illustrated by DP on lines of operation. This schematic describes how the operational objectives and desired endstate will be achieved. Included in each DP matrix should be an expression of risks, threats, hazards and opportunities, along with their mitigation or exploitation strategies and final, residual risk arising from the following:

- a. **Hostile Elements.** Adversary or combative elements with intent and/or capability to undermine the achievement of objectives such as capabilities, doctrine, religious or cultural issues.
- b. **Natural Environment.** Environmental factors such as terrain, weather/climate, flora and fauna, altitude, dust, floods, fire, cyclone and heat/cold.
- c. **Cultural and Man-Made Environment.** Factors such as demographics, politics and religion, infrastructure/utilities, types of buildings, road conditions, lack of

sewerage or safe water supplies, chemical or biological hazards.

d. **Operational and/or Organisational Complexity.** Factors that can cause conflict, confusion or misdirection of effort such as strategic and operational direction, force composition, mission creep and aims/expectations/capabilities of external agencies.

e. **Resources.** The use, availability, suitability and quality of resources such as equipment and stores, finances, facilities, disposal and management of hazardous substances, inadequate maintenance, availability of additional resources and support services.

f. **Personnel.** The force elements composition and technical competence of personnel available/required insufficient trained or qualified people to sustain operations.

g. **Time and Space.** The available time and nature of the tasks to be completed such as the time available for the operation/activity, insufficient time for lead up training, rehearsals, acclimatisation and force preparation.

h. **Human Nature.** Human behavioural factors such as group dynamics, laziness, competitiveness, enthusiasm, tendency to cut corners, not following correct procedures, fraud, morale, fatigue, personnel problems and status of unit culture/ethos.

i. **Legal, Media and Other Mandated Requirements.** Elements of legal, media and other mandated requirements that may limit freedom of action such as military/Malaysian/international law, political/strategic direction, local laws and customs, rules of engagement, status of forces agreements, special provisions for the protection of women and children.

The construction of DP will cover the following pages:

1. 4E – 1
2. 4E – 2
3. 4F - 1

MP 0.5.1 TD

ANNEX F TO
CHAPTER 4

TARGETABLE CRITICAL VULNERABILITY AND ESSENTIAL TASK LIST (DECISIVE POINTS CONSTRUCT)

En Targetable Critical Vulnerability (TCV)	Friendly Critical Vulnerability (CV)	Essential Tasks (ET)
- Predictable manoeuvre route vuln to dislocation by in dir and dir fire from firm base - Log Sp vuln to disruption by deep attack by FF and indir on LoC - Obsn vuln to disruption by dir and indir fire - Predictable dismount point vuln to disruption by obstacle and concentration of fire - En vuln to dislocation from flanking forces due to limited and targetable manoeuvre corridors - Gun posn vuln to detection by RSI elm and CB fire	- Predictable wdr routes vuln to disruption by dir and in dir - Gun Posn vuln to disruption by En radar and CB fire - MSR/SSR vuln to disruption by dir/in dir fire and air interdiction - Obstacle vuln to disruption by en breaching assets - Def posn vuln to disruption by dir and in dir - MIFV vuln to physical dislocation by AT weapon and in dir - Maint area vuln to functional dislocation by air interdiction	- Delay en within bdry fm 1st Lt D-3 until last Lt D+3 - Deny en adv to N along TERENGGANU's inland and coastal - Deny en adv to S along TERENGGANU's inland and coastal route until last Lt D+3 - Lure and channel en into Div KA (Line KUANTAN). - Defeat en forces within and reinforcing AO TIGER - BHO with 7 and 8 Bde by 0001H D+4

4F - 1

DECISIVE POINTS (DP)	
BLUE FOCUS	RED FOCUS
Channel en into Div KA En delayed in multiple delay posn Conduct BHO with 7 and 8 Bde MSR/SSR secure Clean break achieve	Deny en movement in inland and coastal - Disrupt en MSR/SSR - Disrupt en obsn - Deny en bypass Disrupt en pursuit and follow up
- Maint area secure Note: - Friendly CV may either influence the method by which a DP is achieved or form an ET. All ET either form an individual DP or combine to create a DP. - Not all en TCV and Friendly CV will form DP. They may simply influence the method by which a DP is achieved (see en TCV in bold type). - TCVs (in brown) are form DP by itself	

**ANNEX G TO
CHAPTER 4**

EXAMPLE DECISIVE POINTS METHODS MATRIX

Decisive Points	Method 1	Method 2	Method 3
Physical dislocate en inf and armour	<i>1. Deploy RSI including anti tk elm near FEBA.</i>	Layer defensive position in depth	Channel en into anti tk KA
Dislocate en movement	Construct turn obs	Construct anti tk mine	<i>2. Construct anti tk ditch and disrupt obs</i>
Deny en bypass	<i>3. Secure key points with mech force</i>	<i>4. RSI focus on selected NAI</i>	Engineer works to deny
Deny en mov in inland and coastal	Establish successive delay position	<i>5. Establish alternate delay defense position</i>	Establish an area defense
Disrupt en pursuit and follow up	Sequential ground clearance from delay posn to trigger withdrawal and concentration of en	<i>6. Identify firm base in each delay def position to achieve clean break</i>	Air asset to cover the wdr
Disrupt en MSR/SSR	<i>7. BAI into en MSR/SSR</i>	Ambush on resupply point	In dir fire
Note: Each DP can be achieved through a number of different methods. The chosen method (see italic Bold sentences) are then sequenced from 1 to 7. These combine to form COA. Distinguish between COA can be achieved through the combination of different methods and different sequencing			

ANNEX H TO CHAPTER 4

MISSION ANALYSIS BRIEFING FORMAT AND SEQUENCE

Briefer	Subject
(a)	(b)
COS/Op	1. Purpose of the briefing. 2. Condition of the own force (COG, TASKORG and morale). 3. Time Appreciation.
Intelligence (G2)	4. Initial int estimates: a. Brief analysis of the AO (terrain, weather and other factors) b. Brief threat COG analysis leading to critical vulnerabilities. c. Brief threat situation overlays (most likely and most dangerous COA) as developed at that point. d. Brief all IPB products (AO/AI overlay, MCOO, Doc Template, HVT Matrix, Sit Template, Event overlay-NAIs/TAIs/DPTs) e. CCIR.
Op (G3/G5)	5. Intent and mission of higher and next higher commander. 6. Own mission. 7. Specified, implied and essential tasks. 8. Freedoms of action limitation and initial risk assessment (ORM). 9. Critical facts and assumptions. 10. Manoeuvre and combat support conclusions, shortfalls and constraints.

(a)	(b)
Pers/Medical (G1/G9)	11. Current/Latest pers facts and conclusions (strength and shortages, med status and capabilities). 12. Pers Critical Facts and Assumption (replacements, reserves, etc). 13. Branch Events and Broad Branch COA(s) concept or option(s) in supporting Op COA. 14. Branch CCIR.
Log (G4)	15. Current/Latest Combat service support facts and conclusions (repair and recovery, transport, sustainability). 16. Log Critical Facts and Assumption. 17. Branch Events and Broad Branch COA(s) concept or option(s) in supporting Op COA. 18. Factors affecting Branch COA (Battlespace/ Threat/ Time/ Tps etc if relevant). 19. Branch CCIR.
Civil Affairs (G7)	20. Current/Latest Civil Affairs facts and conclusions (civil-military analysis, media support). 21. Civil Affairs Critical Facts and Assumption. 22. Branch Events and Broad Branch COA(s) concept or option(s) in supporting Op COA. 23. Factors affecting Branch COA (Battlespace/ Threat/ Time/ Tps etc if relevant). 24. Branch CCIR.

(a)	(b)
Comm (G6)	25. Current/Latest Comms facts and conclusions (shortfalls). 26. Comms Critical Facts and Assumption. 27. Branch Events and Broad Branch COA(s) concept or option(s) in supporting Op COA. 28. Factors affecting Branch COA (Battlespace/ Threat/ Time/ Tps etc if relevant). 29. Branch CCIR.
COS/Op	30. Present recommended restated mission for Commander's approval. 31. Restate ET and possible constraints to the operation. 32. Brief on recommended threat targetable vulnerabilities. 33. Brief on recommended DP.
Commander	34. Provides Commander's Guidance, including: a. Confirmed or amended mission. b. Intent. c. Decisive Points. d. Threat COA to be developed. e. Broad COA concepts based on decisive events. f. Deception objective. g. CCIRs. h. Time plan. i. Type of orders to be issued. j. Type of rehearsal.

CHAPTER 5

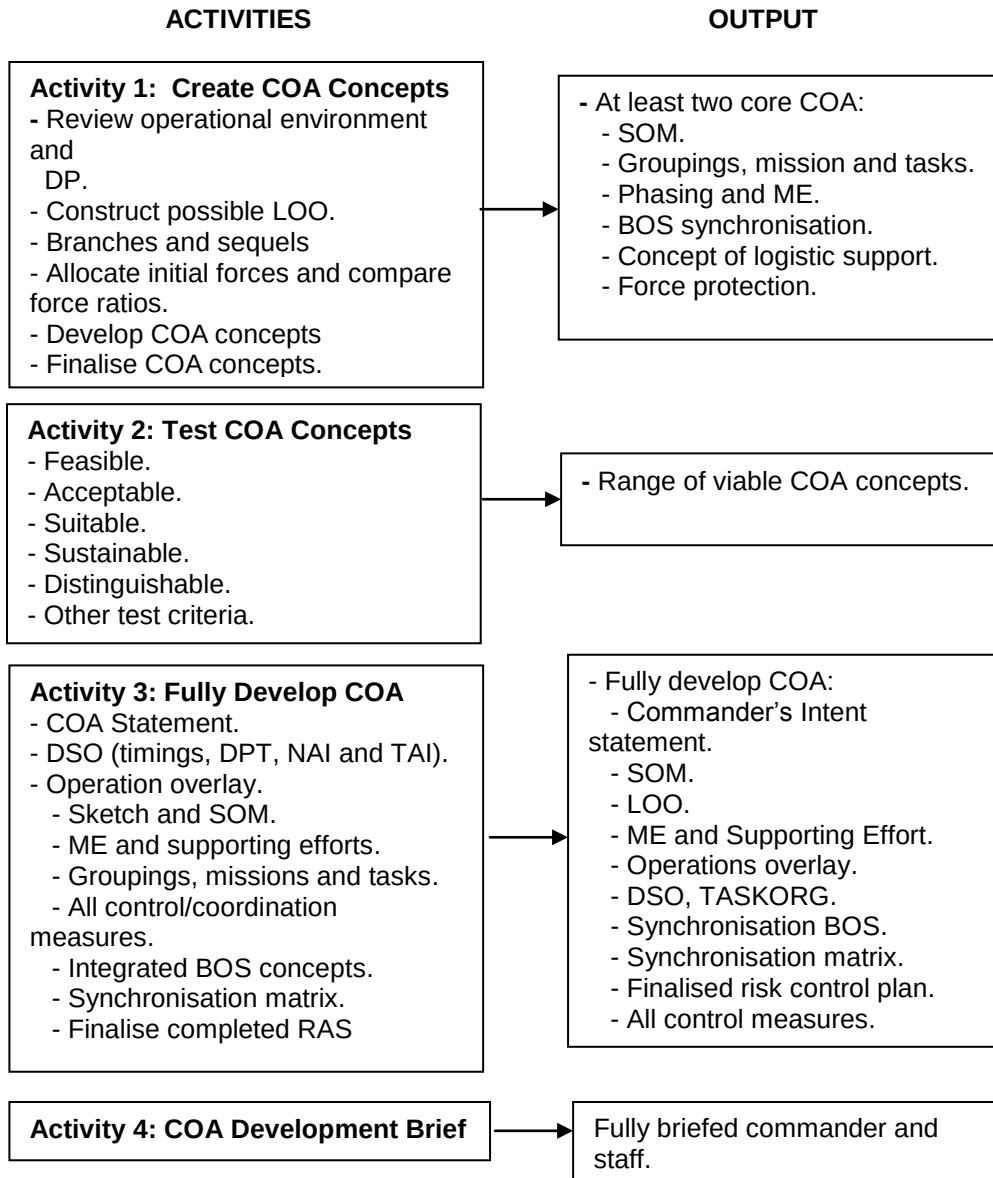
STEP 3: COURSE OF ACTION DEVELOPMENT

SECTION 1

GENERAL

501. The COA development step of the MAP commences at the conclusion of the MA when the commander confirms the broad COA to be developed. COA development refines the broad concepts into COA statements that provide the commander with a range of workable options from which to choose a solution to achieve the mission.

502. The COA development step concludes with the production of COA statements and their supporting graphics, including the synchronisation matrix and Decision Support Overlays (DSO) ready for analysis during COA analysis. A COA development aide memoire shown in **Annex A**. A detailed briefing format for COA development is provided in **Annex B** and the COA development activities are outlined in Figure 5 –1.

STEP 3: COURSE OF ACTION DEVELOPMENT**Figure 5 – 1: Activities of COA Development**

SECTION 2**COA DEVELOPMENT PROCESS****ACTIVITY 1: CREATE COURSE OF ACTION DEVELOPMENT CONCEPTS**

503. **Review Operational Environment and Confirm Decisive Points.** COA are then developed to the point of establishing a clear SOM for each COA, including ME, a concept for phasing (if required), and key supporting BOS activities. COA concepts are then tested to confirm whether they meet the FASSD criteria, before they are fully developed. Interaction between all staff is critical in the early stages of this step to ensure that COA concepts are not developed or considered in isolation. BOS specialist staff may need to undertake separate individual BOS planning and develop BOS concepts in support of the core concept. Further information on BOS planning is contained in Chapter 8.

504. **Construct Possible Lines of Operation.** A LOO is a description of how military force is applied in time and space through DP. Having reviewed and sequenced the DP, the planner constructs possible LOO by using various combinations of DP. At the lower tactical levels it may not be possible to construct more than one LOO owing to a lack of resources or the nature of the situation. At higher levels, a number of LOO may be essential to achieve disparate DP and maintain the initiative. Figure 5 – 2 depicts a single LOO with a branch and sequel.

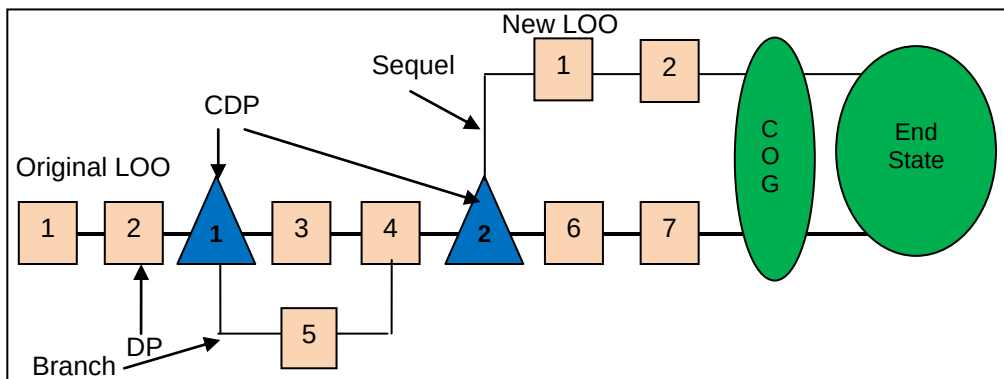


Figure 5 – 2: Single Line of Operation

505. **Structure of Lines of Operation.** A single LOO can be used to express a simple COA. A LOO is constructed by linking the DP required to achieve the mission. The DP may be prioritised to assist in the allocation of resources. CDP are inserted in the LOO if a decision on the next action is required, particularly if the action is dependent on the outcome of a DP. Different COA will have different LOO; the key difference is in the sequencing of DP. It should be noted that DP may not always be achieved sequentially; rather, they may be achieved simultaneously. Forces below brigade level will operate in a single LOO which is an arrangement of DP. When operating at brigade level and above forces may operate along several LOO operating with an array of enablers or across a range of environments.

506. **Branches and Sequels.** A CDP triggers a branch, a sequel or a continuation along the same LOO. A branch is a deviation from the original LOO, then a return in order to achieve the same end state. The branch may be used either to achieve a separate DP or to achieve the same DP through a different method. A sequel is an option for a commander to conduct a follow on action after achieving an objective or mission or if the situation has changed. A sequel is a new LOO and may assist the commander to seize the initiative.

507. **Allocate Initial Forces and Compare Force Ratios.** The planner now allocates sufficient forces to achieve successive DP within the LOO. This requires that start states and locations be agreed for both own and threat forces. The threat start state is derived from the IPOE situation overlays, and the friendly equivalent is determined as a result of any preliminary moves directed in the WngO given at the conclusion of the MA.

508. At this stage the allocation of forces is a preliminary estimate and should be considered in outline only, with the necessary detail coming later in the process. For example, a planner may determine that at a particular DP the threat is likely to be a Mechanised Battalion conducting an advance to contact as a brigade first echelon. If the DP required is to delay the threat it may be implied that the minimum own force required to achieve the DP would be a friendly Combat Team. Broad force ratios can be compared at DP to determine the allocation of forces needed to achieve the desired DP. Force ratio comparison tables are provided in **Annex C**.

509. **Develop Courses of Action.** The staff must now develop COA using the initial allocation of forces at each DP. At this stage the COA must not be overly constrained by the many complexities required to synchronise a detailed plan, as this will occur later in the process. One method to ensure that the focus is maintained at the appropriate level is to initially portray the COA in a rough but workable sketch format on 'butcher's paper' or a whiteboard if available. This will facilitate the capture of ideas regarding the COA as they come to mind. This sketch can be subsequently refined to become a COA overlay (see **Annex D**).

510. The creation of a COA may be aided by working through the following sequence:

- a. **Visualise the Scheme of Manoeuvre.** This activity visualises where friendly forces are now and the desired endstate. The staff use their experience to determine how the battle may unfold and the SOM of own forces required to

achieve each DP within the COA being developed. Staff may be aided by consulting subordinate unit commanders and staff, or by considering doctrinal options to achieve the endstate. Doctrinal options must be modified to avoid allowing the threat to template our actions in their own version of the IPOE process. Surprise and deception should feature in the development of most COA. For example, the operation as follow:

- (1) An advance to contact.
- (2) A quick attack.
- (3) A deliberate attack.
- (4) A delay defence.
- (5) A mobile defence.
- (6) An area defence.
- (7) Any combination of these.

b. **Identify and Build a Main Effort.** Identifying and building a ME in a COA will ensure that a significant effect is achieved through the most efficient use of available resources. Other actions within the COA should support the ME to achieve a unified effort in key areas required in the COA.

c. **Consider Phasing.** It maybe necessary to phase the operation to allow regrouping or reorientation, a change of ME or a significant change in tasks. The requirement for phasing must be balanced with the desire to retain the initiative and deny the threat's opportunity to conduct operations such as counter attacks.

d. **Consider Key Supporting Battlespace Operating Systems.** The integration of the activities and effects of key supporting BOS in the COA needs to be considered. The full integration of BOS effects is detailed in Chapter 8.

e. **Consider Force Protection.** Force protection is defined as the shaping of the operational environment to conserve and maximise fighting power by protecting own CV. COA must encompass the philosophy of force protection while achieving the DP.

f. **Assign Command, Control, Communications, Computers and Intelligence Measures.** The employment of command, control, communications, computers and intelligence measures as appropriate to the operation are assigned to aid the C2 of the COA. These will be refined during the COA analysis.

511. Each COA has a SOM that includes:

- a. Outline groupings.
- b. Missions and tasks.
- c. The assignment of ME.
- d. A concept for phasing, if required.
- e. DP achieved by phase.
- f. Reserve allocation.
- g. Preliminary synchronisation of BOS.

ACTIVITY 2: TEST COURSE OF ACTION CONCEPTS

512. COA development strives to develop a range of courses to meet the DP within the guidance provided by the commander. The principal test of a COA is whether it meets the commander's guidance and in particular, their intent. The following is a list of test criteria based on the mnemonic FASSD:

a. **Feasibility.** The COA is analysed against the following questions:

(1) **Time.** Is there sufficient time to execute the concept as envisioned within the agreed operational time line?

(2) **Space.** Is there adequate ground and air space to conduct the operations?

(3) **Means.** Do friendly forces have the necessary combat power to conduct the operation? Relative combat ratios are checked at the DE in the expected battle. Resources for critical aspects of the operation, such as bridging assets for a river crossing, are checked.

b. **Acceptability.** The COA is assessed for acceptability by comparing the probable risk (cost) versus the probable outcome of the COA in fulfilling the superior commander's intent. The commander must make a judgment based on understanding of the potential gain of the intended battle in terms of its contribution to the overall success of the campaign, and against the likely cost of the battle in terms of personnel casualties, the time spent and resource usage. This step aims to avoid unnecessary conflict and risk.

c. **Suitability.** The COA is subjectively assessed as to its suitability for accomplishing the mission in accordance with the superior commander's guidance.

d. **Sustainability.** The COA is assessed for sustainability by phase in deep, close and rear areas. For example, have planners allowed enough time for forces to prepare, deploy or reconstitute for subsequent operations? Are the logistics support and cost for this COA realistic or unattainable?

e. **Distinguishability.** The COA is assessed on its uniqueness in comparison with other COA. Each COA must be a viable alternative and substantially different from other COA. Differences in COA are developed by emphasising distinction in four areas. These comprise the sequence for achieving the DP, the SOM, the focus or direction of the ME and the TASKORG.

513. It may also be appropriate to test the COA against the key principles and basic considerations for that type of operation and the achievement of DP.

ACTIVITY 3: FULLY DEVELOP COURSE OF ACTION

514. The COA that has passed the criteria test in the previous activity are now fully developed in sufficient detail to be analysed during the COA analysis. Each COA should be fully developed in the following areas:

- a. A COA statement including as a minimum:
 - (1) The SOM.
 - (2) LOO.
 - (3) The ME.
 - (4) Supporting Efforts.
 - (5) Missions.

- (6) Groupings.
 - (7) Tasks.
 - (8) Control Measures.
 - (9) Coordination arrangements.
 - (10) Preliminary moves.
 - (11) A synchronisation matrix.
 - (12) The deception plan.
 - (13) Indirect Support.
 - (14) Logistic support.
- b. A Decision Support Overlay (DSO) including as a minimum:
- (1) Timings.
 - (2) DPT.
 - (3) NAI.
 - (4) TAI.
- c. An operations overlay including as a minimum:
- (1) A complete sketch and SOM.
 - (2) Subunit groupings, ME, missions and tasks.
 - (3) Boundaries, Phase Lines and Report Lines.

- (4) Fire Support Coordination Lines.
- (5) Battle positions (primary and secondary), ground routes and air routes.
- (6) Synchronisation of supporting BOS concepts.
- (7) Coordination points, checkpoints, and equipment and casualty collection points.
- (8) Any other necessary control measures specific to the mission.

515. **Constructing the Course of Action Method Statement.** It should now be possible to fully describe the actions to be taken against the hostile forces by each COA, if not previously directed in the commander's guidance. The description of the effects on the hostile force is directly influenced by the method element of the commander's intent and is referred to as the COA method statement. It can include a description of the hostile force COG and the DP to be achieved, supported by a method statement particular to a given COA. When the commander selects the final COA at the end of the MAP, the chosen COA method statement becomes the method element of the commander's intent.

516. **Synchronisation.** Each COA is fully developed to produce a synchronisation matrix. At this stage the matrix establishes friendly forces tasks, purposes and timings but does not take into account threat action. Reviewing the synchronisation matrix highlights any BOS synchronisation issues before COA analysis. During COA analysis, the synchronisation matrix can be adjusted to accommodate the predicted impact of hostile forces, terrain or other issues. An example synchronisation matrix is shown in Chapter 6 - Appendix 1 to **Annex D**.

SECTION 3

COA DEVELOPMENT OUTPUT

517. At the conclusion of the COA development, the staff has a number of fully developed COA ready for COA analysis. If the COA are not fully developed, they must be completed before progressing to COA analysis. The main outputs are the COA statements, overlays and the synchronisation matrix.

518. The COA statements, overlays and the synchronisation matrix provide the framework for analysis (wargaming) and should contain sufficient detail to allow a rigorous analysis and comparison. COA working sketches should be refined and completed in overlay format prior to COA analysis and the terrain aspects of the MCOO should be properly incorporated.

519. The COA statement and overlay cover the 'who, what, when, where, how and why' of the operation. They must clearly portray how the friendly force will defeat the hostile force and achieve the mission, addressing each part of the operational environment framework (Deep, Close, Rear and the Reserve). An example of COA statement together with overlay is shown in **Annex D**. The COA statement and overlay should state, clearly and concisely, the following information:

- a. The activity Purpose, Method and Endstate.
- b. The SOM, including grouping, missions and tasks.
- c. The ME.
- d. Phasing, if required.
- e. Timings.
- f. Synchronisation of supporting BOS.

SECTION 4

STAFF INTERACTION

520. COA development is driven by the commander's guidance issued at the end of the MA. The commander may subsequently be absent from the HQ for some time undertaking reconnaissance or revisiting the current battle. The staff undertakes the majority of the COA development under the direction of the COS. The following is a list of considerations for the COS in the COA development:

- a. **Time Management.** It is crucial that the COS maintains the direction of the staff to ensure that they adhere to the timings and do not reduce the time available for COA analysis.
- b. **Staff Communication.** Communication between all staff is critical to ensure that COA and hostile force estimates are not developed in isolation. COA must be formulated with an awareness of hostile force COG, TCV and likely approaches or dispositions. Hostile force COA must be developed cognisant of likely own force and friendly force dispositions, or they are of little value as hostile force models.
- c. **Logistic Integration.** The CSS staff must be intimately involved in the COA development. In some cases, COA may be discarded due to CSS limitations, saving considerable effort for all staff. CSS staff should note the early intent apparent at this stage of the process and provide early warning to the CSS chain of command. Additionally, the CSS staff must participate in the activity to test COA criteria in order, to provide an estimate that each COA is logistically feasible, acceptable, sustainable and suitable.
- d. **Battlespace Operating System Staff.** The BOS advisers must also be available when COA are being

developed and tested. They must provide advice on the capability embodied within their BOS. Once the COA are stated, the BOS staff requires time to develop their own BOS concept in support of the core concept. These are required in sufficient detail to enhance the wargame during the COA analysis.

e. **Robust Products.** The COS must examine each of the COA products to ensure that they are robust and sufficiently detailed to support the analysis in the next step (see Chapter 6). Time spent preparing these products saves considerable time during the COA analysis.

f. **Advantages and Disadvantages Analysis.** An additional technique of analysis is to list advantages and disadvantages of each COA against all or a selection of criteria. This technique is particularly useful when combined with other techniques. This matrix allows the staffs expand upon those criteria that the commander indicated as the most important. Additionally, it may be used to summarise each COA. An example of this technique is shown at **Annex E**.

SECTION 5

CONCLUSION

521. The COA development process is where all available options to achieve the mission and how to address the threat will be developed. All available Broad COA derived in the Mission Analysis process will be tested and developed here. To fully develop COA, it requires the use of available deductions derived from the previous step especially on how best to use all available resources and synchronises all the supporting BOS in achieving the mission.

**ANNEX A TO
CHAPTER 5****COURSE OF ACTION DEVELOPMENT AIDE MEMOIRE**

Input	Activities	Output
(a)	(b)	(c)
Commander's guidance. IPOE update and situation overlays. DP analysis carried over from MA.	1. Create COA concepts (if not given by commander): a. Review DP. b. Construct possible LOO. c. Allocate initial forces and compare force ratios. d. Develop COA. (1) Visualise SOM. (2) Identify and build an ME. (3) Consider phasing. (4) Consider key supporting BOS. (5) Consider force. (6) Consider force protection. (7) Assign C4I measures (objectives, boundaries, FSCL, PL, axis, routes, AA).	Identify at least two core COA. Develop a range of COA, including: a. Phasing. b. ME. c. Group mission and tasks, integration of BOS.
	2. Test COA criteria: a. Is it feasible (sufficient time, space and means)? b. Is it acceptable (is it worth the risk/cost)? c. Is it suitable (does it meet the commander's guidance)? d. Is it sustainable (Are the logistic support and cost for this COA realistic or unattainable)? e. Is it distinguishable (is it different)?	Range of viable COA sketches. COA may also be tested against principles of war and considerations for a particular phase.

(a)	(b)	(c)
COA concept sketches.	3. Fully develop COA: a. Troops to task. b. Time and space. c. C2. d. Integrate BOS concepts. e. Update NAI, TAI and DPT (event overlay) statement. f. Construct the COA method. g. Develop the COA statement and overlay.	Produce detailed COA statement and overlay. Identify NAI, TAI and DPT to be confirmed in wargaming. Staff COA brief.

**ANNEX B TO
CHAPTER 5**

COURSE OF ACTION DEVELOPMENT BRIEFING FORMAT

Briefer	Subject
(a)	(b)
COS/G3	1. Intent of own and higher commander. 2. Mission. 3. DP.
G2	4. Updated intelligence estimate. a. Current enemy situation – enemy MLCOA and MDCOA situation overlays. b. Event overlay updated.
G3	5. Brief on each COA. a. COA statement and overlay. (1) Broad COA concept and DP achieved. (2) SOM. (a) Close, Deep, Rear, Security and Reserve Operations. (b) Main supporting and deception efforts. (3) Acceptable levels and areas of risk. (4) Overlay details. b. COA rationale. (1) Achievement of DP. (2) Enemy CV exploited. (3) Deductions from relative combat power analysis. (4) Reasons for force positions selected. (5) Reasons for control measures selected.
G1	6. Update key personnel facts, assumptions and conclusions as necessary. 7. Key estimates for each COA (unit strength, projected casualties, medical capability, stragglers and POW).

(a)	(b)
G4	8. Update key logistic facts, assumptions and conclusions as necessary. 9. Key estimates for each COA (movement, Class 1, 3, 4 and 5 usage, projected equipment readiness, loss and repair).
G7	10. Update key civil affairs facts, assumptions and conclusions as necessary. 11. Key estimates for each COA (local coordinator, displaced persons activities). 12. Update key CIS facts, assumptions and conclusions as necessary. 13. Key estimates for each COA (CIS services to staff, CIS support to DP and DPT).
COS/G3	14. Recommend COA to be analysed.
Commander	15. Direct modification of presented COA as required. 16. Modify intent as desired. 17. Direct COA to be analysed and time allowed. 18. Direct COA comparison criteria if COA analysis and decision and execution steps and briefs are to be combined.

**ANNEX C TO
CHAPTER 5**

FORCE RATIO COMPARISON TABLE

1. Force ratio analysis is a useful COA Development tool. It applies some science to the development of COAs by comparing objective force ratio tables. The force ratio tables included in this annex are for training purposes only. Intelligence staff produce force ratio tables for each operation which reflect up-to-date equipment and capabilities in theatre. Additionally, the intelligence staff maintain electronic spreadsheets that facilitate rapid force ration calculations and comparison. Table 5C - 1 is an example of an electronic force ratio spreadsheet. Figure 5C - 1 is a graph of the spreadsheet output.

2. Analysing force ratios involves a comparison of the overall fighting power of friendly forces versus hostile forces, indicating significant strengths and vulnerabilities for each threat COA. The use of relative force ratios is based on historical data and is intended to provide a rough calculation of what type of operations friendly forces could realistically conduct. For example, ratios can assist in judging what FE is sufficient for economy of force operations and how much fighting power must be concentrated at the decisive point. These force ratios are imprecise and take no account of the most important combat multiplier in war, morale. The ratios are a guide only and must not be slavishly followed.

3. Once force ratios have been established, assessments are made on their potential impact on the tactical situation. These assessments are designed to give the staff an indication of friendly and hostile force strengths and weaknesses, rather than a mathematical answer.

Friendly Forces					LANUN ARMY				
<i>Num</i>	<i>Str</i>	<i>Type</i>	<i>FEE</i>	<i>Total</i>	<i>Num</i>	<i>Str</i>	<i>Type</i>	<i>FEE</i>	<i>Total</i>
3	100%	Standard Inf Bn (BIS)	0.48	1.44	1	80%	Infantry Bn (Light / Air Assault)	0.42	0.34
1	100%	Armoured/Cav Squadron	2.20	2.20	1	80%	AT Bn	0.40	0.32
1	100%	Arty 105 (FD) Regt (HOW)	0.80	0.80	1	80%	GIAT 105mm bn	0.45	0.36
	100%					80%			
	100%					80%			
	100%					80%			
	100%					100%			
	100%					100%			
	100%					100%			
	100%					100%			
Friendly Force Equivalent				4.44	Enemy Force Equivalent				1.02
Ratio of Friendly to Enemy 4.37:1					Ratio of Enemy to Friendly 0.23:1				
Deliberate Attack			<- Mission ->			Deliberate Defense			
10%			<- Est. Losses ->			60%			

Table 5C – 1: Electronic Force Ratio Comparison Table

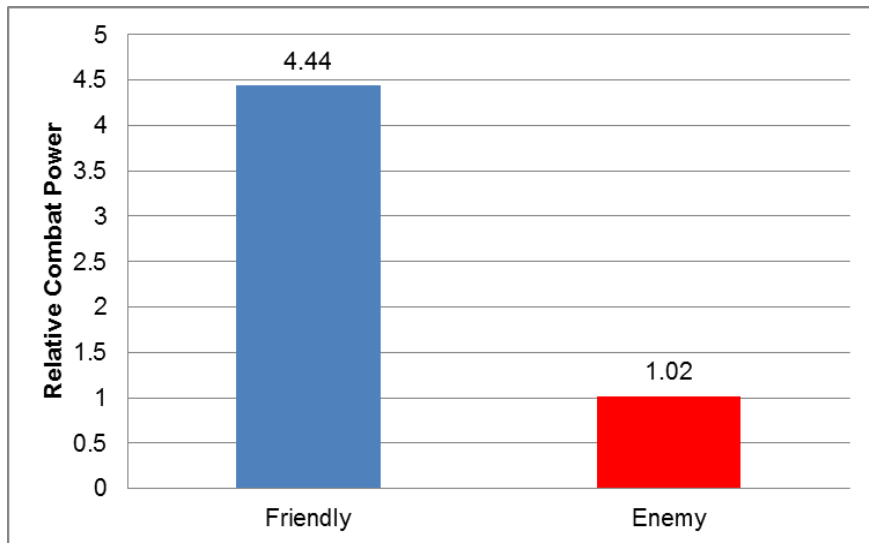


Figure 5C – 1: Electronic Force Ratio Outputs Graph

Force Ratio Comparison Value (Manual Calculation)

4. Relative force ratios involve a comparison of the fighting power between friendly and hostile forces. Analysing force ratios assists in determining realistic tasks for friendly forces and strengths and weaknesses. The following tables outline the force ratio determination process. The historical tables are a useful guide for providing an indication of fighting power. Table 5C - 2 indicates unit values.

Friendly		LANUN ARMY	
Type	Force Element Estimate	Type	Force Element Estimate
(a)	(b)	©	(d)
Infantry Bn (Mech-GEMPITA) (W)	0.71	Infantry Bn (AMX-10P)	0.77
Infantry Bn (Mech-IFV -ADNAN) (T)	1	Infantry Bn (BTR-90)	0.6
Standard Inf Bn	0.48	Infantry Bn (Light / Air Assault)	0.42
SSR (Regt)	0.92	Infantry Bn (Airborne)	0.51

(a)	(b)	©	(d)
Para Inf Bn	0.7	Recon Bn	0.38
Brigade (Armored)	5.3	AT Bn	0.4
Brigade (Mech)	4.7	AT Bn (AT Regt / Div)	0.45
Brigade (BIS)	3.1	Army Gp Tk Bn (41xM-84)	1.05
Brigade (Para)	3.32	Tank Bn (41xLeopard)	0.82
Brigade (SSR)	3.54	9A52 Bn	4.5
Armoured Regt (PENDEKAR)	1.21	BM 21 Bn	2.94
Armoured/Cav Regiment	7.6	PzH 2000 Bn	1.02
Armoured/Cav Squadron	2.2	155mm Bn	0.86
Army Aavn Sqn	0.91	2S1 Bn	0.71
Armoured/Cav Troop	0.5	Norinco 122mm Bn	3.5
Arty 155(GS) Regt (G 5)	0.8	GIAT 105mm bn	0.45
Arty 105 (FD) Regt (HOW)	0.8	Astros	4.6
Arty 155 (SP) Regt (T)	1.6	Army Gp AD Regt (Hawk and ADATS)	0.77
Arty MLRS Regt	4.6	DAG AD	0.25
Arty AD Regt (Starburst)	0.21	FROG Bn	0.22
Arty AD Rapier Regt	0.59	RAG AD	0.21
Inf/Para/SSR Coy/Sqn (AASLT, Abn, Air Mob Op)	0.7	Hughes 500MD	1.3
Div Cav Squadron (Heavy Div)	2	UH-1H	1.5
		Hind Bn	2.05

Table 5C – 2: Unit Values

5. Once established, the values are applied to the total number of friendly and hostile forces available (two levels down). For this example, friendly forces have:

- a. Three infantry companies.
- b. Two APC companies.
- c. One tank squadron.

- d. Three 105 mm gun batteries.
6. The hostile forces have:
- a. Nine infantry companies.
- b. One BTR (wheeled armoured) company.
- c. Three 122 mm gun batteries.
- d. Three 105 mm gun batteries.
7. Furthermore, friendly forces are at 90 per cent strength (0.9), and the hostile force has been determined to be at 80 per cent strength (0.8).
8. The planner combines the previous forces data with the force ratios at Table 5C - 2 and then calculates the relative values as per Table 5C - 3.

Malaysian				LANUN			
Type	Unit	FEE	Total	Type	Unit	FEE	Total
BIS	3	0.48	1.44	Infantry	9	0.42	3.78
IFV 300 ADNAN	2	1	2	BTR-90	1	0.6	0.6
PENDEKAR	1	1.21	1.21				
Sub total			4.65	Sub total			4.38
Strength	0.9		4.18	Strength	0.8		3.5
Artillery (105)	3	0.8	2.4	122	3	3.5	10.5
				105	3	0.45	1.35
Sub total			2.4	Sub total			11.85
Strength	0.9		2.16	Strength	0.8		9.48

Table 5C – 3: Manual Force Ratio Calculation

Comparison Outcome

9. The calculation for the manual force ratio comparison as follows:

a. $\text{Unit} \times \text{FEE} = \text{Total}$ ($3 \times 0.48 = 1.44$)

b. $\text{Sub Total} \times \text{Strength} = \text{Total}$ (4.65×0.9)

10. From this analysis, the Malaysian Army has a 4.18 to 3.5 ratio or a 1.4 to 1 combat ratio over the hostile force. Doctrinally, neither side has the (3:1) combat ratio to attack. The planner also needs to consider other combat multipliers such as artillery. In this case, the artillery ratio is 2.16 to 9.48 or approximately 1 to 6. This comprehensive analysis leads the staff to examine factors such as deception and surprise in order to gain an advantage. A commander may also have to consider requesting more assets or may need to receive priority on combat multipliers such as close air support.

11. The calculations are designed to give the staff an indication of relative strengths and weaknesses, not an absolute mathematical answer as to the capability of each force.

12. Using the planning ratios for the various combat missions found in Table 5C - 4, and with careful consideration of the terrain and threat assumptions, general conclusions can be made about the type of operations that can be conducted.

Historical Minimum Planning Ratios		
<i>Friendly mission</i>	<i>Friendly : Enemy</i>	<i>Position</i>
Delay	1 : 6	Hasty
Defend	1 : 3	Prepared or fortified
Defend	1 : 2.5	Hasty
Attack	3 : 1	Prepared or fortified
Attack	2.5 : 1	Hasty
Counterattack	1 : 1	Flank

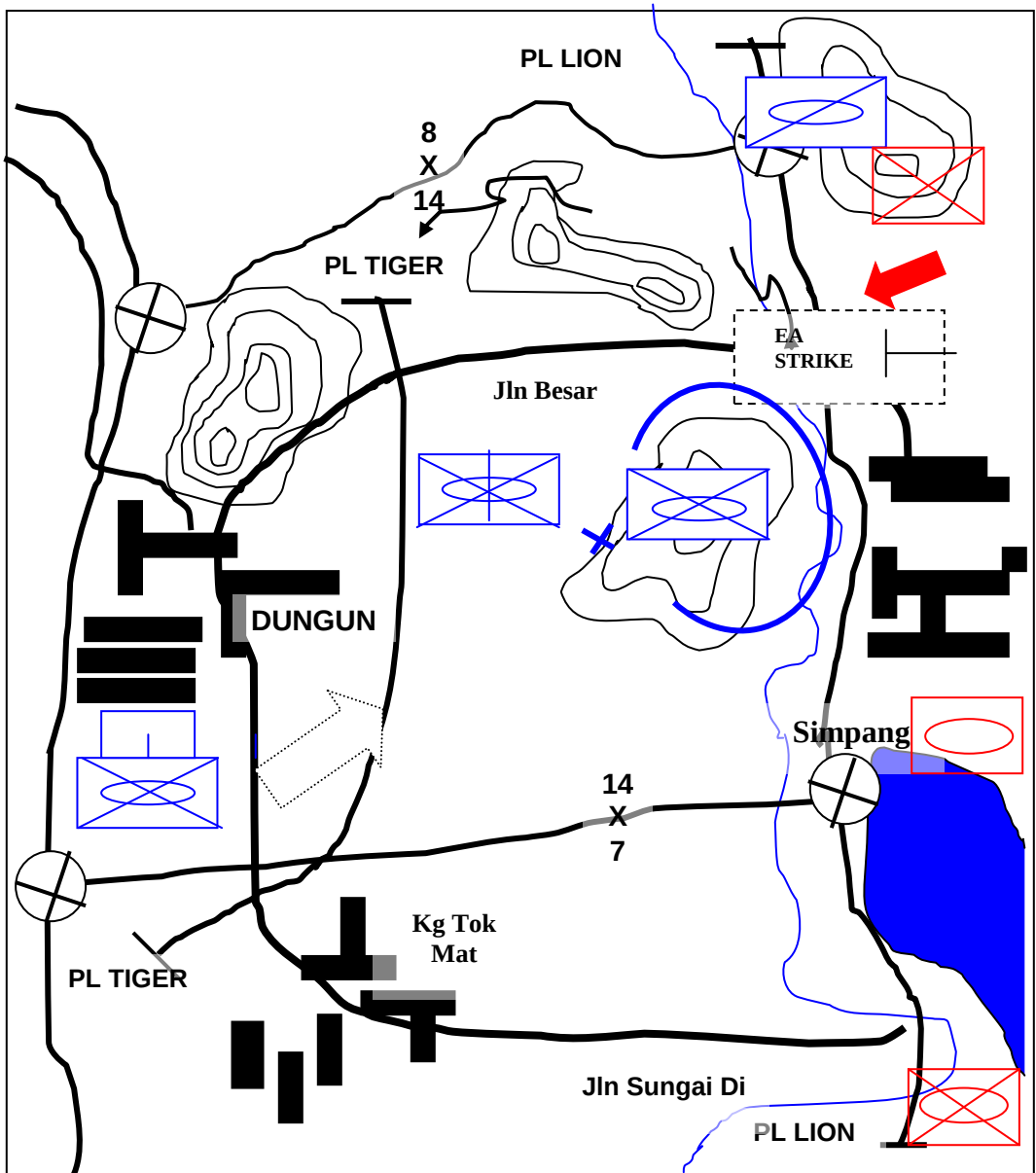
Table 5C – 4: Historical Minimum Planning Ratio

RESTRICTED

MP 0.5.1 TD

ANNEX D TO
CHAPTER 5

AN EXAMPLE OF A COA OVERLAY



5D - 1

RESTRICTED

RESTRICTED

MP 0.5.1 TD

14 Bde (Mech) defends within bdry and allows no penetration south of PL TIGER. En COA entails a Inf Div, with a Inf Regt in first ech, attacking west using JALAN BESAR as the main axis. A guard is estb between PL LION and PL TIGER based on recon, mech inf and AArmd forces. A mech inf defending along the river – focused on br along JALAN BESAR. A mtd inf operates to the north defending the river and as a block obs in KA STRIKE. Armd Hy Bde Res/CAttk force executes CAttk into EA STRIKE on orders.

5D - 2

RESTRICTED

**ANNEX E TO
CHAPTER 5**

**SUGGESTED MATRIX FOR COA ADVANTAGES AND
DISADVANTAGES**

SER	COA	ADVANTAGES	DISADVANTAGES
(a)	(b)	(c)	(d)
1.	COA 1	• Surprise and security • Compensate for some tactical advantages • Lesser logistic weaknesses • Be able to achieve commander intent/end state • Less casualties	• Potential loss of domestic and international support • Jeopardise morale level • May undermine alliance involvement
2.	COA 2	• Pre positioning • Strengthens morale level • Flexibility	• Long term sustainability • Vulnerability of forward deployed forces • Highly dependent on host nation support
3.	COA 3	• Morale increase and international acceptance • Domestic support	• Limited military initiative • Jeopardise commander intent/end state • May result in attrition

CHAPTER 6**COURSE OF ACTION ANALYSIS****SECTION 1****GENERAL**

601. COA analysis is the process of testing COA to ensure their robustness and determine their relative strengths and weaknesses. The primary method for the conduct of a COA analysis is wargaming.

602. Wargaming allows the commander and staff to visualise and fight the battle on the map. It involves the testing of each fully developed friendly COA against multiple threat COA. The wargames may be limited to the threat's MLCOA and MDCOA. However, thorough testing of friendly COA against the spectrum of viable threat COA is preferred.

603. The rigorous testing of friendly COA should result in enhancements to the plan as well as identifying any branches and sequels requiring further development. It will also aid the commander in determining criteria for the commitment of a reserve.

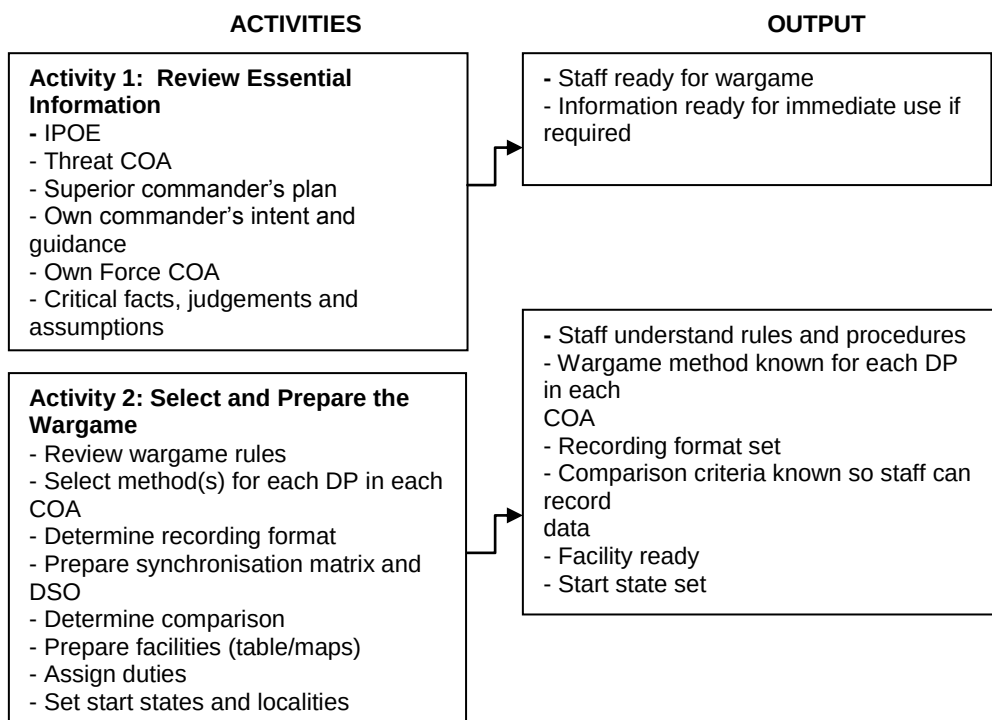
604. **Inputs.** The following products are required in order to commence a COA analysis:

- a. IPOE products:
 - (1) Fully developed threat COA.
 - (2) Synchronisation matrix to support each COA.
 - (3) An threat RSI plan.
- b. COA development products:
 - (1) Fully developed friendly COA.

- (2) Synchronisation matrix to support each COA.
- (3) A friendly RSI plan.
- (4) An HVT matrix.

605. **Course of Action Comparison Criteria.** At the conclusion of the COA development, the commander should provide COA comparison criteria for the wargame. Comparison criteria may include issues such as how well a particular COA achieves the DP, how well it deals with the threat's MDCOA, and whether it achieves surprise or simultaneity.

606. The COA analysis activities are listed in Figure 6–1. A COA analysis aide memoire is provided in **Annex A**.



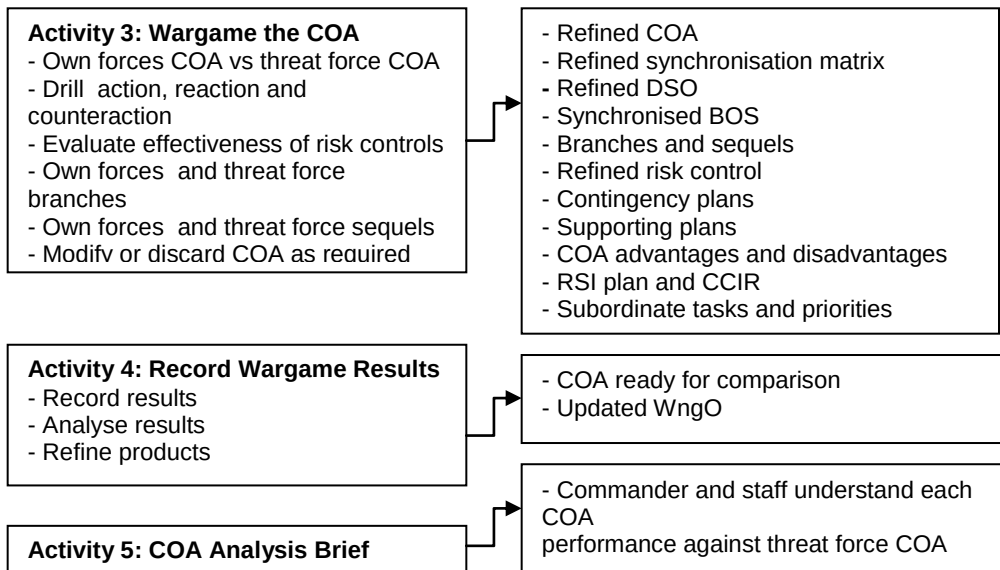


Figure 6 – 1: Course of Action Analysis Activities

SECTION 2

COURSE OF ACTION ANALYSIS ACTIVITIES

ACTIVITY 1: Review Essential Information

607. Prior to starting the wargame, staff should review the operational environment and all essential informations. The results and outputs from IPOE, MA and COA development should also be reviewed so that staff can act, react and counteract without the delays imposed by the requirement to confirm or verify information. It may be useful for the COS to conduct a briefing to ensure that all staff are conversant with the COA and how the wargame is to be conducted. The staff review and briefing should, as a minimum, cover the following elements:

- a. **Intelligence Preparation of the Operational Environment.** The IPOE review should update staff on the environmental characteristics and the operational environment effects, including physical terrain (MCOO), weather, stakeholder groups (ASCOPE), time frames and

any other aspects of the operational environment relevant to the mission. The list of current assumptions, outstanding CCIR and any recent RSI data should also be covered.

b. **Hostile Force Courses of Action.** The staff should then be briefed on the full range of hostile force COA, including ORBAT, capabilities, COG, CV, TCV, HVT, doctrine, tactics and any other aspects relevant to the wargame. Possible actions and reactions of other stakeholders should also be covered.

c. **Superior Commander's Plan.** Once the hostile force and other stakeholder COA are understood, the staff should be updated on the superior commander's plan and intent, and the campaign plan, so that they have a current understanding of their part in those plans.

d. **Own Commander's Intent and Guidance.** The commander's intent and guidance should then be reviewed to ensure that all staff have a current understanding of what the commander is trying to achieve and their role in the superior commander's plan.

e. **Own Force Courses of Action.** Once the superior commander's plan has been reviewed, the staff are updated on own force COA. The briefing should include the commander's intent and COA specific risk tolerance, COA statements and overlays, SOM, DP, CDP, branches and sequels, risk control measures, and all supporting BOS, CS and CSS concepts and capabilities. Friendly forces COA, including other LOO, should also be reviewed in the context of possible effects on friendly forces or own forces LOO.

f. **Critical Facts, Judgments and Assumptions.** The staff is updated on all critical facts, judgments and assumptions, and their associated risks, needed for the start of the wargame, drawing them from IPOE and MA. This identifies those assumptions that have not yet been confirmed as a result of information received through RSI

efforts. These assumptions are critical to decision making during the wargame.

ACTIVITY 2: Select and Prepare the Wargame

608. **Wargame Recording.** Recording the wargame allows the staff to capture any modifications to the COA (such as new branches or sequels) and record them on the DSO. It also facilitates the synchronisation of BOS activities, the refinement of hostile force templates and the comparison of COA (during orders and execution) based on the significant factors determined in accordance with paragraph 607. The subsequent orders and overlays, once the commander decides upon the final plan, are drafted using the wargame records.

609. **Determine Recording Format and Prepare Matrix.** The most effective record is the wargame matrix, supported by the event overlay, detailed in **Annex B**. It is organised to record hostile forces actions and own forces actions, reactions or effects for each DPT or CDP within an established time interval. The synchronisation matrix and the DSO are used in the development of the orders for the final plan and in monitoring the operational environment activities during the mission. An example DSO is shown in **Annex C** and an example synchronisation matrix is shown in Appendix 1 to **Annex C**.

610. **Physical Set up.** Wargaming can be conducted on a map or sand table, or via electronic means if available. The COS should coordinate the set up of the wargame, including allocating a seating plan. Before a wargame is commenced, the following tools must be immediately available:

- a. An operations overlay.
- b. An event overlay.
- c. A DSO.
- d. A synchronisation matrix (managed by the wargame recorder).

- e. A means of representing both friendly and threat FE, i.e two down from the level of command represented in the wargame.
- f. A casualty calculator (either a table or an electronic calculator).
- g. A force ratio calculator.

ACTIVITY 3: Wargame the Courses of Action

611. **The Process.** The wargame is conducted by working through each friendly COA against each threat COA or those previously directed by the commander or COS. An action/reaction/counteraction drill is followed for each DP or critical event in turn within the COA. This process quickly identifies strengths and weaknesses for each event within each COA. COA are modified progressively as weaknesses are found. This is to ensure that groupings, missions and tasks for subordinate units, and BOS actions and effects are appropriate and realistic. To save time, normally only workable COA are completely analysed through to their end state. The COS will provide an initial brief, which will include the wargame's rules, the set up of the room and the wargaming method to be used.

612. **Wargaming Method.** The commonly used wargaming methods are belt, avenue in depth and box method. These methods were described in **Annex D**. Multiple methods may be applied to a single wargame, however, a single method should be applied to each specific event within the wargame.

613. Wargaming relies heavily on tactical judgment and experience. It is important that each staff members bring to the analysis a thorough understanding of the capabilities and limitations of their respective BOS, which are crucial to a realistic appreciation of each COA. BOS representatives who are also wargaming their BOS for the threat must be aware of the threat's capabilities and doctrinal procedures. In wargaming security and

peace operations, it may be useful to record the likelihood actions of those organisations that cannot be grouped as either threat or friendly, for example, UN or non government aid organisations.

614. **Wargaming Drill.** The wargame are conducted using an action/reaction/counteraction drill. It can be conducted either on a map or electronically with appropriate icon representation for units two down from the HQ. To avoid wasting time and staff effort, the COS controls and adjudicates this process. The conduct of the initial action is determined by whoever has the initiative, but this can be either the threat commander (G2) or friendly commander (G3). The wargame is continued for each DP or critical event until a decisive outcome is achieved. The requirements for each drill are addressed according to the following headings:

- a. **Action.** The G3 or the G2 deploys the respective FE onto their start locations (at the time of expected first contact) or describes the BOS effects. The representative states the action forces will take at this point, identifying the purpose, method and end state. This is done by visualising as accurately as possible. The events that those units will be conducting in accordance with the synchronisation matrix. Where available, each BOSs planner may provide their specific actions in support of the manoeuvre plan. Key actions may be noted on the event overlay.
- b. **Reaction.** The opponent then deploys their forces onto the map in their dispositions, as expected, at first contact or describes the effect they will have in the operational environment in response. All possible reactions should be stated. This includes templated forces outside the AO which could influence the battle. All the assets required to carry out the reaction must be identified and their position in the operational environment explained. Actions and assets are recorded on the wargame matrix.
- c. **Counteraction.** This is the final stage, which details the response to the action/reaction sequence of events:

(1) Where friendly forces have the initiative, the aim of this stage is to identify the friendly response to threat reaction and determine the assets and friendly commander is required to carry out the counteraction. The threat reaction, friendly counteraction and asset requirements are recorded on the synchronisation matrix.

(2) Alternatively, should the threat have the initiative, the aim is to identify possible threat responses to friendly reactions. Once again, all possible reactions should be stated. This includes templated forces outside the AO which could influence the battle. All assets required to carry out the counteraction must be identified and their position in the operational environment explained. Actions and assets are recorded on the wargame matrix.

(3) During the drills, the COS and the staff identify the assets that each action and counteraction required. Where the demand for assets exceeds the available forces, the COS must establish priorities for their use and re-examine the forces allocated to that activity. Conversely, it may be determined that the force allocation is more than ample and excess forces should be moved to support another DP. Experience with these drills will result in individual staff perfecting their own methods of refining the process.

615. **Casualty Calculations.** The COS is responsible for awarding casualties to both threat and friendly forces during wargaming. These calculations are based on the tabulated data provided in T 3142 Staff Planning Handbook.

616. **Branches and Sequels.** Inherent within the wargaming process is the identification and analysis the range of branches and sequels which should be cross referenced through the wargame matrix to the DP on the COA to which they referring. A branch relates to the options available for a commander to achieve the

same objective through different COA. Branches will therefore be reflected in the different COA after being wargamed. However, there may also be opportunities to achieve the objective with minor variations to a single COA. These branches should be identified as DP and analysed to ensure that all variations within each friendly and threat COA are considered in the wargame.

617. Sequels are options that a commander has in conducting follow on operations after achieving the objective. Sequels represent significant shifts in focus and will normally follow a different LOO and DP from that originally planned or envisaged. In planning for sequels, the staff attempts to identify the critical information requirements that indicate such a shift, and this will lead to friendly forces contingency planning to defeat the threat reorientation.

618. **Wargame Responsibilities.** Wargaming in its simplest form involves one staff member (G3) acting as the friendly force, one playing the threat force (G2) and one recorder capturing the results on the wargame matrix. Other staff provide accurate inputs based on a detailed understanding of their respective BOS (fire support, AD, mobility and survivability, and CSS at a minimum). Normally the COS arbitrates to ensure an unbiased approach. The commander maintains contact with the COS to ensure that the staff maintains the commander's direction. Specifically, they must ensure that there is one voice in the room. This assists the recorder in capturing all key information by avoiding sidebar discussions. Staff responsibilities during wargaming are detailed in **Annex E**.

619. **Quick Wargaming.** Quick wargaming involves an individual (as detailed in Chapter 9) or a few key staff officers considering only the DP of the COA (box method) and conducting the wargame as a quick mental exercise while viewing a map. These ad hoc wargames can be of benefit if the officers take note of the following:

- a. Have the necessary judgment to make realistic assessments and visualise actual activities in the operational environment.

- b. Adhere to the rules (in particular, avoid bias).
- c. Mentally follow wargaming steps in a disciplined manner.
- d. Use good judgment in assessing results.
- e. Draw in the rest of the staff or BOS advisers, as required, for expert advice.

ACTIVITY 4: Record the Wargame Results

620. During wargaming, the commander and staff consciously visualise the flow of the battle and identify potential events and requirements. These may result a modifications to workable COA and reveal unworkable COA. The commander and staff must be cautious when assessing wargame results. The process is a visualisation the types of activities that could happen, not a prediction of what will happen. In all likelihood, the threat and friendly subordinate units will not react exactly as the wargame predicts. However, thinking through the battle reduces the chances of being caught by surprise by the threat and assists in synchronising the effects of friendly BOS.

621. The wargame process may become complex and laborious. However, the more time and detail put into it, the more useful are the results. This must be balanced with the reality that, during the conduct of an operations, there will not normally be enough time to conduct in depth wargames for more than one to three friendly COA against one or two threat COA. This is where the commander's guidance is crucial in focusing the staff on which friendly and threat COA or key aspects are to be wargame.

622. Results should be recorded immediately after they become obvious through the wargaming process. Wargaming results in identifying or refining the following:

- a. Modified and workable COA.

- b. COA advantages and disadvantages.
- c. The timing and locations of COA DP.
- d. The best use of key or decisive terrain.
- e. The range of possible threat COA.
- f. The risks associated with each COA.
- g. Possible branches and sequels, as well as requirements for deception and surprise.
- h. Subordinate tasks and priorities.
- i. BOS tasks and priorities.
- j. Synchronisation of BOS.
- k. C2 measures.
- l. Refined wargame matrix and event overlays, including known and additional critical events, NAI, TAI and CDP.
- m. The CCIR and the intelligence collection plan.
- n. The time lines for COA.
- o. Threat and friendly forces casualty projections.
- p. Estimates the location of own troops forward line and the relative positions of friendly and threat manoeuvring forces.
- q. Refined DSO and refined synchronisation matrix.

623. **Course of Action Comparison.** Once wargaming has concluded and all relevant deductions and modifications are captured, the friendly COA should be compared in order to allow a

recommendation to be made to the commander on the preferred COA. This information would be then provided as part of the COA analysis brief.

624. **Outputs.** The outputs from the COA analysis are as follows:

- a. Refined threat and friendly COA.
- b. A refined RSI plan.
- c. A refined synchronisation matrix.
- d. A DSO.
- e. Planning guidance to G5 for sequel actions.
- f. A COA analysis brief that allows a commander to select a COA for execution.

ACTIVITY 5: Course of Action Analysis Brief

625. COA analysis finishes with a brief by the staff to the commander, which details the modified COA and their advantages and disadvantages. The staff recommend a COA and the commander confirms which COA are to progress to the next step (Decision and Execution) (see Chapter 7). If the commander has been involved in the conduct of the wargame, this brief can be informal (if it is required at all) or combined with the orders and execution brief. A briefing format example is shown in **Annex F**.

SECTION 3

CONCLUSION

626. Analysing all the COAs developed from the previous step is the important part of the MAP process whereby the use of wargaming method to analyse COA will provide the commander and/or staff a better visualisation towards the strengths and weaknesses for each COA that they have developed. Regardless

of what method used for the war game, all the weaknesses observed or identified should be modified for the enhancement of the COA to ensure all the COAs developed will remain feasible and credible.

627. The use of significant factors such as basic considerations and key principles of war that should be applied for the specific type of operations is the best means to measure the advantages and disadvantages of each COA and this will also facilitate the process for the COA analysis. If the time permitted, all other available methods or tools that can be used to facilitate the COA analysis should be considered.

**ANNEX A TO
CHAPTER 6**

COA ANALYSIS AIDE MEMOIRE

Inputs	Steps and Activities	Outputs
(a)	(b)	(c)
IPOE updates Viable own COA overlays Enemy most likely, most dangerous overlays Event overlays	1. Prepare the War Game a. Review essential information and outputs from MAP and IPOE as fol: (1) IPOE updates – MCOO and Sit overlay (2) Friendly Forces COA. (3) BOS concepts. (4) Event overlays. (5) Status and localities. (6) Critical assumptions. (7) Significant factors. b. Select method: (1) Belt. (2) Avenue in depth. (3) Box. c. Prepare record:	COA ready to be war gamed

(a)	(b)	(c)
	(1) War game matrix. (2) Overlays. d. Prepare war game venue: (1) Wargaming table. (2) Recorder. (3) Overlays.	
Staff: Op friendly comd, Int as enemy comd, COS arbitrates, war game recorder. BOS advisors: 1. RSI. 2. Manoeuvre. 3. Fire support. 4. Mob/surv. 5. AD. 6. CSS. 7. C2. 8. IO. Other special advisors: SF and etc.	2. Conduct the War Game a. Conduct the war game drill until a decisive outcome is reached for each decisive points: (1) Friendly action (initial action). (2) Enemy reaction (enemy respond). (3) Friendly counteraction (respond to enemy action). b. War game from COA starts until endstate is reached. c. Modify COAs as needed. d. Discard unworkable COAs if they cannot be modified.	Workable and modified COAs with: a. Clear advantages and disadvantages. b. Risk management. c. Contingency plans. d. Supporting plans. COA brief.

(a)	(b)	(c)
	e. Ensure war game record notes or confirms: (1) Range of enemy actions. (2) Any modifications to COAs. (3) Changes to subordinate groupings, missions or tasks. (4) DP locations and timings. (5) CCIRs, NAIs, TAIs, DPTs. (6) Key and decisive terrain. (7) BOS supporting actions. (8) Branches and sequels (contingency plans). (9) Potential risk and mitigating actions.	

ANNEX B TO CHAPTER 6

WARGAME MATRIX AND EVENT OVERLAY

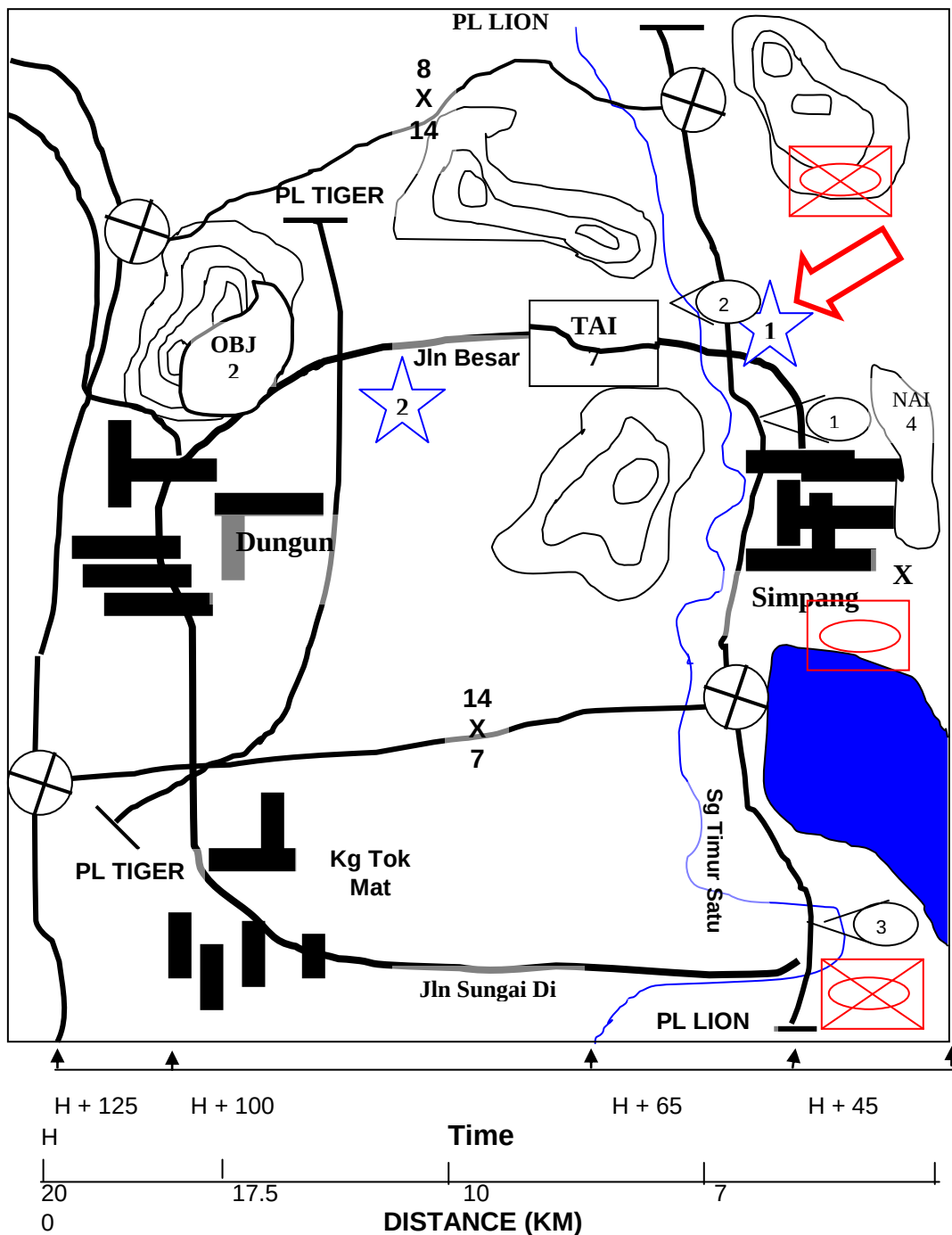
Time/Event			H Hr	H + 45	
(a)			(b)	(c)	
Event Sit/COA Friendly DPT Phase Line TAIs/NAIs EA Objectives				 En penetration PL LION CAttk into EA STRIKE	
R S I	ASSETS LP/OPs Patrols Scouts	OBS	Covering force along PL TIGER	Mech elm focus on PL LION	
	Requests to Division	Comd PIR EW Effort	Is en mech elm along JIn BESAR? When will attk commence?	Where are en tk?	
M A N O E U V R E	DEEP CLOSE REAR SECURITY RESERVE		Covering force – observe en mov out of SIMPANG Res/CAttk force in posn Econ of effort on north of main def	Covering force and CAttk force mov to LD Mech elm fights en at PL LION Protect north flank CAttk force prep mov to EA STRIKE	
F S	Fd Bty (DS) Pri of fire Tgt gp/EA CAS		Covering force	Mech elm/Self Propelled Arty EA STRIKE	

(a)		(b)	(c)	(d)
A D	Pri of Def	Bde res		
M O B / S U R V	Pri of effort for sp	Engr effort to mech elm	Engr effort to sp mob op to CAttk force	
C 2	Tac Main CP	PL LION		
		PL TIGER		
	Rear CP Con measures			
C S S	Alloc of MSR's			
	Pri Maint Med Sup Pers	- Fwd elm - Engr - Mech elm - CAttk force	- Mech elm - CAttk force	
I O	Psyops EW Destruction OPSEC Deception			

Note:

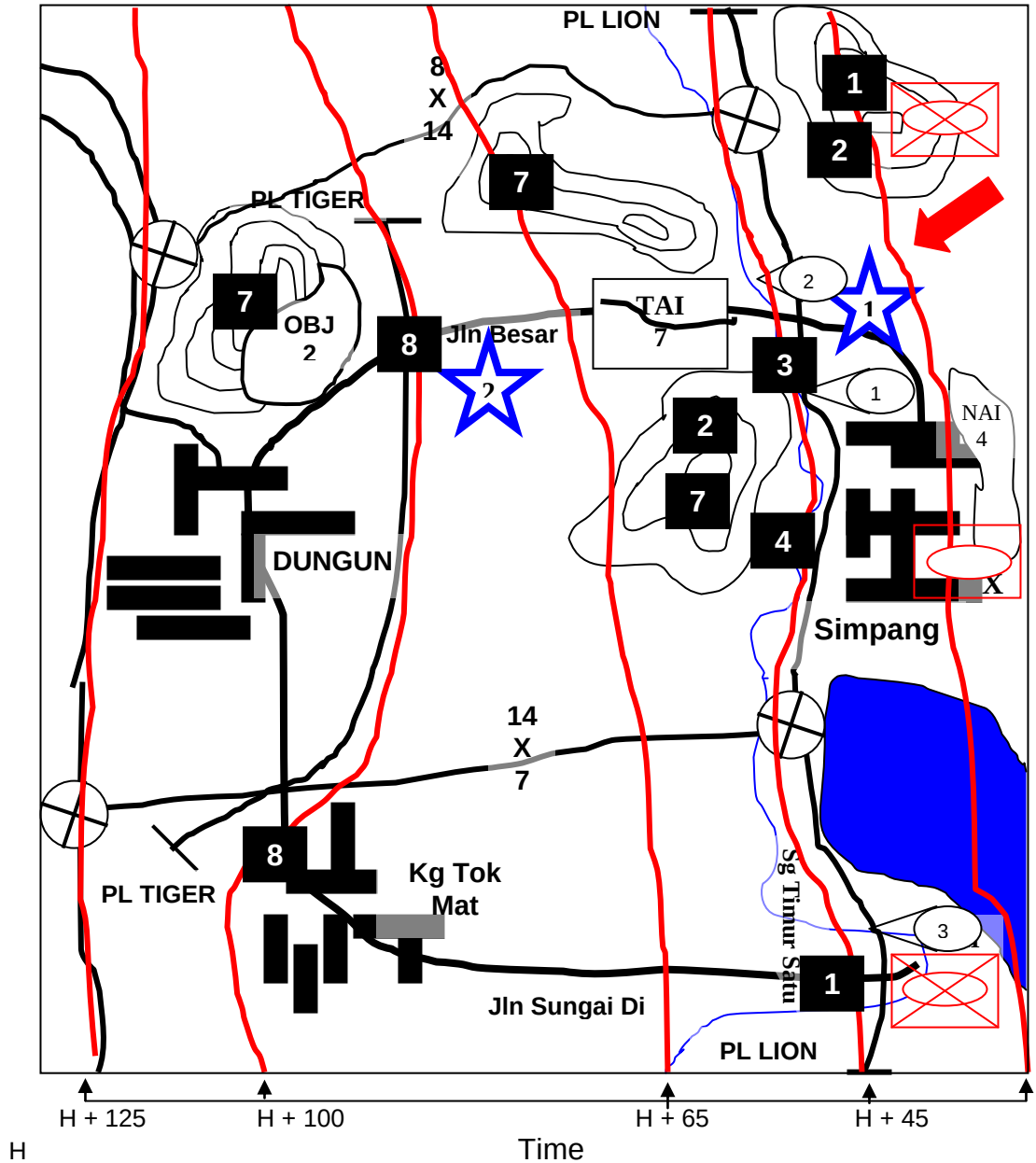
1. Please refer to the Event Matrix overlay at page 6B-3.

EVENT MATRIX



ANNEX D TO
CHAPTER 6

DECISION SUPPORT OVERLAY



Note: For explanation, please refer to the Decision Support Overlay Explanation at page 6C-2.

EXPLANATION OF DECISION SUPPORT OVERLAY

DECISIVE POINTS

1. Disrupt en RSI.
2. Physically Dislocating en inf and armour .
3. Dislocate en movement through the combined effect of obs and offensive support.
4. Disrupt en movement by forcing them to deploy early.
5. Disrupt en LoC through the deep employment of close air support.
6. Deny en initiative on breaching obs.
7. Dislocate en adv through employment of successive BG delay posn to impose continuous delay.
8. Disrupt en ability to bypass.

DECISION POINTS

1. **Friendly**
 - a. Trigger res for CAttk. Does 14 Bde (Mech) have the combat ratios to deploy CAttk.
 - (1) **Condition.** Threat first ech neutralised or destroyed. Approaches and ground defended by no more than 2 x CT. 14 Bde (Mech) has at least one BG free to conduct the task.
 2. Conduct attack due to the obs had been breached. Does 14 Bde (Mech) have the combat power to complete the task by liaising with the other friendly forces to assist.

MP 0.5.1 TD

APPENDIX 1 TO
ANNEX C TO
CHAPTER 6

SYNC MATRIX EXAMPLE

Ser	BOS Effect	D-4				D-3				D-2				D-1				D Day				D+1				D+2				D+3				D+4				
		0600	1000	1400	1800	0600	1000	1400	1800	0600	1000	1400	1800	0600	1000	1400	1800	0600	1000	1400	1800	0600	1000	1400	1800	0600	1000	1400	1800	0600	1000	1400	1800					
1	MVRE	27 RMR BG	Preparation				Etsb delay posn in sector Panther 1				Cont estb delay def posn				Delay posn ready								Delay en for 17 hr in Panther 1				BHO with 7 and 8 Bde											
		14 RRR BG	Preparation				Etsb delay posn in sector Panther 1																Delay En for 17 hr in Panther 1												Delay En for 17 hr in Panther 1			
		11 ARMD BG	Preparation				Etsb delay posn in sector Panther 2																Delay En for 17 hr in Panther 2												Delay En for 17 hr in Panther 2			
2	FS	2 x FGA																	BAI				BAI at ZP 1006				CAS upon BG withdraw											
		GS/CS					Gun in position												Provide fire support through throughout the encounter battle																			
3	RSI	2 x LOH					Flk sy								Long range recon at GR 456734 North of Bandar DUNGUN				Long range recon coastal area from KUANTAN border to Bandar DUNGUN								Long range recon at the East of Bandar DUNGUN to Bandar KUALA TERENGGANU				Long range recon				Flk sy			
		Bde Recon	Recon at NAI 1, 2 and 3								Recon at NAI 4, 5 and 6																				Recon at Simpang Bandar DUNGUN							
4	MS	1 x ENGR SQN									Construct Obs in PANTHER 1 and 2				Construct obs in PANTHER 3				Res Dml at Br Sg Dungun Island								Close gap at Panther 1				Close gap at PANTHER 2							
5	C2	14 Bde HQ	Estb coms								Prov sig requirement throughout the Op																											
		1 x sig Sqn	Etsb coms																																			
6	CSS	1 x BMA	BMA estb								Support BG B ech throughout																											

ANNEX D TO CHAPTER 6

WARGAMING METHOD

Belt Method

1. The belt method (see Figure 6D –1) is most effective when the terrain is divided into well defined cross compartments. It is also effective during phased operations (including amphibious assaults, river crossings, air assault and airborne operations) or when the enemy is deployed in clearly defined belts or echelons. The commanders can then draw belts adjacent to or even overlapping each other for complete battle visualisation and synchronise actions across avenues in depth.

2. When time is short, the commander can use a modified belt method. The modified belt method divides the battlefield into no more than three sequential belts that run the width of the sector. These belts may not necessarily be adjacent or overlapping but would focus on actions throughout the depth of the AO.

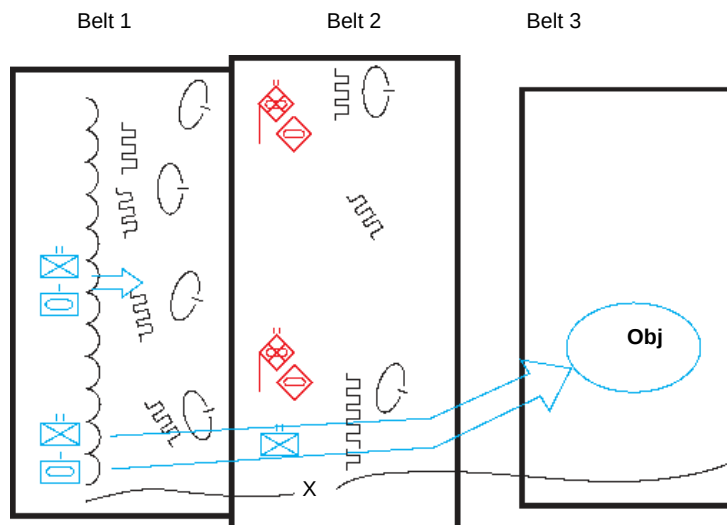


Figure 6D – 1: Belt Method

Note: The areas enclosed in the heavy black lines represent belts

Avenue in Depth Method

3. The avenue in depth method (see Figure 6D – 2) focuses on one AA at a time, beginning with the ME. This method is effective for offensive COA or in the defence when there is canalising terrain inhibiting mutual support.

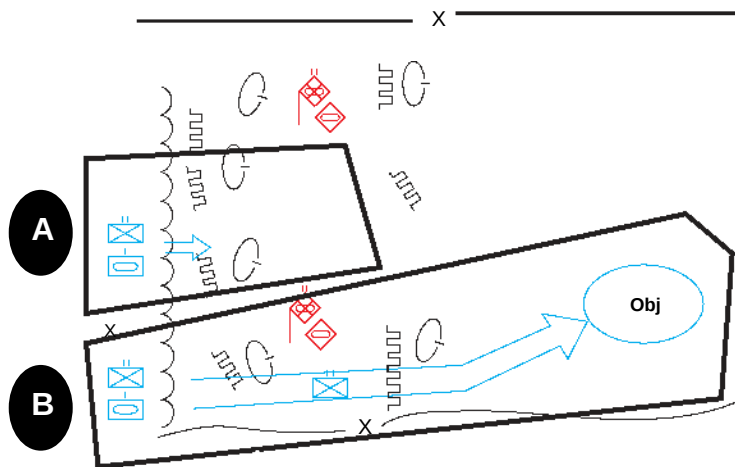


Figure 6D – 2: Avenue in Depth Method

Note: The areas enclosed in the heavy black lines represent avenues in depth

Box Method

4. The box method (see Figure 6D – 3) is a microanalysis of a critical area such as the EA, a river crossing site or a flank AA into the sector. When using this method, the commander isolates the area and focuses the battle there. The commander can also make the initial assumption that friendly units can handle most of the situations on the battlefield, enabling them to focus their attention on more essential tasks.

5. This method is most useful when the task is apparent, as it is when attacking or counterattacking a major enemy unit. It is also a good method to use when time is extremely limited or to wargame the detail of DP.

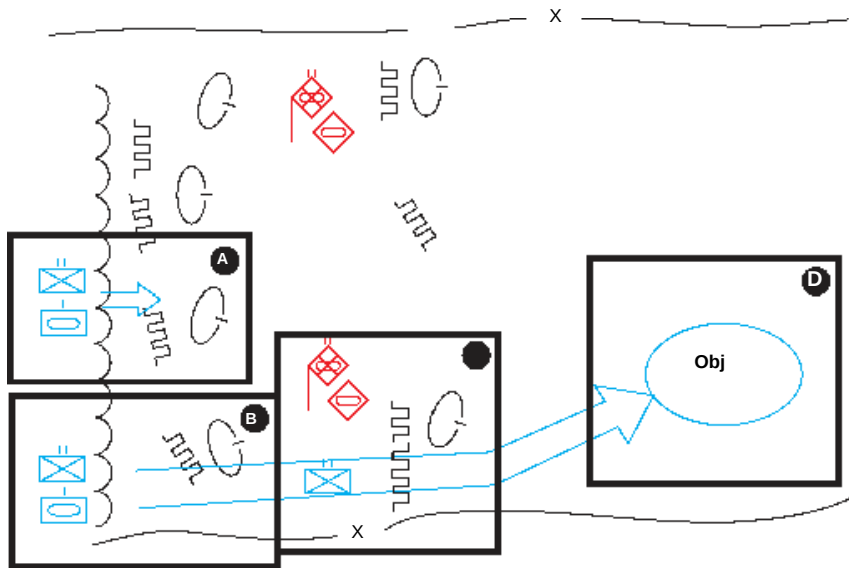


Figure 6D – 3: Box Method

**ANNEX E TO
CHAPTER 6**

STAFF RESPONSIBILITIES DURING WARGAMING

1. The key staff responsibilities during wargaming are detailed in this annex.
2. **Chief of Staff.** The COS coordinates all staff responsibilities and leads the wargame effort. The COS is responsible for the following:
 - a. Providing the wargaming brief, including establishing the rules and conduct.
 - b. Assessing who has the initiative and therefore who will commit the first action (enemy or friendly).
 - c. Appointing a wargaming recorder and ensuring that all relevant actions and modifications are captured.
 - d. Calculating and awarding casualties.
3. **G1.** The G1 is responsible for the following:
 - a. Analysing the COA being wargamed to determine whether it will cause more casualties than other COA.
 - b. Conducting a risk analysis for each COA, determining what can be done to reduce or modify the risk.
 - c. Noting the impact of movement of:
 - (1) Displaced persons.
 - (2) Own force stragglers.
 - (3) POW.

4. **G2.** The G2 is responsible for the following:
 - a. Role-playing the enemy commander.
 - b. Developing the enemy DSO and synchronisation matrix for each friendly COA.
 - c. Identifying information requirements to support the CDP.
 - d. Identifying the NAI that support the TAI and DP.
 - e. Refining the situation overlays.
 - f. Assisting the G3.
 - g. Identifying reactions, projecting enemy losses and verifying NAI, TAI and HVT determined by the IPB.
5. **G3.** The G3 is responsible for the following:
 - a. Role playing the friendly force commander.
 - b. Manoeuvring the friendly forces allocated for the COA in accordance with the SOM until the purpose of the COA is achieved, or until friendly forces become ineffective.
 - c. Developing the wargame matrix for the COA that's been wargamed.
 - d. Identifying information requirements to support the CDP.
 - e. Identifying the NAI that will support the TAI and the CDP.
6. **G4.** The G4 is responsible for the following:

- a. Analysing each COA during the wargame to determine potential problems and deficiencies.
 - b. Identifying reactions, projecting enemy losses and verifying NAI, TAI and HVT determined by the IPOE.
7. **G6.** The G6 is responsible for the following:
- a. Confirming that the communications plan and SOP remain robust throughout each event in the wargame.
 - b. Demonstrating how communications redundancy is achieved within each event.
 - c. Analysing the effectiveness of control measures and recommending modifications.
8. **Battlespace Operating System Advisers.** BOS advisers are responsible for the following:
- a. Providing specialist advice to the G2, G3 and COS with regard to their specific BOS action.
 - b. Highlighting opportunities, imposing limitations and recommending modifications to the SOM.
 - c. BOS concepts during the wargame.

**ANNEX F TO
CHAPTER 6**

COA ANALYSIS BRIEFING FORMAT

Briefer	Subject
(a)	(b)
COS/Op	1. Intent of own (draft) and higher commander. 2. Mission.
Intelligence (G2)	3. Updated intelligence estimate: a. Effects of terrain on operations. b. Effects of weather on operations. c. Brief enemy COA.
Op (G3/G5)	4. Briefs on each COA analysed: a. Assumptions. b. Wargame technique used. c. COA friendly force actions. (1) DP achieved. (2) Actions one level down at each DP. (3) CS required to achieve DP. (4) CSS required to achieve DP.
G2	5. Possible enemy actions/reactions considered during the wargame.

(a)	(b)
G3	6. Results of the wargame for each COA: a. Wargame event matrix. b. Modifications c. Proposed TASKORG. d. Event overlay. e. Priority for BOS. f. Estimated duration of operation. g. Estimated enemy losses (equipment and personnel). h. Estimated friendly losses (equipment and personnel). i. Advantages of COA. j. Disadvantages of COA. k. Degree of risk associated with COA. l. Impacts from movement of: (1) Displaced persons. (2) POW.
COS/Op	7. Recommend to the commander the preferred COA based upon the commander's comparison criteria.
Commander	8. Decision: Decide on preferred COA to be implemented in step 5.
	Note: This brief may be informal or even combined with the decision and execution brief if the commander has been involved in the conduct of the wargame. It ensures that all wargaming modifications are accurately represented in COA sketches and statements, and that the wargame record used is a true reflection of the wargame.

CHAPTER 7**DECISION AND EXECUTION****SECTION 1****GENERAL**

701. Decision and execution is the outcome of comparing the results of COA analysis to enable the commander to make a decision on the preferred COA(see Chapter 6 – **Annex F** (COA Analysis Briefing Format)). The COA Analysis brief is given at the completion of step 4. COA Analysis brief is delivered to the commander and details the modified COA and their advantages and disadvantages. The staffs recommend the COA and the commander decides on the preferred COA to be implemented in step 5. The staff then prepare and deliver a CONOPS brief and produce an Operational Order (OpO) which is issued on commander's approval. The commander then monitors the implementation of the plan and the progress of the mission. The example of CONOPS Briefing Format is in **Annex A**. The suggested CONOPS Format is in **Annex B**.

SECTION 2**CONDUCT****ACTIVITY 1: Refine Plan/Issue Orders and Conduct Rehearsal**

702. This step the staff deliver a CONOPS brief (using the selected COA) to the commander and produce an operation plan (OPLAN) or Operational Orders (OpO) on commander's approval. The commander and staff then implement its execution and monitor its progress. The execution outputs are as follows:

- a. **Warning Order.** Once the DSO and synchronisation matrix are complete, the staff should issue a confirmatory WngO with essential information, including the confirmed

commander's intent and preliminary actions, so that subordinate HQ can refine their plans. The WngO will also keep the higher HQ informed of the intentions of their subordinate commands.

b. **Decision Support Overlay.** Based on the commander's decision and final guidance issued at the completion of the COA analysis, the staff refines the plan and develops the DSO. The DSO is a graphic overlay that displays the collective NAI and TAI and the CDP as refined in the wargame. When overlaid on the OpO overlay, it provides the indicators of hostile force action on a backdrop of the planned SOM. An example DSO is shown in Chapter 6 - **Annex D**.

c. **Synchronisation Matrix.** It displays the information required to make decisions and coordinate friendly actions in accordance with the plan. An example synchronisation matrix is shown in Appendix 1 to Chapter 6 - **Annex C**.

d. **Orders.** Once the plan is complete, orders are issued. Orders may be issued in written form and/or verbally. Back briefs from subordinate commanders are conducted shortly after orders are issued. These provide an opportunity for any additional superior commander's guidance to be communicated, and for subordinate commanders to clarify final issues. There are various forms of orders, including full OpO and OPLAN with a complete suite of associated annexes, single page OpO summaries, and verbal orders which conform to the situation, mission, execution, service support, command and signals (SMESC) format. The form selected will vary depending upon the level of command, time and staff available, the level of training and interoperability of the force, and the complexity of the operation. The suggested OpO format as per **Annex C**.

e. **Rehearsals.** Rehearsals are a key aspect of the execution phase. The rehearsal of techniques provides options for their employment, depending on how much time

is available and whether or not the commander can be involved completely in the rehearsal. They may include but are not limited to:

- (1) **Confirmation Brief.** The confirmation brief is normally performed by a subordinate commander immediately following the receipt of orders. Subordinate commanders confirm their understanding of the commander's intent, their specific tasks and purpose, their unit's part in the forces plan, and the relationship between their unit and the other units in the force.
- (2) **Back Brief.** Back briefs are normally conducted by a subordinate commander once they have had time to develop their own plan. A back brief confirms how a subordinate unit will complete its part in its commander's plan. It also allows subordinate commanders to highlight force or time deficiencies that threaten mission success.
- (3) **Combined Arms Rehearsal.** A manoeuvre unit normally conducts the combined arms rehearsal (CAR) once subordinate units have completed their planning and issued orders to their forces. The CAR allows all elements of a force to understand how a mission will be accomplished and confirms the synchronisation of the plan. Six different rehearsal techniques are available for the conduct of the CAR.
- (4) **Support Rehearsal.** The support rehearsal is normally a separate BOS specific rehearsal that allows coordinating HQ to ensure that BOS effects can be delivered in accordance with the plan. This is an adjunct to the CAR and normally confirms technical BOS specific procedures prior to commencement of the mission.

(5) **Battle Drill or Standard Operating Procedures Rehearsal.** At the lowest tactical levels (platoons and sections) the battle drills or SOP likely to be employed during the conduct of a mission will be rehearsed prior to commencement of the mission.

(6) **Rehearsal of Concept Drill.** A rehearsal of concept (ROC) drill is similar to a wargame and can best be described as a dry walk through of a plan between a commander and their subordinates ensuring a shared understanding of the plan. It allows a final confirmation of particularly complicated portions of the plan and may result in minor amendments to control measures. It will generally involve the commander, all HQ principal staff officers, immediate subordinate commanders and BOS specialists. An ROC drill is generally run by time brackets and is conducted around a map or mud model in a similar fashion to an abridged wargame. At brigade and battalion level the G3/S3 will generally lead the event. Its sequence may include a summary by the G2/S2 of the most likely threat actions in a given time window, followed by each of the subordinate commanders and BOS leaders summarising their SOM for that particular time band. The ROC drill can provide the commander with an opportunity to discuss potential friendly force reactions to specific contingencies that they wish to discuss with their subordinate commanders. For example, they may wish to have particular elements of the threat's MDCOA considered, or the impact of loss in air support at a given time. At combat team level and below this drill may be an informal walk through of the operation with subordinate commanders. The level of detail in an ROC drill will be dependent on the level of command, time and staff available, the level of training and interoperability of the force and the complexity of the operation.

(7) **Fire Support Rehearsal.** Fire support rehearsals provide the opportunity for all fires and effects to be synchronised and coordinated.

(8) **Boxed Rehearsals.** Specific boxed rehearsals can be conducted utilising a variety of methods from map exercises to full scale rehearsals (eg, entry, urban assaults and activities with complex coordination requirements).

(9) **Full Dress Rehearsal.** This is the most deliberate and resource intensive rehearsal. It involves every soldier and system required by the mission to undertake the task the plan calls for. Ideally it will occur in the same weather and terrain as the planned mission. As a result of its resource demand the conduct of full dress rehearsals is rare.

(10) **Reduced Force Rehearsal.** This involves the key leaders of the force (ideally two down) moving through the terrain or like terrain detailing the task, purpose, time, location and trigger for their force to undertake specific actions as part of the higher plan. This type of rehearsal is also very time intensive but does not require the resources of a full dress rehearsal and allows for ongoing battle preparation within the force.

(11) **Terrain Model Rehearsal.** In this type of rehearsal key leaders from the force (ideally two down) move on a large scale terrain model (or move representative icons on a small scale terrain model) detailing the task, purpose, time, location and trigger for their force to undertake specific actions as part of the higher plan. Ideally the terrain model should overlook the terrain over which the mission will be undertaken, but this is seldom possible. This is the most common type of CAR as it maintains a high degree of detailed synchronisation but requires little

time and few resources while allowing for ongoing battle preparation.

(12) **Sketch Map Rehearsal.** The procedures for this task are similar to the terrain model rehearsal. Instead of using a terrain model, they employ large scale sketch maps of specific terrain areas to rehearse specific events in the conduct of a mission. Sketch map rehearsals often only employ key leaders one down. They use very little time and very few resources and are the most common low level (platoon and below) type of CAR.

(13) **Map Rehearsal.** This rehearsal is conducted in the same way as the sketch map rehearsal, however, it uses the terrain map and the operations overlay rather than larger scale sketches.

(14) **Radio or Data Network Rehearsal.** This rehearsal technique involves the subordinate commanders talking through their specific actions in sequence to achieve the force plan. This technique is employed when there is very little time or when forces will not be able to meet physically prior to the execution of the mission.

f. **Measures of Performance.** Measures of performance (MOP) provide the means to determine whether an aspect of an operation is achieving its desired effect and should be linked to the achievement of DP. MOP should be expressed as conditions to be reported against for CDP. Examples of MOP are the status of the kill board, the achievement of PIR, and particular signs of threat movement that are linked to a deception objective. MOP also informs the requirement for the implementation of branches and sequels.

ACTIVITY 2: Execute, Monitor and Adjust the Plan

703. Once orders have been issued and rehearsals completed, the staff focuses on executing, monitoring and forecasting the requirement to adjust the plan. The IPOE is continually updated to reflect ongoing changes in the understanding of the situation and the DSO, the synchronisation matrix and MOP are used as a means of monitoring execution. The requirement for branch and sequel planning should also be planned and implemented at this stage. The outcome of branch and sequel planning will form the requirement for FRAGO and/or subsequent orders.

704. The decision and execution stage is summarised in Figure 7–1.

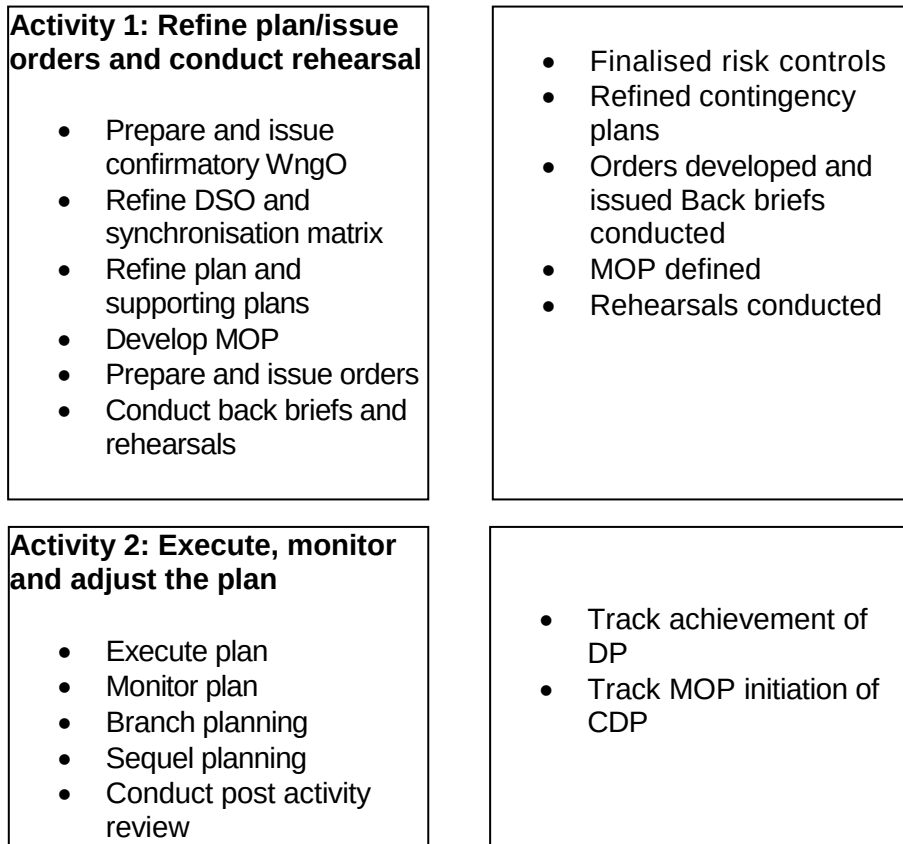


Figure 7 – 1 : Decision and Execution Stage

SECTION 3

CONCLUSION

705. Decide and execute plan and producing orders will mark the final stage of the planning process although it would not be the end of the process as the threat actions is always uncertainty until we will physically engaged with the threat or dealt with him and revealed his COA. The selected modified COA from previous steps will be developed here with all synchronised BOS supporting plan whereas all the remainder COA(s) should be developed as a contingency plan to address any uncertainty in the battle situation as the threat COA assessed early in the process might be wrong. The maximum use of DSO and synchronisation matrix were the best means for updating the situational understanding about the operational environment, threat actions and ensuring the operation progresses as anticipated.

**ANNEX A TO
CHAPTER 7****CONCEPT OF OPERATIONS BRIEFING FORMAT**

Briefer	Subject
(a)	(b)
Commander/COS	1. Intent of higher and next higher commander. 2. Critical assumptions.
Intelligence (G2)	3. Updated intelligence estimate: a. Environment effects. b. Situation. c. Updates threat Course of Action (COA). d. Assessed threat COG and associated CDP and DP.
Commander/COS	4. Commander's Intent 5. Outline CONOP. A broad indication of how the mission is to be achieved and an outline of the lines of operation chosen highlighting the CDP, DP and objectives. 6. The general grouping of forces. 7. The effect(s) to be produced on the threat (as applicable).

(a)	(b)
Op (G3/G5)	8. Detailed CONOP: Scheme of Manoeuvre (deep, close, rear) by phase. Address each component. 9. Main effort for each phase. 10. Specified tasks and groupings of forces.
G2	11. Concepts for intelligence operations. Outline concept of intelligence collection operations.
G1/G4/G9	12. Concepts of personnel, logistics and health support. a. Outline concept of support of operation. b. Outline support phase matches to the operations phases. c. Key locations. d. Commander's support priorities. e. Personnel, logistics and health support priorities. f. Summaries support issues (significant, critical unusual functions, internal and external priorities): (1) Before operations. (2) During operations. (3) After operations. (4) Significant personnel, logistic and health risks.

(a)	(b)
G6	13. Communications and information systems details
G7	14. Concept for civil affairs, CIMIC activities, civil population, NGO and other agencies may involve during the operation.
COS/G3/G5	15. Command and signal.
Commander/COS	16. Vulnerabilities (state how they are to be minimised).

SUGGESTED CONOP FORMAT

1. Situation.
2. Threat Assessment.
 - a. Threat MLCOA and MDCOA.
 - b. Threat COG, CDP and DP.
3. Critical Facts and Assumptions.
4. Limitations:
 - a. Constraints.
 - b. Restrictions.
5. Commander Critical Information Requirement (CCIR).
6. Mission.
7. Commander's Intent:
 - a. Purpose.
 - b. Method.
 - c. Endstate.
8. Scheme of Manoeuvre:
 - a. Deep.
 - b. Close.

- c. Rear.
- 9. Concept for Intelligence Operations.
- 10. Concept for Communication Information Systems
- 11. Concept for Civil Affair:
 - a. Information Operation.
 - b. Media Operation.
- 12. Concept of Support:
 - a. Personnel.
 - b. Logistic.
 - c. Medical/Health.
- 13. Command and Control.
- 14. Risk Mitigation.

**ANNEX C TO
CHAPTER 7**

SUGGESTED OPERATION ORDERS (OPO) FORMAT

1. SITUATION.
 - a. En forces.
 - b. Friendly forces.
 - c. Att and Det.
2. MISSION.
3. EXECUTION (There is no restriction on the number of sub-paragraph in the EXECUTION paragraph but the first is always 'Gen Outline' and the last is 'CoordInstr').
 - a. Gen outline.
 - (1) Phase 1.
 - (2) Phase 2.
 - (3) Phase 3.
 - b. Grouping and Tasking.
 - c. Coordination Instruction. (Heading for coordination instruction; refer to MAFJP 0.01, Appendix 1 to Annex C to Chapter 10, Page 10C1 – 1).
4. SERVICE SUPPORT.
5. COMMAND AND SIGNAL

CHAPTER 8
BATTLESPACE OPERATING SYSTEM PLANNING

SECTION 1

GENERAL

801. The MAP provides a conduit for commanders and staff to attain the 'combined arms effect' through the integration of the eight BOS identified by the Malaysian Army. These are as follows:

- a. Manoeuvre.
- b. Fire Support (FS).
- c. Information Operations (IO).
- d. Reconnaissance, Surveillance and Intelligence (RSI).
- e. Air Defence (AD).
- f. Command and Control (C2).
- g. Combat Service Support (CSS).
- h. Mobility and Survivability (MS).

802. As with any process, each step of the MAP has respective inputs, actions and outputs that both influence the process and provide products oriented to the attainment of the combined arms effect.

803. This chapter details the generic BOS planning considerations applicable to each staff branch or BOS specialist during the MAP. BOS planning is not a separate planning process but is synchronised with the SMAP. Within an SMAP, BOS considerations occur in concert with the core

planning process. BOS planning considers the significant facts, events and conclusions based on the analysis of data particular to each branch or BOS. These considerations are the basis for forming viable COA, and should be comprehensive and continuous without becoming overly time-consuming.

804. The BOS advisers deliver the following outputs:

- a. Enhanced understanding of the enemy through the reverse BOS process.
- b. Developed BOS plans to optimise capability employment to specified COA.
- c. Confirmed BOS synchronisation to specified COA.
- d. Individual BOS products to support the execution of COA.

SECTION 2

BATTLESPACE OPERATING SYSTEM PLANNING IN PRELIMINARY ANALYSIS AND INTELLIGENCE PREPARATION OF THE OPERATIONAL ENVIRONMENT

805. The following occurs in the preliminary analysis step (see Chapter 3) and in support of IPOE:

- a. Reverse BOS planning, which contributes to enemy COA development in IPOE.
- b. Confirmation of the forces available.
- c. Support in writing of initial WngO (the tasking of RSI assets and other preliminary moves).

SECTION 3

BATTLESPACE OPERATING SYSTEM PLANNING IN MISSION ANALYSIS

Inputs

806. A higher HQ will specify tasks given to subordinate units. These may be found in the concept for BOS within the OpO or within the higher BOS annex to an OpO issued to a higher HQ. It is critical that the BOS planner fully understands the higher commander's intent.

Actions

807. The BOS planner must then gather 'facts' from a variety of sources. These facts, which represent the capabilities of the BOS, are as follows:

- a. Equipment status.
- b. Numbers.
- c. Types.
- d. Locations.
- e. Communication links.
- f. Maintenance status.
- g. The characteristics of BOS assets.

808. Ideally, this information can be extracted from unit status charts within the respective BOS HQ. Where critical facts are not available, the BOS planner must make assumptions.

809. The BOS planner then obtains IPOE products from the G2 cell, and contributes to the G2 cell development of threat

COA by conducting reverse BOS analysis with the G2 staff. At all levels the intelligence, operations and BOS cells must interact before the MA brief. This interaction can take the form of a formal meeting or an informal staff coordination session. Regardless of the format, it is vital that the staff gain a common vision of the effects of the environment, the enemy COA and friendly force capabilities before briefing the commander.

810. The next step is to translate the status of BOS assets (eg, raw data) into capabilities or effects that are able to be achieved. This translation is achieved through the application of planning factors, the formulation of assumptions and the conduct of analysis. The capabilities or effects are then considered in the context of the terrain, weather and enemy analysis provided by the IPOE. For example, the effects of temperature and other weather conditions on such things as technical equipment, or the weather and terrain effects on logistic resupply, could well be significant. Operational environment geometry is another possible IPOE effect, where the ranges of deployment for the BOS are such that there will be a requirement for redeployment. This information may be critical for the commander to factor into their guidance. Similarly, analysis of the terrain and enemy will reveal likely threats to the BOS assets that may translate into requirements for physical protection or the need for survivability and mobility measures. The key is to translate capabilities into practical effects that can be included in briefings to the commander.

811. Finally, the BOS planner should develop draft tasks based on the analysis thus far. Task, purpose, method and effects required represent a useful sequence for articulating the desired outcome for the BOS. Their utility in planning lies in their provision of links between the objective (task) and the manoeuvre plan (purpose), the means by which this is to be achieved (method) and what quantifies accomplishment of the task (effects). However, this process is not the only means of achieving this outcome.

Outputs for Mission Analysis Brief

812. When the G3 conducts a briefing on the higher CONOPS and SOM, the BOS planner should also provide a brief on the higher BOS plan. Nevertheless, the BOS planner must be prepared to inform the commander of the tasks and resultant implications of the higher plan.

813. The BOS planner must also be prepared to include in any brief the facts and resultant analysis of threat capabilities and products from the IPOE. This information can be briefed orally or in graphical format however, it should cover the following:

- a. The status of the BOS.
- b. The capabilities/limitations of the BOS and effects that can be achieved.
- c. The BOS IPOE analysis.
- d. The BOS time line (if not incorporated into the manoeuvre time line).

814. Based on the analysis of the known tasks and discussions with the G2 and G3, the BOS planner should recommend the draft tasks determined for the operation. Depending on the level of the planning HQ, BOS planners may simply provide a brief on the task, purpose, method and effects from the higher BOS plan (ie, if they are in sufficient detail and address the requirements of the subordinate commander).

815. As the BOS expert, the BOS planner provides the commander with recommendations. The commander can accept, modify or reject any recommendations, and create new tasks and purposes in their guidance. Where a commander wants to reject or change tasks specified in the higher BOS plan, permission must be obtained from the higher commander.

816. It is important that, before the BOS planner begins to develop their support plan, the planner and the commander have a common understanding of how the BOS will support the operation. The staff may further refine the initial tasks as the MAP progresses (with the commander's approval), but the more clearly the commander defines them initially, the more focused and effective BOS planning will be.

817. The BOS planner's brief should also include details of other BOS planning influences. This may include restrictions, force protection considerations and ROE constraints. At the conclusion of this briefing the commander should provide their guidance for the BOS as required. This guidance should include:

- a. Detail as to how, when and where the BOS should be employed in the development of COA.
- b. Priorities for limited BOS assets.
- c. The focus of effort for the BOS if it differs from the commander's ME.

818. After confirming the commander's guidance with a back-brief, the BOS planner should provide input to the WngO or issue BOS specific WngO where appropriate. As a minimum, the WngO issued after MA must contain the approved tasks and the BOS time line.

SECTION 4

BATTLESPACE OPERATING SYSTEM PLANNING IN COURSE OF ACTION DEVELOPMENT

819. Using the outputs from MA, the BOS planner can plan the method by which the tasks will be accomplished. Given that this is time dependent and based on the developing COA, the BOS planner may develop one or more ways to accomplish

the purpose of each agreed task. Assets are allocated to accomplish each task.

Inputs

820. The inputs for COA development should come directly from the commander's guidance and be articulated as a task and purpose.

Actions

821. **Determine Method.** The next step involves the BOS planner's determination of the method by which the BOS task will be accomplished. This is achieved by quantifying the effects required for each task and using the information to determine the feasibility of the task. The BOS planner must focus on what must be accomplished to achieve the task, rather than on what can be accomplished. Where it is determined that the required effects cannot be achieved with the assets allocated, either the method must be reworked or additional assets must be requested.

822. **Assign Battlespace Operating System Assets.** The BOS planner then determines which BOS assets should be used to achieve the desired effects and end state in order to develop a plan for their use. As the staff discusses and builds the options, timing and other coordination issues are resolved.

823. **Identify Triggers.** Having determined a plan as to which assets will be used to achieve the desired effects, the BOS planner must integrate BOS events or actions with manoeuvre planning. These inputs inform BOS specific actions to be included in the synchronisation matrix. As a minimum, the BOS planner must develop initial triggers that can be refined during COA analysis.

824. **Other Factors.**At each stage, the BOS planner must apply doctrinal or validated planning factors to ensure that the plan is feasible. Real time limitations such as training levels

and equipment serviceability need to be updated and included in planning.

Outputs

825. The desired output of COA development is a draft BOS plan for each COA, branch, plan or sequel. In some cases the BOS plan may not change to support different COA. A developed COA should include:

- a. **Concept of Battlespace Operating System.** The concept of BOS is the logical sequence of tasks which, integrated with the SOM, will accomplish the mission and achieve the commander's intent. The concept allocates, in broad terms, the assets to achieve the tasks. The concept of the BOS is the basis of the BOS paragraph in the OpO.
- b. **Draft Concept of Employment for the Battlespace Operating System.** The draft concept of employment for the BOS may be presented in a number of ways. The information may be graphically depicted on an overlay or provided in written form. The more complete the BOS plan for each COA, the more efficient the wargame will be. The BOS COA is represented on the synchronisation matrix.

SECTION 5

BATTLESPACE OPERATING SYSTEM PLANNING IN COURSE OF ACTION ANALYSIS

826. The analysis conducted in COA analysis is critical to the BOS planner's attempts to integrate the BOS into the manoeuvre plan. The wargame provides final detail and refinement, validates capabilities and synchronises the BOS plan.

Inputs

827. The inputs for the COA analysis are the outputs from the COA development and include:

- a. The concept of the BOS.
- b. The BOS COA represented on the synchronisation matrix.
- c. Reverse BOS planning.

Actions

828. The conduct of the wargame in COA analysis brings the staff together to gain a common understanding of both the COA and how the BOS will interact within it. Based on the conduct of the wargame, the BOS planner can modify the BOS plan and the products that support it.

829. **Fight the Plan and Record Results.** BOS planners are responsible for fighting the BOS plan as part of the analysis for each COA. The conduct of the wargame provides the opportunity to test and refine the BOS plan. Flexibility should be inherent in the plan through the identification of branches, sequels and their associated DP. A key element is the recording of the results of the analysis. The synchronisation matrix is used for recording information and can be used later for the construction of decision support tools.

830. **Develop the Plan and Associated Products.** The BOS plan and associated products for the OpO should be developed concurrently with the conduct of the wargame in the COA analysis.

Outputs

831. The outputs from the COA analysis are the revised products from the COA development and include drafts of the BOS concepts and annexes.

SECTION 6

BATTLESPACE OPERATING SYSTEM PLANNING IN EXECUTION

832. The primary role of BOS planners in the execution step is to provide a brief of the plan and produce the BOS inputs to the OpO.

833. The inputs for this step of the MAP are the outputs from the COA analysis. The output takes the form of a completed order with appropriate supporting documentation.

SECTION 7

CONCLUSION

834. BOS inputs represent a critical ingredient in the development of the OPLAN. Each BOS will be required to develop respective planning processes, with the commander dictating the level of input into the total process.

835. Further detailed information pertaining to BOS planning and outputs is contained in the BOS doctrine series.

836. A detailed example of an RSI BOS planning aide-memoire is provided in **Annex A**.

**ANNEX A TO
CHAPTER 8****RSI PLANNING AIDE MEMOIRE**

Input	Actions	Output
(a)	(b)	(c)
Preliminary Analysis		
Intelligence and RSI staff	1. Review higher HQ products. 2. Prepare to commence IPOE. 3. Await commander's guidance.	Situation update.
Mission Analysis		
Higher HQ OpO/plan Intelligence and RSI staff	4. Communicate IR to RSI staff. 5. Sort, prioritise and manage IR to determine which can be met from information sourced from organic RSI assets. 6. Identify appropriate collection assets.	IR confirmed. Prioritised hostile force COA for development. PIR for inclusion within intelligence collection plan. IR confirmed. Prioritised hostile force COA for development.

(a)	(b)	(c)
	7. Define friendly force collection/ acquisition capabilities. 8. Determine and assess hostile force collection system to define own FOA.	PIR for inclusion within intelligence collection plan. Input to orders for planning and execution of collection/acquisition as necessary within broader operational framework. Information gaps fed back into collection planning process. Develop CI plan.
	9. Provide input to: a. Situation review (including assessed threat mission, disposition and intent). b. Environmental and weather characteristics. c. Hostile force capability and intent. d. HVT.	

(a)	(b)	(c)
	e. Other stakeholder analysis such as religious groups, political, population, ethnic. 10. Provide early answers to IR.	
Course of Action Development		
Intelligence and RSI staff	11. Continue to use IPOE to develop and refine each COA under development. 12. Conduct reverse BOS analysis. 13. Ensure RSI FE component is integrated into each COA to maximize situational understanding. 14. Seek advice from surveillance/reconnaissance collection asset.	

(a)	(b)	(c)
Course of Action Analysis		
Intelligence and RSI staff	15. Assume role of hostile force commander. 16. Assume role of enemy RSIComd to fight the C-RSI battle during wargaming. 17. Perform the role of friendly RSIFE commanders.	Data for production of: a. DSO. b. RSI plan. Update elements of the collection plan for each own force/friendly force COA. c. Confirmed IR linked with relevant NAI/TAI. d. Confirm refined HVT matrix is cross-reference with TAI.
Intelligence and RSI FE commanders	18. Assume role of, and advise on hostile force specialised collection assets.	Appropriate surveillance/reconnaissance collection asset executes RSI component of the collection plan.

(a)	(b)	(c)
Execution		
Intelligence and RSI staff	19. Monitor changes to threat. 20. Update IPOE after wargaming. 21. Prepare surveillance/reconnaissance component of staff work in support of OpO/plan.	Commander's guidance: a. Include IR/PIR in OpO/plan. b. Intelligence and RSI staff contribution to RSI planning groups.
Ops staff	22. Link RSI collection/acquisition tasks into broader OpO/manoeuvre plan.	c. RSI plan ratified. d. Plan included as annex to OpO.

CHAPTER 9

INDIVIDUAL MILITARY APPRECIATION PROCESS

SECTION 1

GENERAL

901. The MAP can be conducted by commanders without the aid of a staff. This normally occurs in the following two settings:

- a. When commanders of echelons without staff (sub-unit and below) plan military tasks.
- b. When commanders of echelons with staff conduct individual planning in order to lead the efforts of their staff.

902. The MAP retains its cyclical and iterative nature and adheres to the same steps regardless of whether it is applied by an individual or a staff. An MAP conducted by an individual (see Figure 9–1) consists of the following five steps:

- a. Step 1 – Preliminary Analysis (see Chapter 3).
- b. Step 2 – MA (see Chapter 4).
- c. Step 3 – COA Development (see Chapter 5).
- d. Step 4 – COA Analysis (see Chapter 6).
- e. Step 5 – Decision and Execution (see Chapter 7).

903. The degree of depth of analysis during an individual appreciation will vary depending on the time available to the commander. To that end the MAP, when applied by an individual, generally targets the production of a single fully developed COA rather than the multiple COA produced by a staff. Additionally, an individual must make trade-offs between analysis, planning and the products used to communicate the order/plan.

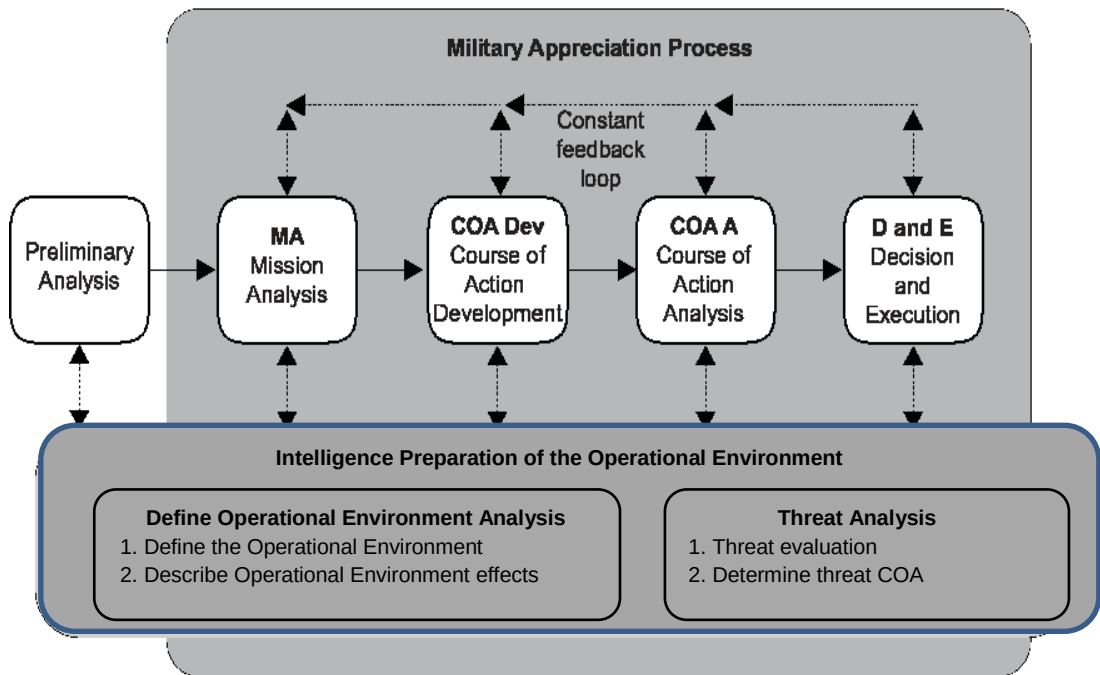


Figure 9 -1: Military Appreciation Process

SECTION 2

INTELLIGENCE PREPARATION OF THE OPERATIONAL ENVIRONMENT

904. The IPOE involves the analysis of the environment, the threat and operational environment. This informs the development of the friendly force COA and RSI plans.

ACTIVITY 1: Define the Operational Environment

905. Key environmental factors of the operational environment that will influence threat or friendly COA need to be identified. These include:

- a. Geography, terrain and weather.

- b. Population considerations.
- c. Political or socioeconomic factors.
- d. Infrastructure.
- e. ROE and legal restrictions.

906. **Identify the Area of Operations and Areas of Interest.** During this sub-step the commander revises, confirms or amends the boundaries issued to them, or recommends boundaries in the event that none are given. These boundaries form the AO. The commander then reviews the areas external to their boundaries that may influence the completion of their mission, and these constitute the AI. An AI may be contiguous or made up of numerous non-contiguous external areas.

907. **Determine Information Requirements and Make Assumptions.** Once the operational environment has been defined, some unknown elements of information necessary to plan the mission will become apparent. The commander should make assumptions about these information gaps in order to allow planning to proceed. Information requirements must be created to source the required information.

ACTIVITY 2: Describe the Operational Environment Effects

908. **Analyse Operational Environment Effects.** The commander analyses the physical terrain within their AO and AI to understand the effect the terrain will have upon the conduct of their mission. Physical terrain analysis could constitute anything from a map reconnaissance to a fully developed MCOO. Further information pertaining to the construction of the MCOO is detailed in Chapter 2. Regardless of the method selected, the analysis is conducted using the following sequence:

- a. **Observation and Fields of Fire.** Observation is the ability to see hostile forces visually or through the use of surveillance devices. Fields of fire are the areas that a

weapon system covers effectively from a given point. During the conduct of this analysis a point of observation normally linked to the fields of fire it will provide. This activity aids in identifying:

- (1) Potential EA.
- (2) Defensible terrain and specific weapon system positions.
- (3) Vulnerable areas for the movement of forces.
- (4) Surveillance positions.

b. **Cover and Concealment.** Areas offering good cover and concealment in relation to the previously identified points of good observation offer the commander, the threat and other stakeholders secure mobility corridors. This analysis is used to identify:

- (1) Defensible terrain and potential battle positions.
- (2) Potential assembly, deployment, dispersal and hide areas.

c. **Obstacles.** Obstacles are any natural or man-made terrain features that may impede or channel movement. The commander should categorise areas of terrain as offering unrestricted, restricted or very restricted movement to tactical formations. These categorisations are based on a combined evaluation of the gradient, vegetation and watercourses and man-made terrain features in an area.

d. **Key Terrain and Vital Ground.** Key terrain is any locality or area the seizure or retention of which affords a marked advantage to either combatant. Vital ground is key terrain that may have an extraordinary impact on the outcome of the operation. The designation of vital ground

implies that the success of the operation depends on the seizure or retention of the terrain.

e. **Avenues of Approach.** An AA is an air or ground route for an attacking force of a given size leading to its objective or to key terrain in its path. All COA involving manoeuvre depend on available AA. AA are identified by combining MC. MC are identified by examining the terrain and determining the size and type of force that could move through any given part of the AO without being restricted by terrain. Corridors that offer the same mobility to like-sized forces are grouped into AA.

909. **Weather Analysis.** Weather analysis is conducted through the identification of weather effects, including visibility, wind, precipitation, cloud cover, and temperature and humidity. This analysis can be represented by a weather effects matrix (see Figure 2 –8).

910. **Analyse other Operational Environment Characteristics.** The effects of other operational environment characteristics on friendly and hostile force COA can be determined through the mnemonics ASCOPE and PMESII (see paragraph 240).

911. **Combine the Operational Environment Effects.** At the conclusion of this step the commander should have a consolidated understanding of how terrain and weather will effect their and the threat's operation. This may be supported by the following:

- a. The identification of AO and AI.
- b. The MCOO.
- c. ASCOPE overlays (or narrative).
- d. Weather effects (can be expressed as a matrix).
- e. The IR and assumptions.

912. Integration and evaluation of the effects of terrain and weather and other characteristics should lead to deductions on threat and friendly capabilities. These deductions inform other threats and opportunities that are presented by the operational environment.

ACTIVITY 3: Evaluate the Threat

913. Evaluating the threat/threat involves identifying the threat's level of command, ORBAT and capabilities, relevant doctrine and tactics, all of which will influence the possible threat COA. Additionally, it enables analysis of threat CV in order to inform DP planning. As previously identified, other stakeholders may also need to be considered in parallel with the threat. Evaluating the threat involves the following analysis:

- a. **Identify the Level of Threat Command.** Identifying the level of command and the intent of hostile, adversarial and neutral stakeholder groups is key to evaluating and understanding their impact on the mission. The level of command of a stakeholder group is normally expressed in terms of the organising HQ. For a military stakeholder this is simple (eg, mechanised brigade); for other stakeholder groups it can be more difficult (eg, district administrator). A stakeholder's intent is best expressed as their objective and its relevant timeline.
- b. **Doctrinal Overlays.** Doctrinal overlays illustrate the hostile force's normal deployment pattern and disposition. Depending on the situation, some doctrinal overlays consider the hostile force as a whole, while others consider individual FE or BOS. When operating against a force with no established doctrine or an adaptable opponent, it may not be possible to develop doctrinal overlays.
- c. **Describe the Preferred Tactics.** A description of the preferred tactics, combined with the doctrinal overlay, can be aligned with the current situation and operational environment analysis to assess what the hostile force is

likely to do under the given circumstances. The description of preferred tactics should cover:

- (1) Doctrinal SOM for the hostile force and other stakeholder groups that pose potential threats.
- (2) The doctrinal activities of hostile force BOS supporting the SOM.
- (3) A time event chart that describes the hostile force's doctrinal planning timings that support the SOM; historical data on attack timings, methods and locations.
- (4) Political activities, if considered relevant.
- (5) Information and media activities.
- (6) Other support activities considered relevant.

d. **Order of Battle File.** When used, stakeholder model data is maintained in an ORBAT file. At the lower tactical levels, the ORBAT file may describe the standard groupings and weapons of anthreat infantry platoon. At battlegroup level, it is likely to be considerably more complicated. The following information is normally contained in ORBAT files:

- (1) Composition, disposition, strength, training status and effectiveness.
- (2) Tactics or modus operandi (including habitual operating areas or patterns for unconventional forces, insurgents, gangs, tribes or clans).
- (3) Recent activities.
- (4) Logistic and support capabilities.
- (5) Electronic technical data.

(6) Leadership, personalities and pseudonyms.

(7) Associations and relationships.

e. **Initial High Value Target List.** Assets that are critical to the hostile force's success are identified as potential HVT and ranked in order of their relative worth to the hostile force. The commander notes which capabilities are considered HVT in a list grouped by BOS, and updates the list as required throughout the planning process.

f. **Identify Threat Capabilities.** The commander reviews each threat and stakeholder model and identifies the range of activities that each element has the capacity to and sustain. This is achieved through reviewing doctrinal overlays and preferred tactics, with modifications made in light of the current situation (terrain and weather, assessed threat readiness and morale, assessed level of combat effectiveness and logistic support). These estimated threat capabilities inform possible COA and supporting operations which the threat can use.

ACTIVITY 4: Determine Threat Courses of Action

914. During this activity commanders use the analysis from the previous three activities (see paragraph 905 to paragraph 912) to estimate how the threat will employ its forces to achieve its objectives and endstate. These estimates differ from the doctrinal models as they are developed with an understanding of what the battlespace makes possible.

915. **Identify Likely Threat Objectives and Endstate.** A commander identifies the threat endstate either from their higher commander's appreciation or by making their own estimate. Based upon that endstate a commander uses operational environment analysis to identify likely objectives. These objectives may be adversary or terrain focused. The commander then uses the previous analysis of threat capabilities to determine how they may

achieve these objectives. These threat methods can then be combined to establish COA.

916. Develop Threat Course of Action Description and Options. The commander makes an estimate of how the methods identified in accordance with paragraph 914 might be combined by anthreat force to create a coherent plan or COA that would achieve its objectives and endstate. By convention hostile force COA are considered in terms of likelihood and potential impact. This will identify the MLCOA and MDCOA, although the hostile force may adopt any combination or variation thereof. Each of the threat's COA should be represented graphically. In the event that a commander conducting an appreciation as an individual has time to develop graphical representations further, they can be turned into situation or event overlays (see paragraph 919).

917. Estimate the Threat Centre of Gravity and Critical Factors for Each Course of Action. Once a commander has made estimates as to how the threat will employ its forces to achieve its objectives and end state, they are able to develop the COG construct for each of these estimated COA. While it is not necessary that each COA has a different COG, it is possible that the differing methods employed will result in slightly different CV. These CV are employed later in developing the friendly force plan.

918. Confirm the Threat High Value Target List. Once each COA has been developed and the COG estimate is completed, the commander can revisit their initial HVTL. By examining how the threat is expected to achieve its objectives and end state, the commander may identify elements of the initial HVTL that are unlikely to be important to the threat plan. These elements can then be removed from the list. Elements can be added to the initial HVTL if the alternative is true. The elements present in the HVTL should correspond to some of the critical requirements and may correspond with complete CC from the developed COG constructs. The HVTL is employed during the COA development when compiling the HPT list (note that the two are linked but not synonymous).

919. **Situation and Event Overlays.** Where time permits, each COA should be represented graphically through the use of overlays. These COA can be fully developed through a detailed estimate of the threat SOM and subsequent BOS integration. The result of this full development is a situation or event overlay. These overlays should include the likely locations of threat NAI, TAI and EA. HVT should be identified and prioritised. Further detail on conducting these processes can be found in Chapter 2. These COA are used to support the development of friendly force plans during the COA development and COA analysis steps.

SECTION 3

STEP 1 – PRELIMINARY ANALYSIS

920. Preliminary analysis is used to focus the commander on an impending operation. This is triggered by receipt of higher orders or a change in situation. The commander must then conduct an initial analysis of the situation – this is known as the preliminary analysis.

921. Preliminary analysis defines the purpose, the time available for planning, and the desired end state, without pre-empting full MA or IPOE. Preliminary analysis comprises the following:

- a. **Situation Overview.** The commander needs to conduct a broad overview of the situation before commencing subsequent steps. This will include initial scoping of the threat and the operating environment. Other stakeholders may also need to be considered in parallel with the threat in this and all subsequent steps.
- b. **Define Purpose and Endstate.** The mission, purpose and desired endstate need to be identified from higher orders.
- c. **Establish Operational Timeline.** An operational timeline appreciation is conducted by determining a critical

timeline and planning in reverse order. Imposed key timings are given by the superior commander and may include:

- (1) The time the superior commander's end state is to be achieved.
- (2) H-Hour. Known phase timelines (an appreciation of the threat timeline also needs to be conducted).

d. **Establish Planning Timeline.** The commander must weigh up the desired degree of depth in planning as opposed to the need to act before the threat does, in order to seize and retain the initiative. The one-third, two-thirds rule should be applied when developing a planning timeline; that is, the commander should allocate one-third of the available time before an operation commences to produce and disseminate the plan. The other two-thirds are required for subordinate battle procedure. Of the one-third of time available, a recommended percentage allocation to each of the steps in the process is:

- (1) IPOE – 20 per cent
- (2) Preliminary analysis – 10 per cent
- (3) MA – 20 per cent.
- (4) COA development – 20 per cent.
- (5) COA analysis – 10 per cent.
- (6) Decision and Execution – 20 per cent.

e. **Initial Information Requirements and Reconnaissance Effort.** At this stage initial information requirements and reconnaissance effort may be identified to provide more fidelity to subsequent steps of the planning process.

- f. **Issue Warning Order.** A WngO is issued at the end of the preliminary analysis. A subsequent WngO can be issued at any time during the process.

SECTION 4

STEP 2 – MISSION ANALYSIS

ACTIVITY 1: Analyse the Superior Commander's Intent and Identify Own Mission

922. **Analyse the Superior Commander's Intent.** The superior commander's intent (one up and two up) guides the commander's planning. It includes the reason for the mission (purpose), broad concept of achieving the mission (method) and desired result of the mission (endstate). These elements are detailed further in Chapter 4. Under mission command, a subordinate commander has considerable freedom of action in deciding how to achieve the mission, but they must remain nested within the guidance of the intent statement.

923. **Identify Own Mission.** Once the superior commander's intent is understood, the commander should identify the mission they have been issued. Where they have not been issued a mission, they should be capable of developing at least the purpose statement of a draft mission, given their understanding of the superior commander's intent and their part in the overall plan (based on the preliminary analysis). The issued or stated mission is reviewed towards the end of the MA once the task and the available forces are understood.

ACTIVITY 2: Analyse Tasks

924. **Identify Tasks.** The tasks required to complete the mission are normally included in the superior commander's orders under groupings, missions and tasks. However, the list cannot be considered comprehensive and commanders must interpret their

specified tasks and determine implied tasks and ET. The tasks to be identified are categorised as follows:

- a. **Specified.** These tasks are listed in the superior commander's orders and must be completed.
- b. **Implied.** These tasks are not specified in orders but generally need to be completed to achieve the mission. Implied tasks can also be drawn from own COG construct and IPOE analysis.
- c. **Essential.** These tasks must be completed for a mission to be successful, and may be specified or implied.

ACTIVITY 3: Determine Freedom of Action

925. **Freedom of Action.** Determining freedom of action involves identifying the broad range of actions that can be conducted to achieve the superior commander's intent. In order to ascertain what freedom the commander has, it is often necessary to identify what the commander cannot do. This involves the consideration of factors that limit possible actions and an analysis of the situation to identify potential opportunities for action. The limitations determine the commander's freedom of action.

926. **Limitations.** The limitations on an activity include restrictions and constraints. Restrictions are actions that a superior commander prohibits subordinate commanders from conducting (eg, not crossing a boundary) and are generally specified in orders. Constraints affect the way a subordinate commander can conduct the operation (eg, having to maintain a reserve). Constraints are imposed actions that must be undertaken, while restrictions are prohibited actions.

927. When assessing limitations, commanders and staff must accept that friendly force and neutral stakeholder activities within the operational environment may place some limitations on their mission. Although they may not be specified by the superior

commander, activities that inhibit or impact upon other stakeholders may detract from friendly force efforts on other LOO.

928. **Opportunities.** It is important that the commander does not overlook potential opportunities. Opportunities can be described as the possible methods (ways and means) available to a commander outside the parameters identified by limitations. Opportunities should be viewed from the perspective of the operational environment, timings and each friendly BOS. Additionally, other stakeholder activities may provide an opportunity for mutual cooperation, cover or deception.

929. **Risk Tolerance Thresholds.** During this activity the commander determines how much risk their superior commander is willing to accept during the conduct of the mission. The superior commander may formulate their decision in terms of how much of their force they are willing to lose (as casualties) during the conduct of a mission. Alternatively, they may express how much of the force must remain available to conduct subsequent operations once the mission is successful. Risk tolerance thresholds may result in limitations that restrict or constrain the commander's options during the conduct of the mission. However, commanders should not overlook opportunities.

ACTIVITY 4: Identify Critical Facts and Assumptions

930. **Facts.** Facts are statements of information that are known to be true. Facts include friendly force dispositions, available troops, unit strengths, stockholdings and materiel readiness. Facts have usually been verified by testing. A bridge, for instance, can be constructed, tested and proven to have a particular load-bearing capacity. A convoy can factually have a rate of movement along known routes, with known rates of equipment failure but without hostile force interference. By using facts, a commander can increase the degree of certainty in a plan.

931. **Assumptions.** Assumptions are statements for which no proof is currently available. Assumptions are made to enable planning to continue without the delay of waiting for verification. A

bridge, for instance, can be assumed to exist from the markings on a map. Once the bridge is observed, it is then known to exist but, if the type of construction and the condition cannot be seen clearly, it must be assumed to have a particular load-bearing capacity. A convoy can have an assumed rate of movement along unknown routes with known rates of equipment failure. Each assumption must be allocated a corresponding IR.

ACTIVITY 5: Confirm the Mission

932. The mission statement must be confirmed or altered to ensure that it meets the superior commander's intent and is in accordance with the current situation. The exact wording of the mission must clearly detail the primary task and the purpose of the mission. Changing an assigned mission should not be undertaken lightly. Mission statements can only be changed with the consent of the higher commander. This may occur as a result of a commander assessing that they have insufficient combat power to complete a mission (resulting from a force comparison between Step 2 (see Section 4, Chapter 9) and Step 3) or that the mission task verb does not support the purpose of the operation. Where the superior commander accepts the restated mission, a WngO should be issued to subordinates.

ACTIVITY 6: Analyse Own Troops

933. **Analysis.** The location, status and readiness levels of own troops (combat, CS and CSS) and friendly forces should be reviewed and noted. This is normally achieved by establishing which BOS FE are available within the commander's scope of authority. The effects that these forces can generate, as well as their sustainment demands, should be examined.

934. **Initial Centre of Gravity Construct.** Based upon their understanding of the force's part in the overall plan and the FE available for the mission, the commander is now able to complete an initial COG construct for their own force. This analysis will identify the aspect of the force (CV and possibly the time and location of the employment of complete CC) that must be protected

in order to prevent disruption of own mission. These own force CV must be kept in mind when developing own force COA.

ACTIVITY 7: Consolidate Intelligence Preparation of the Operational Environment and Mission Analysis

935. The analysis completed during the IPOE and the MA is consolidated to generate design rules for own force COA development. This synthesis creates the DP and CCIR.

936. **Derivation of Decisive Points.** Having determined the tasks and freedoms of action during previous activities, the planner should consolidate all analysis undertaken so far to derive DP. The derivation of DP combines the commander's visions of how they will defeat the threat's plan, how they will achieve their ET and how they will fulfill their part in the overall plan.

937. **Determine Threat Defeat Mechanisms.** The first step in deriving DP is to visualise how the threat can be defeated (if the defeat of the threat is not a necessary part of the plan, it may only need to be neutralised). The commander should revisit their estimate of the threat COG construct. One way to determine how the threat force or plan can be defeated is to examine how the threat's employment of their CC can be disrupted or dislocated. By preventing the threat's employment of one or more of its CC the friendly force is likely to break down the cohesion of the threat plan. The most common method of determining how to disrupt or dislocate those CC is to identify the CR that can be disrupted or dislocated. This is normally drawn from the CV identified earlier.

938. **Consider the Achievement of Essential Tasks.** The commander should now determine whether or not the achievement of any of the previously identified ET can occur during the same activity as targeting the threat's defeat mechanisms. This can be a difficult step in the derivation of DP and relies on the experience of the commander.

939. **Determine the Decisive Points.** The next element in the determination of DP lies at the core of the tactical art. The planner

must now visualise the range of possible actions that will meet the ET and/or undermine the threat plan by targeting their defeat mechanisms. The recommended way to do this is to consider the battle chronologically and ask the question: 'What must I achieve to target the threat's CV and/or achieve my superior commander's intent?' The commander should attempt to answer this question in terms of targets and effects that will achieve decisive outcomes against the threat and in pursuit of the mission's purpose. This consideration should result in the identification of a number of events that are critical to the success of the operation.

940. More than one TCV or essential task may be encompassed in a single DP. The list of DP does not need to be sequenced or prioritised yet, as this will occur in the first stage of the COA development.

941. **Confirm Commander's Critical Information Requirements.** At the end of the IPOE and MA the commander should be able to establish a consolidated list of CCIR. This list may be added to during the COA development, but it is important to understand the CCIR at this point as they must form a basis for developing COA in the next step (answer PIR and protect essential elements of friendly information), detailed in Section 5, Chapter 9.

SECTION 5

COURSE OF ACTION DEVELOPMENT

942. COA development is one of the steps of the MAP that is significantly abridged when the appreciation is completed by an individual rather than a staff. The nature of the abridgement is that multiple COA are not fully developed. Rather, multiple COA concepts are developed and tested. At the end of the test one concept is selected for full development. This single developed COA is then analysed in the next step of the appreciation. COA development by an individual consists of the following four activities:

- a. Create COA concepts.
- b. Develop COA concepts.
- c. Test COA concepts and select a COA for full development.
- d. Fully develop the COA.

ACTIVITY 1: Create Course of Action Concepts

943. To create the COA concepts, the commander uses the consolidation of the steps detailed in Section 2 to 4 in Chapter 9 (specifically the DP and CCIR). The commander should develop a rough concept of how each of the PIR will be answered and how these will inform the achievement of each of the DP. The commander must also develop a rough concept of how each of the DP will be achieved and exercise tactical judgment to link the DP in chronological order to form COA concepts. The DP may be linked in a variety of ways (simultaneously or sequentially) or undertaken by different FE to create several COA concepts. This allows the commander to consider more than one option for conducting the mission.

944. COA concepts have been created when a commander can explain when and how the PIR will be answered, how these inform the conduct of the mission, and when and how each DP will be achieved.

ACTIVITY 2: Develop Course of Action Concepts

945. Once the COA concepts have been created, the commander develops them to the point where they can be tested. Prior to being tested the developed concepts should be sketched on an overlay and a CONOPS statement drafted to support the graphic representation. Broad FE should be allocated to achieve the DP and force ratios compared. When time permits, thorough COA concepts can be developed as follows:

- a. **Visualise the Scheme of Manoeuvre.** The commander uses the COA concept created to determine how the force will get from its start state to the end state (identified during the examination of superior commander's intent during the MA). The SOM must include answering PIR and achieving DP as detailed in the COA concept. It should adopt standard groupings for the tactical action being undertaken, but the allocation of troops to tasks should be avoided at this early stage until tasks have been identified.
- b. **Identify and Build a Main Effort.** Identifying and building an ME in a COA ensures that a decisive outcome is achieved through the most efficient use of available resources. Other actions within the COA should support the ME to achieve a unified effort in the key areas required in the COA. The ME must relate to achieving one or more DP, to orientate own force or to shape other stakeholders so that DP can be achieved subsequently. Building the ME and SE involves identifying the tactical tasks that must be achieved and should include the allocation of the essential, specified and implied tasks identified during the MA.
- c. **Allocate Initial Forces to Tasks.** Once the tasks that achieve the ME and SE are understood, the commander must allocate the type and size of force that can achieve the task. This allocation relies upon the previous analysis of the environment, the threat and stakeholders (to ensure that initial force ratios are appropriate).
- d. **Phasing.** The initial allocation of forces to tasks that achieve the ME and SE will inform the phasing of a mission. The available forces determine whether achieving multiple DP simultaneously is feasible or whether they must be achieved sequentially. Once the implication of the initial allocation of forces is understood, the commander can identify appropriate ways to phase a mission. Phasing is important in achieving regrouping or a change to the ME. Phasing must be balanced with the desire to retain the

initiative and deny the hostile force the opportunity to counterattack.

e. **Develop the Collection Plan.** The commander must establish the indicators of threat behavior that will answer their PIR. By using the threat COA overlays they can then determine when and where to look for these indicators. Using this understanding of what, when and where to look and using the priority listing of PIR, they can allocate forces to seek out these indicators. This information collection is normally controlled through the creation of a collection overlay that depicts the NAI (where to look for indicators) and the collection matrix (what to look for, when to look for it and the primary and alternative sensors).

f. **Synchronisation.** A preliminary synchronisation of BOS or FE is developed to ensure that the BOS effects are coordinated to achieve the CONOPS.

g. **Force Protection.** The commander must check the initial force allocation to ensure that FE have sufficient fighting power to achieve the DP and that other FE can prevent hostile force disruption of own CV.

h. **Implement Basic Considerations/Principles.** The commander must check the allocation of the ME and the initial allocation of forces to ensure that the basic considerations and principles have been adhered to. In the event that the considerations have not been adhered to, it must be the result of a considered trade-off instead of an oversight.

i. **Identify Risk Controls Specific to Courses of Action.** When creating COA concepts the commander mitigates risk by attempting to treat it within their own resources or by transferring it to their superior commander. A commander can treat risk by ensuring that the initial allocation of forces adheres to standard force ratio requirements and by ensuring that forces are allocated to

protect identified own force CV. In the event that they are not able to mitigate risk within their own means, they should transfer the residual risk to their commander (this would normally involve requesting additional forces, time or space or recommending that the higher commander tolerate the residual risk).

946. When a commander has limited time the COA concept may simply entail developing an idea of how PIR will be informed, how these will link to their decisions and how each of these will result in achieving DP. This might be indicated by an initial draft of a LOO or by a simple COA sketch that depicts how PIR will be informed and DP achieved.

947. **Finalise Course of Action Concepts.** The commander must then ensure that the COA concept is developed enough to take analysis. To do so the commander should check that the COA concept includes:

- a. Concept of the operation that details how the mission will be phased, how each PIR will be answered and when each DP will be achieved.
- b. SOM statements and supporting operations overlays by phase (including control measures).
- c. A collection plan that articulates how the PIR will be answered (initial collection overlay and collection matrix).
- d. Other applicable BOS concepts by phase.
- e. Initial groupings and tasks by phase.
- f. The ME and SE (if applicable) by phase.
- g. Identification of the reserve (dedicated or situational) by phase.

ACTIVITY 3: Test Course of Action Concepts

948. Once the COA concepts are finalised, they are tested to ensure that they are likely to achieve the mission. This testing process prevents time being wasted fully developing a COA that cannot achieve the mission. Where a COA passes the test, it may be fully developed. During the test, the COA concepts are examined to ensure that they meet the commander's intent. The COA is tested using the mnemonic FASSD as detailed in the following paragraphs.

949. **Feasible.** The COA concept is tested for feasibility against the following questions:

- a. **Time.** Is there sufficient time to execute the concept as envisioned?
- b. **Space.** Is there adequate ground and air space to conduct the operations?
- c. **Means.** Do friendly forces have the necessary fighting power to successfully conduct the activity? This is ascertained by comparing the relative combat ratios at each DP and/or ME action. Resources for critical aspects of the operation, such as bridging assets for a river crossing, are also checked.
- d. **Defeat Threat Course of Action.** All COA concepts must be tested against the threat COA to ensure that they defeat the threat MLCOA and are capable of countering the threat MDCOA for long enough to enact own or superior actions on. The best means for conducting this check is to analyse how own force COA defeat the threat COA at the time and location of their objectives. This step should incorporate the superimposition of own force overlays onto the threat COA overlays.

950. **Acceptable.** The COA is assessed for acceptability by determining whether it exceeds the superior commander's risk

guidance (confirmed during MA, if it has not been specified). The commander must make a judgment based on their understanding of the potential gain of the intended mission in terms of its contribution to the overall success of the operation and the likely impact of the mission on the following threat impact categories:

- a. Mission accomplishment.
- b. Own forces.
- c. Resources.
- d. Reputation.
- e. Environment.

951. **Suitable.** The COA is tested against known considerations, principles and/or tasks (specified/implied/essential) to subjectively assess its suitability for accomplishing the mission in accordance with the superior commander's guidance.

952. **Sustainable.** The COA is tested to ensure that it can be supported by the existing CSS elements available to the force. This test should check that the supply, health support, and repair and recovery elements available to the commander will provide the necessary combat stores and enable evacuation of the likely casualties (personnel and equipment) in accordance with the initial phasing concept.

953. **Distinguishable.** The COA is assessed for uniqueness in comparison with other COA. Each COA must be a viable alternative and substantially different from other COA. Differences in COA are developed by emphasising distinctions in the following four areas:

- a. The sequence for achieving the DP.
- b. The SOM and other applicable BOS concepts.

- c. The focus or direction of the ME.
- d. The TASKORG.

954. **Select a Course of Action Concept for Development.** Based on the comparison of FASSD, including the consideration of tenets, principles and basic considerations, the commander determines which COA to fully develop and then execute.

ACTIVITY 4: Fully Develop the Selected Course of Action

955. **Fully Develop the Course of Action.** Following the selection of the COA concept during COA analysis, the concept is a broad outline but lacks the detail required for execution. The commander fully develops the selected COA concept as follows:

- a. Complete the commander's intent statement.
- b. Complete the CONOPS paragraph, operation overlay(s) and the collection plan overlay and matrix.
- c. Complete the SOM paragraphs.
- d. Develop groupings, missions and tasks and identify an ME.
- e. Develop timings and appropriate control measures.
- f. Finalise TCV and produce an HVT matrix.
- g. Synchronise BOS and supporting force elements.

956. **Complete the Commander's Intent Statement.** The description of the tactical action is directly influenced by the method element of the commander's intent and is referred to as the COA method statement. It may include a description of the hostile force's COG, the CV to be targeted by the COA and the DP to be achieved. It should also include any changes to subordinate risk tolerance thresholds. When the commander selects the final COA

at the end of the IMAP, the chosen COA method statement becomes the method element of the commander's intent. The purpose and end state for all COA are generally similar and reflect the reason the activity is being conducted and the conditions to be established to achieve the outcome. These two elements are drawn from the MA and IPOE.

957. **Complete the Concept of Operations Paragraph and the Operation Overlay(s) and Collection Plan Overlay and Matrix.** The overlay(s) must include the necessary TASKORG graphics, task graphics and control measures by phase to clearly articulate the execution graphically. These overlays will be used to complete the dry synchronisation later in the process. The CONOPS paragraph must articulate the number of phases for the mission, the PIR being answered and the DP being achieved by phase.

958. **Complete the Scheme of Manoeuvre Paragraphs.** These paragraphs must articulate the start state for each phase, which groupings are completing which tasks and how these tasks contribute to achieving DP by phase.

959. **Develop Groupings, Missions and Tasks and Identify Main Effort.** The outline groupings, missions and tasks designed in the COA concept are fully developed. FE are grouped according to their tasks and chain of command and missions and specified tasks are allocated. At this stage the ME is formalised and accorded the appropriate forces. These tasks are confirmed during the BOS synchronisation.

960. **Develop Timings and Control Measures.** The broad timings noted in the COA concepts are compared to the groupings, missions and tasks to ensure that they are achievable by the relevant FE and supporting arms and services. Similarly, the control measures are refined to ensure that SOP/TTP are adhered to and that the SOM can be appropriately coordinated. These timings and control measures are confirmed or amended during the BOS synchronisation.

961. **Finalise Targetable Critical Vulnerabilities and Produce the High Pay-off Target Matrix.** The TCV list, drafted during threat and stakeholder analysis and further developed during the MA process (see Chapter 4, Section 2) to derive DP, is finalised based on the specific DP for each COA. The preliminary high pay-off target (HPT) list is reviewed with the hostile force TCV (COA specific) and own force DP to determine the HPT for the plan. Once the HPT are determined, an HPT matrix can be produced to support the execution of the plan. Forces can then be allocated to detect, track and deliver effects specific to each HPT in accordance with their priority.

962. **Synchronise Battlespace Operating Systems and Supporting Force Elements.** Once the groupings, missions, tasks, timings, control measures and HPT have been refined to an acceptable level, FE activities in the battlespace must be synchronised. This task is normally undertaken using the BOS construct as it logically groups FE into more manageable groups. One method of ensuring that the plan is fully developed is to produce a synchronisation matrix (see Chapter 6); however, this is often not possible at the individual level. In the likely event that the commander does not have enough time to do this, they should use the TASKORG matrix and the mission time line and step through each phase using a mud model or map to confirm or amend the groupings, missions, tasks, timings, control measures and HPT. This is a time-consuming activity and requires a disciplined approach, but if conducted well the plan will be effectively synchronised.

963. The fully developed COA is now tested against the estimated threat COA to improve its chances of success.

SECTION 6

STEP 4 – COA ANALYSIS

964. COA analysis is another step of the MAP that is significantly abridged when conducted by an individual. An individual does not have the capacity to conduct complete wargames with multiple

COA. Instead the commander should conduct a shorter graphical test of their COA against their estimate of the threat and a series of questions to identify the need for amendments to the COA (including the development of contingencies). During the COA analysis the commander should complete the following activities:

- a. Conducted an initial graphical test of the own force RSI plan.
- b. Answer the COA analysis questions and conduct COA Analysis Matrix. COA Analysis Matrix as in **Annex A**.

ACTIVITY 1: Test Own Force Reconnaissance, Surveillance and Intelligence

965. The commander should check that their RSI plan is capable of determining whether or not the threat is enacting the estimated COA (MLCOA or MDCOA). This is normally achieved by overlaying the graphical RSI control measures on the threat COA sketches developed during the IPB. In the event that the RSI plan is incapable of identifying which COA the threat is enacting, amendments must be made.

966. The commander must then check that their RSI plan is capable of identifying the elements of the threat force or plan that their own COA will target. The RSI plan should generally identify threat TCV in a timely fashion so that other FE can be triggered to achieve the desired effect against those CV.

967. The commander should finish the initial graphical task by ensuring that they have the means of protecting their own force against threat surprise. There are two elements to this determination. Firstly, the RSI plan must have the necessary flexibility to be rapidly amended in the event that the threat is not identified as enacting either the estimated MLCOA or MDCOA. The second element should incorporate early warning of own forces to prevent threat surprise such as spoiling attack.

ACTIVITY 2: Answer the Course of Action Analysis Questions and Conduct COA Analysis Matrix

968. The commander should consider the following list of questions concerning the COA:

- a. How does the COA bring about the defeat of the threat's plan (does it target force, will or cohesion, or a combination of all three)?
- b. Can the COA counter all probable hostile force threats?
- c. Does the COA achieve all DP required for mission success, and is there sufficient time?
- d. Does the COA achieve all specified tasks and ET?
- e. Is the deception plan appropriate?
- f. Are the military control measures effective?
- g. Does the COA target hostile force TCV?
- h. Does the COA protect own force CV?
- i. What elements (in space and time) of the COA are vulnerable to friction?
- j. Have the appropriate control measures been put in place to reduce friction?
- k. Does phasing support the regrouping or re-tasking of the force?
- l. Can the COA achieve the superior commander's intent?

- m. Does the COA position the FE for future missions after this mission is completed?
- n. Does the COA have an effective withdrawal plan?
- o. What is likely to happen if the threat successfully targets own force CV?
- p. Can it be countered or can own forces recover?
- q. Are contingency plans likely to be effective?

SECTION 7

STEP 5 – DECISION AND EXECUTION

969. The decision and execution step of the IMAP consists of the following activities:

- a. Develop and issue orders.
- b. Complete rehearsals.
- c. Execute and monitor the mission.

ACTIVITY 1: Develop and Issue Orders

970. **Develop Orders.** Orders are derived from the commander analysis and can be delivered either verbally or in written form.

971. **Issue Orders.** Where resources permit, the commander should issue to their subordinates, as a minimum, hard copies of the TASKORG matrix and operation overlay(s) prior to orders commencing. The orders should also include the requirements for back-briefs by subordinate commanders, the timing for the combined arms rehearsal and the timings for battle preparation inspections.

ACTIVITY 2: Complete Rehearsals

972. **The rehearsal type is selected.** In environments where the IMAP is being employed to develop plans, rehearsals should be incorporated into the force's battle preparation at different times.

973. More information describing rehearsal techniques is detailed in Chapter 7.

ACTIVITY 3: Execute and Monitor the Mission

974. **Execute the Plan.** Once orders have been issued, rehearsals have been conducted and the battle procedure has been completed, the commander focuses on executing the mission.

975. **Monitor and Adapt the Mission.** The execution of the mission is monitored and adapted as required in response to the emerging understanding of the situation versus the planning estimate of the situation.

SECTION 8

CONCLUSION

976. The MAP when applied by an individual is fundamentally the same as when applied by a staff. The two minor deviations are that, at the end of COA development, only one COA is taken to COA analysis; and that wargaming cannot be effectively conducted by an individual. Although all products developed as part of the MAP by a staff may be useful as part of individual planning, the capacity to produce those products is far more limited. To that end, an individual must make trade-offs between analysis, planning and supporting product development in order to ensure that orders are delivered in a timely manner.

**ANNEX A TO
CHAPTER 9**

COURSE OF ACTION ANALYSIS IN THE IMAP

1. COA analysis in the IMAP is done upon the completion of COA development. This step requires the fully develop COA to be tested and wargamed. COA analysis is another constituent of MAP focusing on individual approach, considering incapability of an individual to complete wargames with multiple COAs. The commander should orchestrate simpler matrix of COA encompassing elements of threat estimate and analysis in case of need to modify and amend the existing COA.
2. The COA Analysis Matrix is the tool to test the COA with the Principles of War, which the outcomes and the results will determine how errorless the COA would be. As a result, the COA Analysis Matrix is not for the commander to select the best COA or making comparison; however, it is a tool to analyse with weightage, which COA can be utilised and executed.
3. The commander must then check that their RSI plan is capable of identifying the elements of the threat force or plan that their own COA will target. Threat TCV must be identifying on time so that other FE can be triggered to achieve desired effect against those CV.
4. The COA Analysis Matrix for IMAP is a multipurpose tool of mental wargaming for any phases of operations. The Principles of War used as the methods of the COA analysis matrix are rating from 3 to 5. The rating of each Principles of War is the logical process to the necessity and desirable of each COA. The factors of each Principles of War are determine by the logical tasks, characteristic, capabilities and locality mainly to answer and articulate the wargaming questions as in **Chapter 9 para 968**.
5. **The Calculation.** The pointing and rating system is articulate and determine based on the creativity and visualisation of

the planner in conducting this matrix. This method is used as the quantitative approach in deciding the result in selection of the COA.

6. The COA Analysis Matrix is shown in **Table 9A – 1**.

COURSE OF ACTION ANALYSIS MATRIX

Ser	Principles of War	Factors	Weightage	COA 1	COA 2
(a)	(b)	(c)	(d)	(e)	(f)
1.	Selection and the maintenance of the aim (5)	Clear aim	1	1	0.5
		Imposed time achieve	1		
		Ability to achieve aim	1		
		Does endstate achieve?	2		
2.	Maintenance of morale (5)	Reserve	0.5		
		Logistic Support	1		
		Air Support	0.5		
		Armd	0.5		
		Mech	0.5		
		Ammo	1		
		Mobility	0.5		
		Protection	0.5		
3.	Offensive action (5)	Manoeuvre	1		
		Speed	1		
		Surprise	0.5		
		RSI	0.5		
		Fire power	1		
		Air support	0.25		
		Protection	0.5		
		Anti Armd	0.25		
4.	Security (5)	Flank	1		
		Rear	1		
		Reserve	0.5		
		Air parity	0.5		
		Reconnaissance	1		

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MP 0.5.1 TD

(a)	(b)	(c)	(d)	(e)	(f)
5.	Surprise (4)	Deception	0.5		
		Speed	0.5		
		Mobility	0.25		
		Air support	0.25		
		Preliminary op	0.5		
		RSI	0.5		
		Concealment	0.5		
		Secrecy	1		
6.	Concentration of force (5)	Greater force Ratio	1		
		Indirect Firepower	0.5		
		Direct Firepower	0.5		
		Manoeuvre	0.5		
		Phasing	0.5		
		Main Effort	0.25		
		Supporting Effort	0.25		
		Reserve	0.5		
		Flank protection	0.25		
		Air support	0.25		
		Groupings	0.5		
7.	Economy of effort (3)	Simple plan	0.5		
		Priority of tasks	0.5		
		Concurrent acty	0.5		
		Protection	1		
		Balance force	0.5		
8.	Flexibility (4)	Phasing	0.25		
		Communication	0.5		
		Fire plan	1		
		Manoeuvre	0.5		
		Air support	0.5		
		Avenue of approach	0.25		
		Cmob	0.5		
		RSI	0.5		
9.	Cooperation (4)	Mutual support	1		
		Aim	1		
		Flexibility	1		
		Communication	1		

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(a)	(b)	(c)	(d)	(e)	(f)
10.	Administration (5)	Logistic plan/support	1		
		Sustainment	0.5		
		Flexibility	0.5		
		MSR/SSR identified	0.5		
		Resources	0.5		
		Air threat	0.5		
		Reinforcement of troop	0.5		
		Medical/Pri of cas	0.5		
		Replenishment	0.5		
11.	Risk Management (5)	Mission	1		
		Capabilities	1		
		Personnel	1		
		Reputation	1		
		Environment (Damage/Cost)	1		
Total			50		

CHAPTER 10**COMBAT MILITARY APPRECIATION PROCESS****SECTION 1****GENERAL**

1001. The MAP is a rational decisionmaking process that supports the generation of detailed analytical plans. It is highly useful during battle procedure at all levels but is too time consuming to enable rapid decisionmaking in combat. Combat decisionmaking is not a substitute for the IMAP, which (time and situation permitting) should be used for more rigorous planning. The combat military appreciation process (CMAP) is a combat decisionmaking tool that is derived from the IMAP and is used post H-hour in response to a contact or incident that requires an immediate response. It draws on the commander's knowledge of the previous SMAP or IMAP, accumulated operational environment knowledge, military judgement and tactical experience.

1002. A commander will normally conduct the CMAP when there is insufficient time to consider all the factors. It is largely based on intuition and situational awareness. The CMAP is a four-step process whereby intuition plays an increased role in decisionmaking.

1003. The four steps of the CMAP are as follows:

- a. Step 1 – MA.
- b. Step 2 – Enemy/Threat Analysis.
- c. Step 3 – Terrain Analysis.
- d. Step 4 – Develop and Execute.

1004. Combat decisions are those decisions made in combat or imminent combat for which the current plan, battle drills, TTP and/or SOP do not adequately cater. The decisions are usually

made in timepoor situations, usually under intense stressors and often with limited information and require a commander to make a decision and deliver orders quickly.

1005. The tempo of decisions in combat must be greater than that of the enemy, otherwise defeat will be imminent. A decision of average quality made prior to an enemy decision is far more likely to succeed than a good decision made too late. The importance of time cannot be over emphasised. The quality of decisions will improve with experience.

1006. Soldiers are trained in battle drills, TTP and SOP so that they can perform them in combat without further detailed orders. These battle drills, TTP or SOP do not require an MAP or a combat decision to plan how to conduct them – they simply need a commander to decide to conduct one and enact the trigger for it to commence.

1007. **Cognitive Skills in Combat.** Cognitive ability is further limited by combat through stress, fatigue, nutrition and hydration – all present in war. Any information process intended for combat must be limited to fewer than seven elements if the user is to accurately recall and process the information.

1008. Humans inherently behave in rational ways; that is, they will decide to act in a way that achieves their objectives in consideration of the likely outcomes. That action will be modified by the consequences. The MAP supports this rational process, and the CMAP is a useful tool to ensure that hastydecisions are not rash decisions. Both the MAP and CMAP are designed to ensure that action is timely and tactically sound.

SECTION 2

STEPS OF THE COMBAT MILITARY APPRECIATION PROCESS

1009. The CMAP is a simple tool to prompt the decisionmaker through some critical considerations that have most likely changed. It can be used as follows:

- a. To decide on a COA where the situation has changed, or
- b. To review an existing plan or order.

1010. **Depth.** Each point can be explored in greater or less depth depending on the time available. An understanding of the time limitations applicable to the situation is critical to then deciding how much time can be spent exploring each point.

1011. Although the CMAP steps are depicted in a linear format in Figure 10–1, the order in which they are considered is dependent upon the experience and knowledge of the commander. By following the CMAP process, a commander can quickly analyse key factors and their relationship to SMESC, as depicted in Figure 10–1.

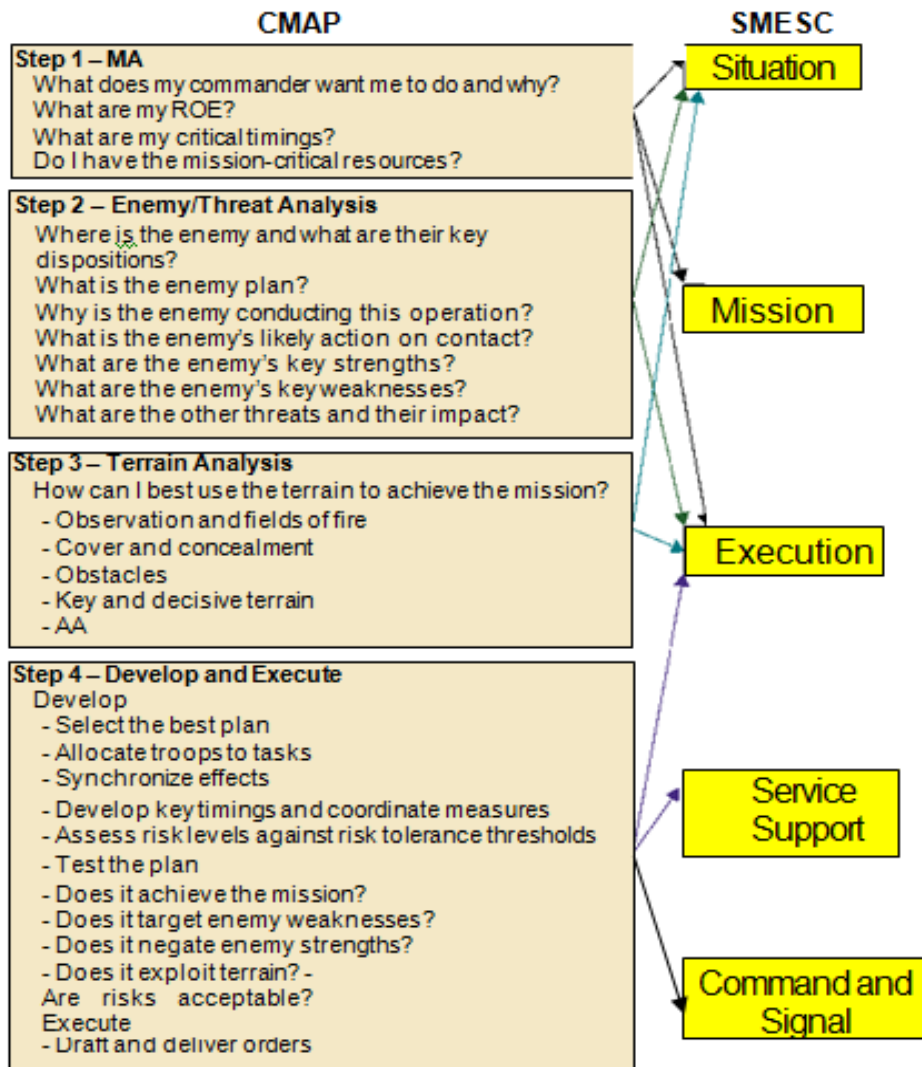


Figure 10–1: Combat Military Appreciation Process

STEP 1 – MISSION ANALYSIS

1012. Mission analysis has been distilled into the following four fundamental questions:

- a. What does the commander want me to do and why?

- b. What are the ROE?
- c. What are the critical timings?
- d. Do I have the missioncritical resources?

1013. The answers to these questions should be reflected within the 'situation, mission and execution' parts of the orders format and will directly influence the tasks to be conducted during the execution of the plan.

STEP 2 – ENEMY/THREAT ANALYSIS

1014. As the CMAP is conducted post H-hour, the commander is already familiar with the enemy's capability, doctrine and tactics. The threat analysis principles detailed in Chapter 9 for IPOE Step 3 Activity 3 – Evaluate the Enemy (see paragraph 915) are applicable in the CMAP; however, key components have been distilled into the following seven fundamental questions:

- a. Where is the enemy and what are its key dispositions?
- b. What is the enemy plan?
- c. Why is the enemy conducting this operation?
- d. What is the enemy's likely action on contact?
- e. What are the enemy's key strengths?
- f. What are the enemy's key weaknesses?
- g. What are the other threats and their impacts?

1015. The answers to these questions should be reflected within the 'situation' part of the SMESC orders format. The analysis of the hostile force influences the development of a plan that targets hostile force weaknesses.

STEP 3 – TERRAIN ANALYSIS

1016. During terrain analysis, the commander's analysis should follow the OCOKA methodology detailed in Chapter 3 for IPOE Step 2 Activity 1 – Terrain Analysis (see paragraph 326 to paragraph 335). The key question during this step is 'How can I best use the terrain to achieve the mission?'.

1017. The answer to this question is derived through terrain analysis using OCOKA. The answer is reflected in the 'topography' part of the SMESC orders format and the analysis of terrain determines how terrain will be used during the execution of the plan.

STEP 4 – DEVELOP AND EXECUTE

1018. The develop and execute step of the CMAP combines the last three steps of the IMAP (see Chapter 9), which are as follows:

- a. COA development, detailed in Section 5, Chapter 9.
- b. COA analysis, detailed in Section 6, Chapter 9.
- c. Decision and execution, detailed in Section 7, Chapter 9.

1019. Due to time constraints, there will rarely be time to develop more than one COA, which means that commanders must intuitively consider the COA while analysing the hostile force, threats and terrain.

1020. The key questions during this step are as follows:

- a. What resources and support are available?
- b. What are the relevant or required coordination and control measures?

1021. In developing and executing a COA, commanders should consider the associated risks and the risk tolerance threshold allocated by their superior commander.

1022. While all COA carry varying levels of risk to own troops, if a chosen COA requires a higher risk tolerance, the commander should where practicable backbrief the superior commander before executing the COA. A flow diagram of the planning process is provided in Figure 10–2.

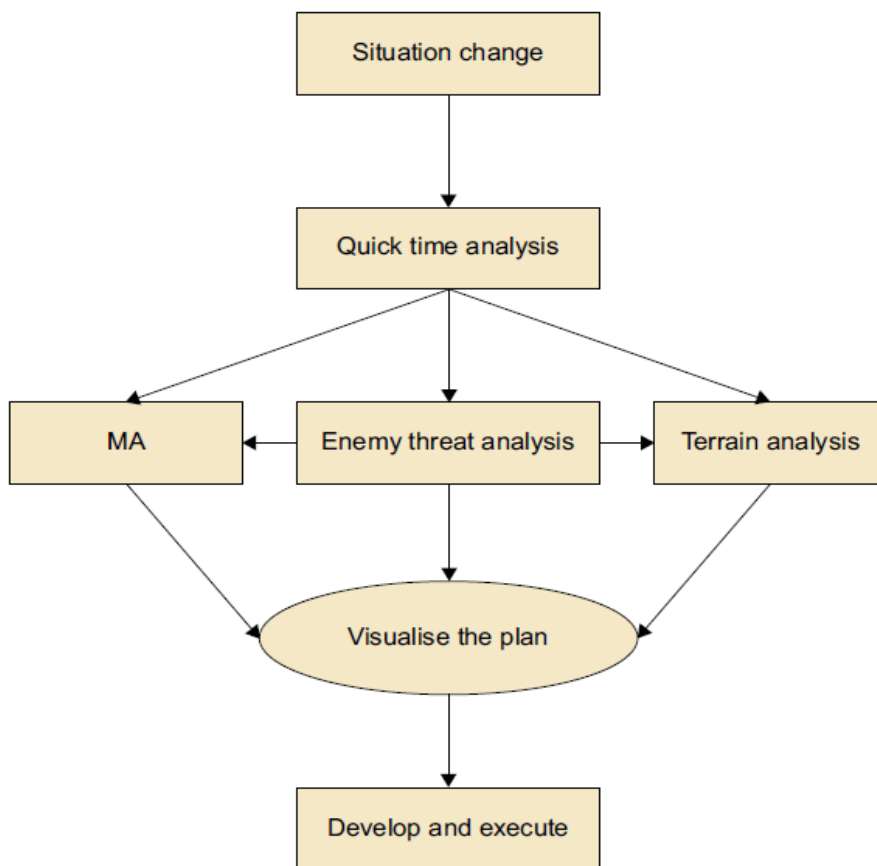


Figure 10–2: Planning Process Flow Diagram

SECTION 3

OUTPUT AND OUTCOMES

1023. Combat decisionmaking is a process and requires an output to produce an outcome. This will generally be affected through orders or the triggering of a drill, TTP or SOP.

1024. **Orders.**Orders must be clear and unambiguous and delivered in a timely fashion. The key components of situation, mission, CONOPS, subordinate missions and key coordination measures should be delivered through SMESC.

1025. **Drills.** TTP and SOP provide very effective battle drills and where applicable, should be used to support tactical action. Battle drills will reduce the detail of orders and assist the commander in maintaining a superior tempo.

SECTION 4

CONCLUSION

1026. Tactical action often requires commanders to analyse, decide and act quickly. This requires training and practice and uses intuition more than logic. It is in high-stress combat situations when commanders are under pressure to act quickly that the CMAP should be used to analyse the key factors and determine the best workable solution.

**SENARAI NAMA TIM PENULISAN MANUAL DOKTRIN
'MALAYSIAN ARMY MILITARY APPRECIATION
PROCESS' (MAP) TENTERA DARAT**

Bil	Senarai Nama	Catatan
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2.	Lt Kol Zulkinine bin Yunus (3005412)	Pen Ket Tim
3.	Mej Mohammad Jafizul bin Mohammad Jafferi (3009439)	Ahli
4.	Mej Ng Chin Sai (3009307)	Ahli
5.	Mej James Hodge (Australia)	Ahli
6.	Mej Sufian bin Kamarul Ariffin (3010164)	Ahli
7.	Mej Muhammad Shazarikh bin Shaad (3008043)	Ahli
8.	Mej Mohd Fadzil bin Ngadiman (3005373)	Ahli
9.	Mej Fazul Salim bin Anor Salim (3010032)	Ahli
10.	Mej Fauzi bin Ismail (3009043)	Ahli
11.	Mej Mohd Hafiz bin Abdullah (3010070)	Ahli
12.	Mej Mohamad Farid bin Abd Hamid (3010060)	Ahli
13.	Kapt Azmeer Rezza bin Azali (3021993)	Ahli
14.	Kapt Mohd Rahman bin A Bakar (3011262)	Ahli
15.	Kapt Mohd Shahizam bin Murad (3011268)	Ahli
16.	Kol Dr. Mohd Radzi bin Hj Abdul Hamid (3003937)	Peg Penyelaras MK Latihan TD
17.	Lt Kol Hamzah bin Hashim (3005065)	
18.	Mej Ruslan bin Sidek (3005784)	



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