AUSTRALIAN ARMY

LAND WARFARE DOCTRINE

LWD 3-4-1

EMPLOYMENT OF ARTILLERY

This publication supersedes Land Warfare Doctrine 3-4-1, Employment of Artillery, 2005.
AUSTRALIAN ARMY

LAND WARFARE DOCTRINE

LWD 3-4-1

EMPLOYMENT OF ARTILLERY

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Issued by command of Chief of Army

2 February 2009

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Commandant
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PREFACE

Aim

1. The aim of the publication is to describe the capabilities of artillery in order to provide an understanding of its contribution to the comprehensive range of military activities within a 'whole-of-government' approach to national security.

Level

2. This publication is written for new members of the Army. It provides corps non-specialists with an understanding of the capabilities of the artillery organisation and its raise, train and sustain role. This publication is a useful reference for government and non-government agencies working with the Army.

3. This publication provides application level doctrine. This is the capstone publication for artillery as part of the Land Warfare Doctrine Operation series. This publication describes the employment of artillery and complements Land Warfare Doctrine 3-0, Operations (Developing Doctrine), 2008 and Land Warfare Doctrine 3-0-3, Land Tactics (Developing Doctrine), 2009. Detailed tactics, techniques and procedures are provided in the Artillery Land Warfare Procedures – Combat Arms series.

Scope

4. This publication provides the following:

   a. a description of the operating environment for the employment of artillery;
b. an explanation of the role, capability, concepts of employment, command and control, and sustainability issues associated with artillery;

c. a description of the missions and tasks undertaken by artillery, including synchronising within the combined arms team and in a coalition environment;

d. a description of artillery in offensive, defensive, stability and enabling activities within a whole-of-government approach;

e. a description of the limitations of artillery organisations or capabilities, including in specific environments;

f. a description of the organisation and its assets;

g. an explanation of the planning, tasking, coordination processes and control measures for each artillery capability;

h. an explanation of the unique combat service support structures and systems that support artillery and its impact on operations; and

i. an explanation of the employment of artillery in various environments.

5. While this publication will focus primarily on Australian-led operations, it will do so in recognition that the contribution of these capabilities will normally be part of a joint or larger coalition force in an interagency environment.
6. This publication should be read in conjunction with other publications and documents, in particular:


b. Army Endorsed Concept for Employment of a Tactical Unmanned Aerial Vehicle Capability;

c. Australian Defence Doctrine Publication 00.1, Command and Control (Draft), 2008;

d. Australian Defence Doctrine Publication 3.1, Offensive Support, 2004;

e. Australian Defence Doctrine Publication 3.3, Joint Airspace Control, 2008;

f. Australian Defence Doctrine Publication 3.14, Targeting; 2009;

g. Australian Defence Force Publication 3.1.1, Offensive Support Procedures, 2004;

h. Land Warfare Doctrine 3-0, Operations (Developing Doctrine), 2008;

i. Land Warfare Doctrine 3-0-3, Land Tactics (Developing Doctrine), 2009;

j. Land Warfare Doctrine 3-3-1, Employment of Army Aviation, 2009;

k. Land Warfare Doctrine 3-6-1, Employment of Engineers, 2009;
### Contents

- **l.** Land Warfare Doctrine 3-9-1, Operations in Specific Environments (Developing Doctrine), 2004;

- **m.** Land Warfare Doctrine 3-9-5, Urban Operations (Developing Doctrine), 2005;

- **n.** Land Warfare Doctrine 5-1-1, Staff Officers’ Guide (Developing Doctrine), 2007;

- **o.** Land Warfare Procedures - Combat Arms (Offensive Support) 5-3-2, Target Engagement, Coordination and Prediction – Duties in Action, 2003;

- **p.** Land Warfare Procedures - Combat Arms (Surveillance and Target Acquisition) 2-3-2, Artillery Surveillance and Target Acquisition (Developing Doctrine), 2008;

- **q.** Land Warfare Procedures - Combat Arms (Surveillance and Target Acquisition) 2-3-4, Artillery Target Acquisition – Troop Deployment (Developing Doctrine), 2008;

- **r.** Land Warfare Procedures - Combat Service Support 4-0-1, Combat Service Support in the Theatre (Developing Doctrine), 2003;

- **s.** Land Warfare Procedures - General 3-8-2, Population Protection and Control Techniques (Restricted), 2001;

- **t.** Land Warfare Procedures - General 7-7-9, All Corps Air Defence Procedures, 2005;

- **u.** Market Survey Land 17/18 Artillery Replacement Project Army’s Future Offensive Support System;

- **v.** United Kingdom Artillery Training Volume 1, Pamphlet 1, The Tactical Handling of Artillery, 1999;

- **w.** United Kingdom Artillery Training Volume 1, Pamphlet 2, Artillery Staff Officers Handbook;

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*LWD 3-4-1, Employment of Artillery, 2009*
x. United States JP 3.02.1 Landing Force Operations First Draft; and


Online Doctrine

7. This and other doctrine publications are available via the Army Doctrine Electronic Library website located at: http://adel.defence.gov.au. Paper copies may be out of date. The Army Doctrine Electronic Library is the authoritative source for current doctrine. Users are to ensure currency of all doctrine publications against the Army Doctrine Electronic Library.

Gender

8. This publication has been prepared with gender-neutral language.
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GLOSSARY

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

**air defence commander**
A duly appointed commander responsible for the air defence of a designated area.

**air superiority**
That degree of dominance in the air battle of one force over another which permits the conduct of operations by the former and its related land, sea and air forces at a given time and place without prohibitive interference by the opposing force.

**airspace control**
The implementation and coordination of the procedures governing airspace planning and organisation in order to minimise risk and allow for the efficient and flexible use of airspace.
airspace control authority
The commander designated to assume overall responsibility for the operation of the airspace control system in his or her assigned area.

attack guidance matrix
In targeting, a matrix enabling an increase in the detection to attack time through pre-determined attack options for different types of targets.

attrition
The reduction of the effectiveness of a force caused by loss of personnel or materiel.

battlespace
Those geographical, physical and virtual areas; that includes the traditional domains of land, air and sea, space, the electromagnetic spectrum and cyberspace, which are of concern to a commander.

Note: Also embraces the social, political and temporal contexts in which conflict is waged.

centre of gravity
Characteristics, capabilities or localities from which a nation, an alliance, a military force or other grouping derives its freedom of action, physical strength or will to fight.

combat assessment
The function that determines the overall effectiveness of force employment during operations, and recommends future targeting priorities.

control
That authority exercised by a commander over part of the activities of subordinate organisations, or other organisations not normally under his command, which encompasses the responsibility for implementing orders or directives. All or part of this authority may be transferred or delegated.
counter-battery fire
Fire delivered for the purpose of destroying or neutralising indirect fire weapon systems.

critical vulnerabilities
A critical capability that is vulnerable to being destroyed, captured or neutralised and whose loss will significantly undermine a force's centre of gravity.

defensive fire
Fire delivered by supporting units to assist and protect a unit engaged in a defensive action.

destroy
1. To physically render a group or organisation ineffective unless it is reconstituted.
2. To render a target so damaged that it cannot function as intended nor be restored to a useable condition without being entirely rebuilt.

direct support (ADG term 1 and 3)
The support provided by a unit not attached to or under the command of the supported unit or formation, but required to give priority to the support required by that unit or formation.

In land operations, a primary tactical task given to an artillery unit to provide fire requested by a supported unit other than an artillery unit, without specifying the command relationship.

Related term: general support reinforcing

early warning
Early notification of the launch or the approach of unknown weapons or weapon carriers.

emission control
Measures taken to minimise the use of electronic emissions by friendly forces to prevent premature disclosure of the presence and composition of a force.
force protection
All measures and means to minimise the vulnerability of personnel, facilities, equipment and operations to any threat and in all situations, to preserve freedom of action and the operational effectiveness of the force.

fratricide
The unintentional killing or wounding of friendly personnel by friendly firepower.

general support
That support which is given to the supported force as a whole and not to any particular subdivision thereof.

general support reinforcing
A tactical task in which an artillery unit fires in support of the force as a whole and, on a secondary basis, provides reinforcing fire for another artillery unit.
Related term: direct support (ADG term 3)

high pay-off targets
Any target which, if lost by the enemy, will greatly contribute to the success of the friendly course of action.

independent check
A check of key data required to achieve the effect and conducted by all personnel involved with the delivery of offensive support.

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

offensive support
Offensive support is the offensive measures taken to support a commander in pursuing this mission, and may be organic to the Service of the supported unit or be provided by another Service, and includes naval surface fire support, fire support
from any ground-based weapons system other than small arms, and offensive air support, including air reconnaissance and maritime strike.

**passive air defence**
Passive measures taken for the physical defence and protection of personnel, essential installations and equipment in order to minimise the effectiveness of air and/or missile attack.

**positive control**
In air traffic control within North Atlantic Treaty Organization, a method of regulation of all identified air traffic within a designated airspace, conducted with electronic means by an air traffic control agency having the authority and responsibility therein.

**preparation fire**
Fire delivered before an attack to weaken the enemy position.

**priority of fire support**
A ranked list detailing in what order artillery fire units’ fire support assets will be used to support the manoeuvre commander’s concept of operations.

**procedural control**
A method of airspace control which relies on a combination of previously agreed and promulgated orders and procedures.

**reinforcing**
In artillery usage, a tactical mission in which one artillery unit augments the fire of another artillery unit.

**superimposition**
Used in fire planning to indicate that an artillery unit is augmenting fire on a target and its fire may be lifted from that target by the authority implicit in its fire support role.

Note: May also be applied to mortar units.
surveillance
The systematic observation of aerospace, surface or sub-surface areas, places, persons, or things by visual, aural, electronic, photographic or other means.

synchronisation
The arrangement of military actions in time, space and purpose to produce maximum relative combat power at a given place and time.

tactical air operations centre
The principal tactical air operations centre for the control and management of all aircraft and air warning functions.

target
1. The object of a particular action, for example a geographic area, a complex, an installation, a force, equipment, an individual, a group or a system, planned for capture, exploitation, neutralisation or destruction by military forces.
2. In intelligence usage, a country, area, installation, agency or person against which intelligence activities are directed.
3. In artillery, an area designated and numbered for future firing.
4. In artillery and naval fire support, a term indicating that the target has been hit.

target acquisition
The detection, identification, and location of a target in sufficient detail to permit the effective employment of weapons.

target selection standards
The specific criteria concerning a target that must be met before a response can be initiated.
targeting
The process of selecting and prioritising targets and matching the appropriate response to them, taking into account operational requirements and capabilities.

tempo
The rate or rhythm of activity relative to the enemy, and incorporates the capacity of the force to transition from one operational posture to another.

Note: It is a critical determinant of operational logistics.
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1 ATF 1st Australian Task Force
AAAD all arms air defence
ABF attack by fire
ABMS air battle management system
AD air defence
ADC Air Defence Commander
AER ammunition expenditure rates
AP ammunition point
ARH armed reconnaissance helicopter
BC battery commander
CBF counter-battery fire
DF defensive fire
DS direct support
EA engagement area
EW electronic warfare
FS fire support
FSCM fire support coordination measure
FU fire unit
GBADC Ground Based Air Defence Commander
GBADLO Ground Based Air Defence Liaison Officer
Contents

GS general support
GSR general support reinforcing
HA humanitarian assistance/aid
HN host nation
HPT high-payoff target
IR information requirement
JOSCC Joint Offensive Support Coordination Centre
JOST joint offensive support team
JTF joint task force
ME main effort
OAS offensive air support
OP observation post
OPCOMD operational command
OS offensive support
PGM precision guided munitions
POFS priority of fire support
RP replenishment park
SA situational awareness
SBF support by fire
SP self-propelled
STA surveillance and target acquisition
STAC surveillance and target acquisition cell
TA target acquisition
TACOMD tactical command
UAV unmanned aerial vehicle
VCP vehicle checkpoint
VP vital point
WLR weapon locating radar

2. The following abbreviations appear in tables and figures within this publication.

AEW&C airborne early warning and control
AGM attack guidance matrix
AP advance post
APOD air point of disembarkation
APOE air point of embarkation
ASCA air space coordination area
ATZ artillery target zone
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<tbody>
<tr>
<td>BG</td>
<td>battlegroup</td>
</tr>
<tr>
<td>BSG</td>
<td>brigade support group</td>
</tr>
<tr>
<td>COIN</td>
<td>counterinsurgency</td>
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<tr>
<td>DP</td>
<td>distribution point</td>
</tr>
<tr>
<td>FMB</td>
<td>forward mounting base</td>
</tr>
<tr>
<td>FSCC</td>
<td>fire support coordination centre</td>
</tr>
<tr>
<td>FSG</td>
<td>forward support group</td>
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<tr>
<td>HPTL</td>
<td>high-payoff target list</td>
</tr>
<tr>
<td>GSR</td>
<td>ground surveillance radar</td>
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<tr>
<td>IPB</td>
<td>intelligence preparation of the battlespace</td>
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<tr>
<td>LC</td>
<td>land component</td>
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<tr>
<td>MB</td>
<td>mounting base</td>
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<tr>
<td>MSL</td>
<td>minimum safe limit</td>
</tr>
<tr>
<td>NFL</td>
<td>no-fire line</td>
</tr>
<tr>
<td>PL</td>
<td>phase line</td>
</tr>
<tr>
<td>RCP</td>
<td>regimental command post</td>
</tr>
<tr>
<td>RFL</td>
<td>restricted fire line</td>
</tr>
<tr>
<td>Rt</td>
<td>reinforcing</td>
</tr>
<tr>
<td>ROZ</td>
<td>restricted operations zone</td>
</tr>
<tr>
<td>RSI</td>
<td>reconnaissance surveillance intelligence</td>
</tr>
<tr>
<td>SCP</td>
<td>salvage collection point</td>
</tr>
<tr>
<td>SPOD</td>
<td>sea point of disembarkation</td>
</tr>
<tr>
<td>SPOE</td>
<td>sea point of embarkation</td>
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<td>TACP</td>
<td>tactical air control party</td>
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<tr>
<td>TSS</td>
<td>thermal surveillance system</td>
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<td>Wdr</td>
<td>withdrawal</td>
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CHAPTER 1

FUNDAMENTALS OF ARTILLERY EMPLOYMENT

SECTION 1-1. INTRODUCTION

During the Battle for Long Tan, some 2639 artillery rounds were fired in support of the besieged D Company of 6th Royal Australian Regiment who fought for their lives against a numerically superior attacking force. The Officer Commanding of D Company, Major Harry Smith, acknowledged in his after action report that the accurate and effective support of American 155 mm and Australian and New Zealand 105 mm batteries had a major outcome on the result of the Battle of Long Tan. He estimated up to 50 per cent of the enemy casualties had been caused by artillery fire. As Robert O'Neill states in Vietnam Task:

‘The intensity and accuracy of the defensive fire which the gunners laid around the beleaguered company was of critical importance to the outcome of the day.’

1.1 The Australian artillery capability contains three components: offensive support (OS), surveillance and target acquisition (STA), and GBAD. This publication uses the term ‘field artillery’ to refer to field and medium regiments and their integral STA capabilities. The term ‘STA’ refers to the various locating and target acquisition (TA) assets within the force-level STA unit. These assets include weapon locating radars (WLRs) and unmanned aerial vehicles (UAVs). The term ‘GBAD’ includes the missile systems, sensors, communications, and command and liaison elements that are integral to an air defence (AD)

1. O’Neill, R. J. 1968, Vietnam task; The 5th Battalion, the Royal Australian Regiment, 1966/67, Cassell Australia, Melbourne, p. 84.

LWD 3-4-1, Employment of Artillery, 2009
1.2 Land warfare is multidimensional. It involves the integration of military formations and the coordinated application of fighting power to defeat the enemy’s will to resist. Modern land warfare takes place across the range of tactical activities related to operation themes, as illustrated in Figure 1–1. Artillery is able to conduct a wide range of missions and move effortlessly between activities throughout the spectrum of conflict and across the comprehensive range of military activities.

Figure 1–1: Range of Tactical Activities Related to Operation Themes

1.3 Australian military history has many examples of successful artillery engagements, including large commitments to the Allied cause during the two world wars, involvement in Korea and Vietnam, and involvement in the more recent conflicts in Afghanistan and Iraq. A concise history of artillery is contained in Annex A.

1.4 This chapter describes the role, characteristics, tasks, capabilities, principles of employment and limitations of artillery, and the contribution of artillery to land warfare.
SECTION 1-2. ROLES

1.5 **Artillery.** The role of artillery is to maximise the ADF’s fighting power through the provision of OS coordination and targeting, indirect firepower, STA, and GBAD.

1.6 **Field Artillery.** The role of field artillery is to provide timely and accurate indirect fire support (FS).

1.7 **Surveillance and Target Acquisition.** The role of STA is to conduct systematic surveillance and accurate TA and targeting in order to enable field artillery to provide FS.

1.8 **Ground Based Air Defence.** The role of GBAD is to defeat or reduce the effectiveness of enemy offensive airpower.

SECTION 1-3. CHARACTERISTICS

1.9 The characteristics of artillery are as follows:
   a. flexibility,
   b. versatility,
   c. responsiveness, and
d. reach.

1.10 **Flexibility.** Flexibility is the ability to switch quickly from one task to another, or to be capable of achieving a range of tasks during a mission. Artillery achieves flexibility through the capacity to mass indirect FS, and to shift that fire between targets quickly and without the need to redeploy. It also achieves flexibility through a variety of weapons, the diversity of ammunition natures, and its ability to shift effort without moving the guns. For example, field artillery may suppress a target to support an attack in one mission and, within minutes, be firing illumination rounds to support another mission in a different area. FS tasking may be amended at any time in response to changes in the tactical situation. The ability of artillery to rapidly shift its fire in response to changes in the
tactical situation provides a land commander with inherent flexibility.

1.11 **Versatility.** Versatility is the ability to perform a range of tasks, as shown in Section 1-4. Artillery can be employed throughout the spectrum of conflict and across the range of military activities shown in Figure 1–1. Artillery gains its versatility from its ethos, its equipment and its organisation. The versatile ethos is instilled through collective training and the application of mission command. This versatility is enhanced by the ability of gunners to leave their guns and undertake a number of unrelated tasks in support of other lines of effort.

1.12 **Responsiveness.** Artillery can adjust onto any target within range and have rounds on the ground within minutes. Artillery has a unique ability to support a number of units spread over a wide geographical area in a timely manner. Reach and speed of reaction ensure that any response is rapid and accurate.

1.13 **Reach.** The range of artillery systems and the access to the assets of some coalition partners adds depth to the battlefield.

**SECTION 1-4. TASKS**

**Field Artillery Tasks**

1.14 Field artillery tasks include:

a. suppression;
b. neutralisation;
c. destruction;
d. harassment;
e. illumination;
f. interdiction;
g. counter-battery fire (CBF); and
h. coordination of fires.
1.15 **Suppression.** Suppression limits the ability of a target to perform its role. Suppression may cause casualties if a lethal nature of ammunition is used. However, the primary requirement of suppression is to create the conditions for friendly manoeuvre. Suppression generally has no lasting effect after the fire has lifted and is used to prevent effective fire on friendly forces. Suppression can be achieved by the following:

a. blinding a target, or screening a friendly force with smoke;

b. blinding night observation devices with illuminating ammunition; and

c. engaging targets with a volume of fire that limits their ability to engage friendly forces.

1.16 **Neutralisation.** Neutralisation causes casualties and prevents the target from taking action such as moving, observing or employing weapon systems. Neutralisation renders the target ineffective or unusable for a temporary period, pending repair or reconstitution. Neutralisation can only be achieved by the following:

a. employing lethal ammunition natures,

b. achieving coverage of the target area, and

c. achieving sufficient density and duration of fire to prevent effective action by the target.

1.17 **Destruction.** Destruction requires a heavy weight of fire with specific ammunition. Its purpose is to inflict a high level of casualties on a given target or the physical destruction of selected individual high-payoff targets (HPTs). A destroyed target is rendered permanently combat ineffective in its intended role, although some elements may survive. The destruction of a force may require up to three times the ammunition expenditure of neutralisation and 10 times the requirement for suppression, and in many cases may not be an achievable FS task given available resources. The destruction of selected HPTs or individual systems with precision guided
munitions (PGM) may be more appropriate. The commander and the FS planner must consider whether neutralisation or suppression may be more efficient or more appropriate.

1.18 Harassment. Harassment is the disruption of the enemy by impeding movement, impeding supply and forcing redeployment through OS engagements. Harassment is normally conducted independently of friendly manoeuvre and can be achieved by firing a variety of ammunition natures at varying intervals and rates of fire. Harassing fire may also achieve the secondary outcomes of attrition and demoralisation.

1.19 Illumination. Illumination is the provision of white or infra-red light with illuminating projectiles.

1.20 Interdiction. Interdiction is usually a depth fire task for medium and heavy regiments. It is planned at higher levels and seeks to isolate selected parts of the enemy force and help shape the battle in the commander’s favour. Interdiction fire is used to delay, disrupt and weaken the enemy by the following means:

a. engaging enemy forces and their logistic support in depth,

b. damaging or destroying infrastructure such as bridges, and

c. denying the enemy unrestricted use of a point or area.

1.21 Counter-battery Fire. Field artillery provides CBF to limit the effectiveness of enemy artillery.

1.22 Coordination of Fires. Field artillery integrates OS assets with combined arms teams and provides close support to manoeuvre forces. Field artillery coordinates the destruction of targets deep in the enemy rear areas through the employment of other OS assets.

Surveillance and Target Acquisition Tasks

1.23 A STA system combines the means of acquiring information and targets, and carrying out an appropriate level of target information processing. The STA system incorporates a
cyclical process which informs, directs and updates the priorities and the rate of the collection effort.

1.24 The principal tasks for STA are as follows:
   a. surveillance, and
   b. TA.

1.25 **Surveillance.** Surveillance is described as the systematic observation of aerospace, surface or sub-surface areas, places, persons, or things by visual, aural, electronic, photographic or other means. STA units conduct surveillance, in conjunction with other arms, to collect and disseminate tactical information.

1.26 **Target Acquisition.** TA is described as the detection, identification and location of a target in sufficient detail to permit the employment of weapons. STA units conduct TA of enemy forces. The location of enemy artillery (including mortars) is important to enable CBF of the enemy indirect fire threat.

**Ground Based Air Defence Tasks**

1.27 GBAD is an integral part of air, land and, in some cases, maritime battles. GBAD contributes to land manoeuvre by engaging hostile aircraft with missiles; collecting information for the ADF air battle management system (ABMS), and providing advice to commanders, their staff and units on the air threat and passive AD measures.

1.28 GBAD fights as part of a combined arms team. However, the scarcity of GBAD means that the units will often be tasked to defend vital assets. The following are the principal tasks allocated to AD units:
   a. defend, and
   b. destroy.

1.29 **Defend.** AD assets, including all arms assets, are often tasked with defending a location or an asset against an air threat.

1.30 **Destroy.** Aircraft are a valuable and scarce resource. The destruction of any air asset will not only protect our own forces.
and allow greater freedom of action, but also weaken the enemy.

SECTION 1-5. CAPABILITIES

1.31 Artillery capabilities include:
   a. survivability,
   b. mobility and deployability,
   c. interoperability,
   d. guarantee,
   e. precision,
   f. surveillance,
   g. TA,
   h. reconnaissance,
   i. the sensor–shooter relationship, and
   j. information management and dissemination.

1.32 Survivability. Artillery achieves survivability by dispersion, frequent relocation and, in the case of self-propelled (SP) guns, the protected mobility of the platform.

1.33 Mobility and Deployability. Artillery must be as mobile and deployable as the supported force. Mobility is also important for survivability. Artillery units are skilled at rapidly packing, moving and setting up again. They carry only first-line ammunition, with further ammunition readily available through the supply chain.

1.34 Interoperability. Operational deployments will normally be joint and coalition in nature. The battlespace management system is compatible with key coalition partners. LOs, common terminology and standardised procedures enhance interoperability.
1.35 **Guarantee.** Artillery C2 terminology outlines the guarantee of FS that a commander will receive from artillery. C2 is discussed in detail in Chapter 3.

1.36 **Precision.** Artillery limits collateral damage and unnecessary casualties by employing PGM.

1.37 **Surveillance.** Surveillance is the systematic observation of the aerospace, surface or subsurface areas, places, persons or things by visual, aural, electronic, photographic or other means. Surveillance missions aim to observe points or areas in order to detect change. The information gained through surveillance may provide a trigger for the more detailed tactical reconnaissance required by commanders prior to commencing tactical missions. UAVs are the primary tactical air surveillance platform. Area surveillance includes:

a. **Wide Area Surveillance.** Surveillance is conducted over dispersed areas to provide coarse-grain detection and possible classification of those detections.

b. **Focal Area Surveillance.** Focal surveillance aims to observe a localised area, activity or target in order to identify and track threats.

1.38 **Target Acquisition.** Artillery uses a variety of assets to conduct STA. This includes joint offensive support teams (JOSTs), sensors organic to GBAD units (which can provide the local air picture and also be used in the ground surveillance role), and UAVs. TA is a comprehensive process from the initial detection of a target, to the application of fire on that target, and concluding with the battle damage assessment of the results. Artillery provides assets that detect, identify and locate targets in sufficient detail to permit the employment of weapons. Sensors and information from the ADF ABMS enhance understanding of the broad area and local area air picture, and advise commanders on the air threat.

1.39 **Sensor–Shooter Relationship.** The sensor–shooter relationship, enabled by the battlespace management system, provides the commander with real-time information for the real-time interdiction or prosecution of targets.
1.40 **Information Management.** Information generated by ISTAR assets is coordinated and managed by the ISR system through the surveillance and target acquisition cell (STAC). Information management is time sensitive.

### Types of Fire

1.41 Field artillery can produce the following types of fire:

a. **Preparation Fire.** Preparation fire is normally delivered prior to an attack or a phase of an attack. Preparation fire may be employed:
   
   (1) to fix the enemy,
   
   (2) to weaken enemy resistance,
   
   (3) to provide neutralising or suppressive fire, and
   
   (4) to demoralise the enemy.

b. **Defensive Fire.** Defensive fire (DF) is delivered to protect a unit engaged in a defensive action by disorganising enemy preparations for an attack or counterattack and breaking up the assault. DF tasks include:

   (1) **Counter-preparation Fire.** The aim of counter-preparation fire is to disrupt enemy preparations for an attack or counterattack and to inflict casualties on their reserves during the assault.

   (2) **Close Defensive Fire.** Close DF includes priority DF, standard DF and final protective fire. Close DF aims to break up enemy attacks by engaging the enemy when they are forming up or assaulting. Subsequently, DF is adjusted to continue engaging them during their assault until they are forced to break off the attack.

   (3) **Priority Defensive Fire.** The priority DF should be sited on the most likely enemy approach at the point at which initial detection of enemy forces is likely. This is the first target where artillery will be
used, and guns remain laid on the priority DF whenever they are not in use.

(4) **Final Protective Fire.** There is only one final protective fire per fire unit (FU), and this concerns the final target that is to be engaged by indirect fire prior to engagement by direct fire weapons.²

(5) **Covering Fire.** Covering fire is employed during the attack and counterattack to protect assaulting troops by neutralising enemy direct fire weapons that can engage them.

c. **Counter-battery Fire.** The aim of CBF is to destroy, neutralise or force the redeployment of enemy indirect fire weapon systems. This type of fire includes the engagement of all components of enemy indirect fire systems, such as weapon platforms, ammunition dumps, sensors and C2 assets. To achieve lasting neutralisation, large numbers of guns and ammunition are necessary. CBF can be planned in advance as part of an attack or react to opportunity targets when supporting defensive activities.

d. **Harassing Fire.** The aims of harassing fire are:

(1) to reduce enemy morale by interfering with movements of troops and supplies and preventing rest, and

(2) to force the enemy to disperse and thus lose time.

e. **Interdiction Fire.** The aim is to delay, disrupt and weaken the enemy.

f. **Smoke.** Smoke is used to blind the enemy, screen the movement of own troops or both. While blinding the enemy may prevent observed fire by artillery and aimed

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² This definition is from **LWP-CA (OS) 5-3-2, Target Engagement, Coordination and Prediction – Duties in Action, 2003.** This definition differs from the traditional artillery understanding of final protective fire.
fire by direct fire weapons, it will not affect weapons firing on fixed lines or artillery engaging recorded targets.

g. **Illumination.** Illuminating ammunition is used at night:

1. to aid the observation of fire,
2. to assist the movement of own troops,
3. to illuminate enemy activity, and
4. to diminish the effectiveness of some enemy night observation equipment.

h. **Suppression of Enemy Air Defences.** The aim of the suppression of enemy ADs is to destroy or neutralise known AD weapons immediately before friendly aircraft operate along the approach and egress corridors and in the target engagement area (EA). The suppression of the enemy ADs is normally planned and coordinated at joint force level or higher.

**SECTION 1-6. PRINCIPLES OF EMPLOYMENT**

1.42 The principles to be observed when planning for the employment of artillery are as follows:

a. cooperation,

b. concentration of fire,

c. economy of effort, and

d. sustainment.

1.43 **Cooperation.** Cooperation is achieved in the following three ways:

a. **Field Artillery.** Effective FS involves knowing when, where and what type of fire is required. This is achieved by planning, liaison, standard terminology and status of command.

b. **Surveillance and Target Acquisition.** STA commanders must maintain a close liaison with all elements of the...
ISTAR system. STA elements may be located in the vicinity of manoeuvre elements without any direct responsibility to those units but must still liaise in respect of real estate, protection and resupply.

c. **Ground Based Air Defence.** The Ground Based Air Defence Commander (GBADC) achieves cooperation by providing LOs to the Air Force, integrating land force assets into the overall AD plan, and providing advice to the local commander on the tactical air threat.

1.44 **Concentration of Fire.** While individual weapon systems and units may be dispersed for protection, the ability to concentrate the fire of those dispersed systems quickly is essential. The degree of concentration will depend on the task and the type of fire required to prosecute the target.

1.45 **Economy of Effort.** Economy of effort is achieved by overlaying multiple FUs to achieve redundancy, maintaining a reserve of ammunition to engage targets of opportunity, coordinating artillery fire with that of other weapons to achieve a greater weight of fire, and having logistic arrangements that support the application of fire. Economy of effort implemented in one area allows for better concentration of force at decisive points at critical times. Linking sensors to shooters enhances economy of effort by releasing reconnaissance and surveillance assets for other tasking. Economy of effort is important for GBAD resources, which are limited in number and not able to protect every vulnerable point or asset.

1.46 **Sustainment.** Sustainment is critical to the uninterrupted provision of FS. It involves the supply of ammunition, the maintenance of systems, and the protection of logistic and technical support assets. In high-intensity conflict, the supply of artillery ammunition is one of the largest single components in the resupply chain. Up to 70 per cent of Army’s lift capability may be required to supply artillery ammunition. The nature of modern artillery systems has created an increased requirement for technical maintenance and information technology support. CSS is discussed in Chapter 8.
SECTION 1-7. LIMITATIONS

1.47 Commanders must be aware of the limitations of artillery in order to use the capability effectively.

Field Artillery Limitations

1.48 The limitations of field artillery include:
   a. firing and communication signatures,
   b. limited destruction capability,
   c. the environment,
   d. communications,
   e. self-protection,
   f. logistic support, and
   g. CBRN defence.

1.49 **Firing and Communication Signatures.** Such signatures can expose the location of artillery elements to detection and therefore attack. The siting of equipment, the use of terrain, engagement policies and radio discipline are some of the ways in which this risk is mitigated.

1.50 **Limited Destruction Capability.** If using unguided ammunition, field artillery requires considerable quantities of ammunition to destroy targets. Even with precision and smart ammunition, the successful destruction of targets cannot be guaranteed. Commanders should consider artillery as a last resort when requiring destruction as an outcome, as other systems, such as armour or aviation, may be better suited to the task.

1.51 **Environment.** Artillery is capable of operating in a wide range of weather and terrain. However, the characteristics of different environments may require commanders to adopt or modify procedures to overcome these challenges. Further information on the relationship between artillery and specific operating environments can be found in Chapter 9.
1.52 **Communications.** Artillery relies upon uninterrupted communication to provide FS at the right place and time. Attacks against friendly communications, through lethal and/or non-lethal means, require own forces to maintain sufficient extra equipment and nets to have a redundancy.

1.53 **Self-protection.** Artillery has no discrete self-protection force. If gunners are required to defend themselves they will not be able to man the guns and provide FS. This will impact on the combat power of the supported force.

1.54 **Logistic Support.** Artillery relies heavily on CSS, especially ammunition resupply. When high ammunition expenditure rates (AER) are required, the positioning of distribution points and the overall resupply plan are critical.

1.55 **Chemical, Biological, Radiological and Nuclear Defence.** CBRN conditions can impose limitations on artillery operations. This is examined in more detail in Chapter 9.

### Surveillance and Target Acquisition Limitations

1.56 Commanders must be aware of the limitations of STA to maximise its application within the battlespace. These limitations include:

- a. sensor limitations;
- b. changes in information requirements (IRs);
- c. asset security; and
- d. the environment.

1.57 **Sensor Limitations.** The enemy may exploit sensor limitations through the technical disruption or neutralisation of the sensors. False information may also be supplied to mislead information processors.

1.58 **Changes in Information Requirements.** Some assets, such as WLR, may be readily oriented onto a new zone to cover a change in an IR. However, other assets such as patrols or listening posts may take time to reorient before the change in IR can be covered.
1.59 Asset Security. STA assets have a limited self-defence capability and require support from external organisations or collocation with other units. For example, WLRs are key targets for the enemy. Therefore, efforts must be made to enhance their survivability through emission control policy and deployments.

1.60 Environment. Information on the relationship between STA and specific operating environments is provided in Chapter 9.

Ground Based Air Defence Limitations

1.61 GBAD has the following limitations:
   a. assets,
   b. signature,
   c. environment,
   d. communications,
   e. range, and
   f. logistic support.

1.62 Assets. There will never be enough GBAD available to protect every important friendly asset. As a result, GBAD units are tasked at the highest practical level. This can involve assigning GBAD to protect civilian assets and military forces, facilities or bases belonging to other Services or nations.

1.63 Signature. Firing, movement, radar and communication signatures give enemy forces an opportunity to locate GBAD positions.

1.64 Environment. The impact of different environments on GBAD is described in Chapter 9.

1.65 Communications. GBAD forces rely on HF and VHF communications between themselves and the ABMS. This limits the speed with which information is passed and the level of detail available. The use of VHF communications also limits the ability to disperse elements of the same unit, while HF communications increase the possibility of losing
communications with distant nodes in the airspace control/defence network. These communications means also increase the opportunities for electronic attack by enemy forces.

1.66 Range. The relatively short ranges of in-service weapons means that some aircraft can deliver weapons (such as missiles) and conduct reconnaissance or surveillance from beyond the range of GBAD.

1.67 Logistic Support. The complex and specialised nature of GBAD weapons and sensors requires a well-defined link to the national support base.

SECTION 1-8. CONTRIBUTION TO LAND WARFARE

Contemporary Operating Environment

1.68 The characteristics of the contemporary operating environment are evolving lethality, density of battle, exploitation of complex terrain, operational uncertainty and information dominance. These characteristics combine to produce a range of challenges to land warfare, where soldiers fight in a multidimensional battlespace against forces seeking to develop and exploit an asymmetric advantage and thereby influence the perceptions of the population.

1.69 Artillery assets can be deployed across the spectrum of conflict. Artillery is able to support forces with fire, use both lethal and non-lethal munitions, provide vital information in both combat and non-combat conditions, and provide personnel to lines of effort that do not require combat forces.

Conduct of Land Warfare

1.70 Comprehensive Range of Military Activity. Throughout the range of military activity and the spectrum of conflict, artillery provides support to offensive, defensive and stability activities. In addition to firepower, artillery provides commanders with enhanced situational knowledge drawn from sensors, networked communications and the diversity of assets. This
allows commanders to adapt their plans to changing conditions in the battlespace. Artillery units can also deploy without their guns to assist with stability and reform. All artillery is capable of fighting at one end of the spectrum and delivering public information, population support and indigenous capacity building at the other end. It can also deliver this support across a number of lines of effort simultaneously.

1.71 Mission Command. Mission command is critical to allow the force the freedom of action to exercise initiative and position itself to provide optimum support. Artillery is a key contributor to land manoeuvre through the achievement of dislocation, disruption and surprise to hostile forces. The speed at which artillery can shift fire to support different activities contributes to tempo. Artillery commanders must be given the flexibility to relocate, as and where necessary, to provide support to a diverse range of activities.

1.72 Adaptive Action. Adaptive action is an iterative process of forcing the enemy to respond, learning from those responses, and changing behaviour accordingly. Adaptive action incorporates outputs from deliberate planning as the start point for subsequent interaction with the operating environment. Artillery is able to stimulate a response from a known enemy. In a complex competitive learning environment where friendly forces are fighting an adversary who can shelter below the discrimination threshold, artillery must provide precision fires or precision guidance to those fires in order to permit friendly forces to close with the enemy and react quickly and disproportionately to enemy responses. Friendly forces can learn from and adapt to the response and seek to press an advantage. The continued stimulation of the hostile force should produce predictable responses that can be readily countered, provide opportunities that can be exploited, and provide an insight to the true centre of gravity and its critical vulnerabilities.

1.73 Lines of Effort. The land force takes a comprehensive approach to influence and shape the overall environment. This includes a diverse array of tactical tasks required to win the
fight and influence the people. Artillery is able to operate throughout the spectrum of these tasks. Conceptually, land forces operate across five interdependent and mutually reinforcing lines of effort (joint land combat, population protection, public information, population support and indigenous capacity building). All land force activities contribute to one or more of these lines of effort. Artillery is flexible and is able to transition between and across multiple lines of effort. For example, field artillery may be used in an offensive tactical action to remove organised resistance. The troops can be used without their field guns to provide protection and security to a threatened population through roadblocks, use their vehicles to transport vital stores for humanitarian assistance (HA), and assist with training local security forces. Artillery is equally effective in both combat and non-combat lines of effort.

1.74 The land component of a joint force uses manoeuvre warfare as the basis for executing land strategy. The combined arms approach is designed around the tenets of manoeuvre and the application of firepower. Artillery contributes to the combined arms fight by contributing to situational knowledge, disrupting the enemy during combat, providing protective fire and minimising the air threat.

1.75 Airspace is also becoming more complex in terms of both the air threat and the demands of airspace battle management. Future hostilities are likely to see the use of both conventional and unconventional air power. GBAD has a critical part to play in the air battle.

Annex:

A. Concise History of Australian Artillery
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1. On 15 September 1949, the Royal Australian Artillery Regiment (Regular Army) and the Royal Australian Artillery (Militia) became one regiment under the title Royal Australian Artillery (RAA). Her Majesty Queen Elizabeth II granted the RAA the title of the Royal Regiment of Australian Artillery on 19 September 1962.

Pre-Federation

2. Prior to 1855 artillery in the Colony of Australia was composed entirely of permanent forces provided by England. Colonial volunteer artillery units were formed in NSW in 1855 and were later introduced in the other states. By 1870, the last of the imperial forces from England had been withdrawn from the colony.

3. On 1 August 1871, ‘A Bty’ of the NSW Artillery was raised as the first Australian Permanent Artillery Force. (This date is recognised as the formation of the RAA and celebrated each year by all gunners.) By 1877 this force had been increased to three batteries.

4. The first Australian force for overseas service sailed on 3 March 1885, comprising A Fd Bty and some infantry, disembarking at Suakin, Egypt. 1885 also saw the School of Gunnery established at Middle Head, NSW.

5. By 1899, the three eastern states had well-established permanent artillery forces, and on 14 of July 1899 they were designated the RAA with the NSW Regiment, the Queensland Regiment and the Victorian Regiment respectively.

6. In 1900, A Fd Bty was again deployed to support the South African war, disembarking at Capetown on 5 February 1900 and returning to Australia in September 1901. With the Federation in 1901, all permanent forces in the Commonwealth...
of Australia were combined. In recognition of their services during the South African war, the RAA was presented an ‘Honourable Insignia’ in 1904. In 1909, this title changed to the ‘King’s Banner’.

World War One

7. A rapid expansion of artillery units commenced in 1914, and by 1918 Australian artillery batteries had served with distinction in Gallipoli, France, Flanders, Egypt and Belgium. The greatest concentration occurred during the Battle of the Somme, and at one stage it was estimated that the adjustment of targets alone had accounted for over a quarter of a million rounds per day.

8. An important development affecting artillery during this period was the use of aircraft in battle. The need to develop weapons capable of defending ground troops and installations against the air threat led to the establishment of AD artillery.

Between the Wars

9. The period 1919–39 saw the RAA reduced to coastal batteries and one regular field battery. The Militia (later to be re-titled the Citizen Military Force and later the Army or GRes) units continued to develop and maintain the skills and techniques learnt in WWI. By 1938, the artillery commenced changing over from horse-drawn to gun tractors (trucks) and, as war loomed, the artillery entered a new era.

World War Two

10. During 1939–45 the RAA saw another rapid expansion and the development of new equipment and tactics. The older equipment was replaced by new equipment, including search lights for AD artillery, sound-ranging recorders to locate enemy artillery, and the famous 25-pounders (this terminology was used to describe the weight of the project fired and has now been replaced by ‘calibre’). The control of artillery was centralised at the highest level and concentrated the fire of the maximum possible number of guns to support infantry. CBF was organised to an extent previously unknown, while
divisional and corps concentrations were capable of being fired at a few minutes’ notice.

Post World War Two

11. Once again with demobilisation came the reduction of Australia’s Defence Force to a small permanent military force supported by a large part-time force. The new part-time Army, the Citizen Military Force was raised in 1948, with its initial strength derived from ex-members of wartime forces.

12. In 1949, 1 Fd Regt was raised at North Head as a regular unit and once again the steady expansion of regular units and batteries began.

13. In 1950, the battle honour ‘Ubique’ (‘everywhere’) and the motto ‘Quo Fas Et Gloria Ducunt’ (‘whither right and glory lead’) were issued by Royal Warrant to the RAA.

14. In 1962, Her Majesty Queen Elizabeth II (the Captain General of the RAA) granted the title of the Royal Regiment of Australian Artillery.

British Commonwealth Occupation Forces

15. Due to the scale and anticipated operations for raising the force to Japan, the RAA commitment was one field battery rather than the normal field regiment. The battery selected for this task was the 2nd Mountain Battery, which had been formed in 1943 from A Fd Bty (the Army’s only regular field artillery unit between the wars) and in March 1946 was redesignated to A Fd Bty, returning to Australia in December 1948.

16. By February 1950, the Australian Government had announced the introduction of a National Service Scheme and commenced the full withdrawal of the remaining troops from Japan.

Korea

17. When North Korea invaded South Korea in mid-1950, Australia committed 3 RAR as part of the British Commonwealth Brigade. Although no Australian artillery units took part, Australian gunners were involved from the beginning through instructors, volunteers and secondments with 3 RAR and
16 Fd Regt RNZA, and later with 1 RAR. During this period the value of air operations was recognised, with training commencing at the School of Artillery. This valuable experience for the gunners was soon transferred to other conflicts.

**Malaysia, Malay–Thai Border and Borneo Confrontation**

18. Australia was now able to contribute to requests from Britain to provide troops to Malaya. In 1955, an Australian battery was deployed to support the 28th Commonwealth Infantry Brigade Group. During this period RAA units were renumbered, with A Fd Bty becoming 100 (A) Fd Bty and the raising of a new 105 Bty.

19. 105 Fd Bty arrived at Penang in October 1955 with eight 25-pounders and the commencement of re-learning the art of jungle warfare. It was also a start to the use of the RAA in out-of-role tasking as infantry. 100 (A) Fd Bty relieved 105 Bty and by 1958 it had been redesignated A Fd Bty.

20. Further unrest and confrontation led to the need for more ground troops, and 111 LAA Bty departed for Malaysia for a 6-month deployment in June 1966. Commencing their tour in role, it was not long before they were tasked to infantry roles. As the deployment length increased, the rotation of troops commenced, and by the end of the tour over 260 personnel had served as part of the battery. In June 1966, 110 LAA Bty arrived in Malaysia and 111 LAA Bty returned to Australia. By June 1967 the confrontation had subsided and the 110 Bty National Service personnel had fulfilled their commitment and were replaced by members of the second National Service intake.

21. The Emergency officially ended in 1966, with RAA sub-units continuing to provide support throughout the Vietnam War, with the last rotation by 108 Fd Bty relieving 107 Fd Bty in September 1969.

**South Vietnam**

22. RAA personnel were part of the Australian Army Training Team Vietnam from 1962. The increase of deployed forces to
become a task force in Vietnam saw 105 Fd Bty deployed in support. This commenced the RAA gaining specific skills to deploy by helicopter with the first deployment in early November 1965. By May 1966 the RAA commitment had increased to include 1 Fd Regt, including 103 Fd Bty and a detachment of 131 Div Loc Bty, and taking command of 105 Fd Bty and 161 Fd Bty RNZA. DF tasks and deployment to FS bases commenced.

23. Two major battles that remain etched in our history during this period are the Battle of Long Tan and the Battle of Coral/Balmoral.

24. The Long Tan rubber plantation on a tropical wet afternoon in South Vietnam set the scene for the battle. 1 Fd Regt, comprising 103 Mdm Bty and elements of 131 Loc Bty with 161 Fd Bty, RNZA and a 155 mm US Bty, were in support of the 1st Australian Task Force (1 ATF) at a FS base in Nui Dat. Repeated incoming mortar fire led to D Coy, 6 RAR deploying to search the area. As D Coy established contact with a large enemy force, the heavy monsoonal rain commenced and the battle had begun. Between approximately 1600 hr on 18 August 1966 and 0300 hr the next day, it is estimated that over 2639 rounds of 105 mm and 155 rounds of 155 mm were expended to support D Coy at close range. The relationship between Australia and NZ combined with the coordination of armour, infantry and artillery, had once again proved itself.

25. The deployment of 1 ATF as part of Operation TOAN THANG (‘Complete Victory’) was the first brigade operation with all combat arms undertaken by Australians since WWII, and the largest operation that 1 ATF conducted in Vietnam. 1 ATF activities in this period disrupted enemy infiltration and attacks against Saigon to such an extent that the Australian force experienced enemy regimental sized attacks on both Fire Support Base CORAL and Fire Support Base BALMORAL. During the period 12 May to 6 June 1968, 12 Fd Regt, comprising RHQ, 102 Fd Bty and elements of 131 Loc Bty with 161 Fd Bty RNZA and a US 155 mm Mdm Bty, deployed in support of 1 ATF, including 1 RAR and 3 RAR. These 26 days
saw a series of action in and around the FS bases. The lessons learned were immediate and had to be mastered quickly; the battles included fierce close-quarter contact, the enemy openly attacking the Australian defensive positions, and the successful coordination of tanks, guns and air support for the infantry. 102 Fd Bty received the honour title ‘Coral’ from his Excellency MAJGEN P. M. Jeffery in May 2008, 40 years after the battle. This is the only honour title that has been issued to an RAA unit; in fact within the ADF.

26. The rotation of artillery units increased and continued until December 1971 with the drawdown and return to Australia of 104 Fd Bty. National Service was abolished in December 1972 and the RAA numbers in units declined rapidly. Many of the Citizen Military Force artillery units struggled to produce one full-strength battery.

Post-Vietnam

27. The RAA struggled after Vietnam to regain the techniques to apply gunnery in open country, including deploying a regiment, camouflage and moving by road by day and night in a conventional war setting. It was soon re-learnt that the full value of artillery was only effective when command was held at divisional or higher level. Divisional missions were again fired in 1977.

28. In March 1977, Her Majesty Queen Elizabeth II, as Captain General, dedicated the RAA National Memorial on Mount Pleasant in Canberra.

29. Australia’s commitment to personnel for Rifle Company Butterworth has continued for many years, with RAA personnel attached to their supported arms companies, and in more recent times sub-units have been re-roled as a rifle company. The non-infantry commitment has slowly increased from the late 1970s, with the RAA initially committing platoon strengths, and more recently company strengths have been provided by field and AD gunners to conduct this tasking.
30. The UN continued to develop after WWII and had gained in its authority. It was now asking countries around the world to commit troops to monitoring, peacekeeping and peace enforcement operations.

31. The UN Truce Supervision Organisation was established in 1948 and has been supported by Australian personnel since 1956. The RAA has committed personnel in a variety of roles, including staff officers and military observers in Israel, Syria, Lebanon and Jordan.

32. Although no RAA unit deployed to Rhodesia, a large contingent of individual gunners was seconded to this operation for out-of-role tasks during the late 1970s. This began an era where Australia and the RAA commenced support to the UN through a variety of roles, including individual military observers to a range of UN requests for assistance.

33. The Multinational Force and Observers in the Sinai commenced in 1981. The RAA has provided members to assist in the peace process by monitoring the treaties of 1978 and 1979.

34. In August 1990, Iraq invaded Kuwait and Australia’s commitment included a short-notice task to deploy an RBS-70 detachment from 111 AD Bty to bolster the Navy’s organic AD umbrella for the Australian ships deployed. The operation concluded at the end of February 1991 without the detachment firing in defence of attack.

35. Approximately 50 gunners were deployed to Cambodia during 1991–93 as part of the Australian commitment to support free elections.

36. Eleven gunners served, mainly as signallers, in the Western Sahara from 1992 and 1993.

37. By early 1993, a battalion group based on 1 RAR, including the command, liaison and observation group from 107 Fd Bty, was deployed to Somalia. These gunners provided a dual capability block of being capable to call for allied FS if required and also
being out-of-role tasked as the Civilian-Military Operations Team.

38. 1994–96 saw RAA members providing support to the UN mission in Rwanda.

39. The Australian commitment to East Timor commenced with support as UN Observers to the vote for independence from Indonesia. By September 1999 it had escalated to the deployment of the UN-mandated International Force in East Timor. Although the guns of 4 Fd Regt were moved to Darwin, they were not deployed and the gunners from 108 Fd Bty supported out-of-role tasking as a 5th infantry company, civil–military liaison and other roles. Australia has maintained a constant commitment to Timor Leste since and also assists in the Defence Cooperation Program, as well as providing military LOs and a battlegroup. Successive rotations have included the deployment of RAA sub-units re-roled as infantry to support battalion (+) battlegroups. Since 1996, the term 'gulf company' has crept in to common usage to identify the RAA composition of additional rifle companies to battalions deployed as battlegroups to Timor Leste. This practice ceased under the CA direction in 2008, and deployed sub-units were directed to retain their organisational titles. The Australian commitment to the government and people of Timor Leste continues.

40. Unrest in the Solomon Islands commenced in 2000, and the RAA provided support in a variety of RAA and out-of-role positions in response to the initial UN request to assist. Since the development of the Australian-led Regional Assistance Mission to Solomon Islands in 2003, the ADF commitment continues.

41. Individual gunners have been seconded to support RAN operations in the Indian Ocean since 2001, with the main support as boarding parties to assist the RAN tasking. The RAA GRes units have provided much of this support.

42. The 131 STA Bty skills with WLR were soon to be called on as the ADF committed to the ongoing conflict in Iraq. The commitment by 131 STA Bty, and later as 20 STA Regt,
increased when the ADF established the UAV capability in the unit. The remaining RAA commitment to Iraq is based on individual, small teams and capability. The RAA has provided joint fires observer teams, commanders at various levels and components of the training teams. With the reduction of Australian forces in 2008, the RAA commitment to the rehabilitation and reconstruction of Iraq continues.

43. 20 STA Regt continued with artillery commitments to Afghanistan, including a long-term rotation of UAV detachments of 30 personnel from 20 STA Regt to operate the ScanEagle UAV. Continual RAA support has included Joint Offensive Support Coordination Centres (JOSCCs) and JOSTs by rotation. Additionally, by 2008, 15 gunners from 8/12 Md Regt had deployed as part of the UK Task Force HELMAND. These gunners are serving under a bilateral arrangement to further enhance the training and experience of the Australian Army’s OS capability. Further rotations from RAA units continue.

44. The civil war which had lasted more than 20 years led Australia to commit to the UN Mission in Sudan. The RAA has contributed military observers to this tasking since 2005. The commitment continues.

45. The UN requests for Australian support continue, and with these requests the RAA continues to provide personnel both in role and out-of-role tasking.

46. The last 30 years has seen a development in technology ranging from early computers and lasers to state-of-the-art equipment. New field/medium guns and smart ammunition are under project.

47. Recent years have seen the relocation and remodelling of the RAA. Undoubtedly, more change and evolution will come. The HQ and functions of the Directorate of Artillery, Commander Land Command Artillery and Divisional Artillery Commanders have been disbanded. 8/12 Mdm Regt moved to Darwin in the 1990s. The School of Artillery was relocated to Puckapunyal. The STA Regt has been raised, comprising 131 Loc Bty and
132 UAV Bty. Batteries have been reallocated within units, others have been raised, some have been redesignated and some have been disbanded. Reserve units are trialling 81 mm mortars to replace field guns.

References and Suggested Reading

48. The following publications provide further information on the annex:


d. McAuley, L. 1988, *The battle of Coral*, Hutchinson of Australia, Hawthorn, Victoria; and

e. School of Artillery, 1970, ‘Guns and gunners’, a brief history of artillery, School of Artillery, North Head, Manly.
CHAPTER 2

ARTILLERY ORGANISATION

SECTION 2-1. INTRODUCTION

2.1 Artillery units are the basis for raising, training and sustaining a force. On deployment, artillery forces may be regrouped, especially if support is required in widely dispersed locations. But, using the principle of concentration, this regrouping is generally achieved on a C2 basis, rather than by a physical reallocation of forces wherever possible. Whichever method is used, artillery will support task-organised structures to achieve combined arms outcomes.

2.2 Task organisation refers to the regrouping of forces for specific activities and phases and is a key element of combined arms forces. A task-organised force consists of an appropriate unit HQ with subordinate sub-units grouped to meet the requirements of the task. Combined arms grouping seeks to maximise the effectiveness of a force while minimising its limitations, by combining the capabilities of armour, aviation, artillery, infantry and engineers. Artillery HQ do not normally command combined arms forces.

2.3 This chapter will describe the C2 of artillery, the levels and types of support provided by the artillery tactical tasking system, the key artillery staff and the major units within artillery.

SECTION 2-2. COMMAND AND CONTROL

2.4 Command includes the authority and responsibility for using available resources effectively and for planning the employment, organising, directing, coordinating and controlling of military forces to accomplish assigned missions. The main functions of command in terms of artillery are as follows:

a. the authority to control the FS or STA capability,
b. the authority to move and deploy artillery, and

c. the responsibility to administer artillery.

2.5 The artillery system of C2 is different from that of other arms and services. The artillery C2 system ensures that artillery support is responsive, flexible and appropriate. A key tenet of artillery support is that artillery allows firepower to be available to more than one unit or formation simultaneously. Therefore, the siting of guns and the concentration of their firepower to achieve the best results during changing tactical situations is critical to success.

2.6 Some broad guidelines for the C2 of artillery are as follows:

a. Offensive Actions. In offensive activities, where the friendly force has the initiative, the control of artillery can generally be more decentralised (see Chapter 4).

b. Defensive Actions. In defensive activities, where the enemy has the initiative, it will be difficult to predict accurately when and where the enemy will attack. In this instance, the control of artillery is likely to be more centralised (see Chapter 5).

c. Security Actions. Security activities are often characterised by the isolation and independence of the forces involved. In such instances, artillery elements may be grouped for command under a subordinate manoeuvre commander, using an appropriate degree of operational authority.

2.7 Command relationships and the allocation of artillery tactical tasks allow the manoeuvre commander or JOSCC to define a subordinate artillery commander’s specific FS responsibilities. The process of establishing appropriate artillery C2 relationships is conducted in the following two steps:

a. Command. The first is to establish or confirm the command relationship with a senior commander (manoeuvre or higher JOSCC). This is done by using a degree of operational authority and identifies the commander who has the authority to delegate...
operational authority (command) or allot a tactical task (control).

b. **Control.** The second is to allot control using tactical tasking terminology. The control of artillery can be delegated, if appropriate, to the lowest level without affecting the overarching command relationship. An artillery unit should be allocated only one tactical task at a time. Control is discussed separately in [Section 2-4](#).

## Command Terminology

2.8 The ADF employs joint C2 terminology. The detailed information on joint terminology can be found in ADF and Army publications such as *ADDP 00.1, Command and Control (Draft)*, 2008. Some of the joint terms employed are as follows:

a. **Operational Command.** Operational command (OPCOMD) represents the highest authority that will usually be assigned to a joint force commander or a component commander. OPCOMD usually imposes an administration and logistic responsibility on the commander commanding the asset.

b. **Tactical Command.** Tactical command (TACOMD) is similar to OPCOMD, but is better suited for combined operations that involve multiple nationalities. Artillery units may be placed under TACOMD to other nationalities for specified periods or tasks.

c. **Operational Control.** Operational control (commonly known as OPCON) is a status often used between manoeuvre elements. Generally, operational control is used to describe the relationship between manoeuvre units, the JOSCC and JOSTs; but it is rarely used to establish a relationship between a manoeuvre unit and an artillery unit. There may be occasions when artillery units will be placed under OPCON to a formation for the achievement of a specific mission.

d. **Tactical Control.** Tactical control (commonly known as TACON) allows for the local direction of an asset in such
a way that it assists in the accomplishment of a mission or tasks. For artillery units, TACON usually applies to circumstances where a supported unit requires local liaison and coordination with an artillery unit for the accomplishment of a task. A good example is the deployment of an AN/TPQ-36 radar and an additional JOST attached to a manoeuvre unit for a specific tactical activity or purpose.

SECTION 2-3. STAFF

2.9 Artillery staff and associated HQ are established at all levels of command. Artillery commanders and planners facilitate, and coordinate the commander’s requirements into OS plans. This is usually achieved through the JOSCC. The JOSCC will usually incorporate components from land, air and maritime. In an Australian context, the JOSCC commander will usually be the senior artillery officer in the HQ.

Joint Task Force Level

2.10 The C2 structure for a force, and consequently the JOSCC attached to that force, will vary according to the task and forces allocated. Therefore, the individual structures must be flexible and responsive to the mission. Joint OS coordination refers to the procedure of applying OS at the required decisive point utilising a combination of land, air and maritime platforms. It includes all direct and indirect systems delivering lethal or non-lethal options for the treatment of specific threats or targets.

2.11 The key function of a joint task force (JTF) HQ JOSCC is to advise the commander on OS and to coordinate the employment of OS assets to achieve timely and appropriate outcomes. The structure of each JOSCC will vary based on the span of command and complexity of agencies and assets to be
coordinated on behalf of the commander. The key appointments within the JOSCC are as follows:

a. **Joint Task Force Joint Offensive Support Coordination Centre Commander.** The JTF JOSCC commander is the principal OS adviser to the commander. The JOSCC commander will coordinate all forms of OS, including any naval surface OS and offensive air support (OAS). This coordination is achieved in conjunction with the senior representative from each capability element.

b. **Offensive Support Plans.** The OS planner, called OS Plans, is usually an artillery officer and is responsible for establishing and supervising the JOSCC. In concert with joint operations staff, OS Plans integrates all OS assets into the commander’s plan. OS Plans must also monitor the status of all OS assets, including current capabilities and ongoing limitations. OS Plans is instrumental in the development, monitoring and execution of the OS effort.

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**Formation Level**

2.12 A formation is the basis for forming a JTF. A formation or JTF may be allocated air and maritime assets, especially OS, to complete its mission. To coordinate the employment of these assets the formation JOSCC is collocated with the formation HQ.

2.13 The formation JOSCC is structured to provide timely and effective coordination of all organic and external OS assets. It consists of up to three components (if allocated), as follows:

a. an artillery tactical HQ to coordinate land assets;

b. a tactical air control party or tactical air control cell (air component) to coordinate air assets (including Army aviation); and

c. a naval support cell to coordinate maritime assets.

2.14 The artillery tactical HQ is the artillery element of the JOSCC and is integral to the coordination of all joint OS. It is the conduit
between the land forces that require immediate and pre-planned OS and the air and maritime JOSCC components.

2.15 The formation JOSCC is commanded by the artillery CO, the direct support (DS) regiment CO, who is the principal adviser on the coordination of all joint OS. The artillery operations officer is the CO's principal staff officer and supervises all formation JOSCC staff. The artillery CO in each formation HQ is the principal adviser to the commander on the employment of all forms of artillery and joint OS. Additional artillery elements may include:

a. Surveillance and Target Acquisition. The formation JOSCC receives artillery intelligence and targeting information from the STAC that is normally collocated with the artillery tactical HQ. While located in the JOSCC, the STAC works closely with the operations and intelligence cells within the formation HQ. Further information is detailed in Section 2-5.

b. Ground Based Air Defence. A GBAD coordination cell, responsible for the provision of advice on the employment of GBAD assets and its coordination in consultation with the brigade air LO and JOSCC staff, may be collocated with the artillery tactical HQ as required. Further information is detailed in Section 2-5.

2.16 Surveillance and Target Acquisition Cell. The STAC is commanded by the STA commander and is normally located within a formation HQ (usually collocated with the JOSCC). The STA commander is the subject matter adviser on all forms of STA assets allocated to the JTF or formation. The STAC contributes to the preparation of the HPT list and attack guidance matrix and produces the STA plan and target selection standards. The full list of duties for the STA commander, STA watchkeeper and advanced munitions systems adviser is provided in LWP-CA (STA) 2-3-2, Artillery Surveillance and Target Acquisition (Developing Doctrine), 2008. The staff of the STAC are drawn from the force-level STA unit and are task-organised according to the requirements of the supported formation. Where possible, the
STAC is astride the formation JOSCC and intelligence cell (S/J2). The STAC requires effective communications and liaison with both the JOSCC and the S/J2. The following paragraphs detail the primary functions of the STAC.

Unit Level

2.17 The unit JOSCC is normally collocated with the manoeuvre unit HQ. The unit JOSCC is commanded by the artillery battery commander (BC). The BC is responsible for providing advice to the unit commander on the capabilities and employment of all OS assets.

2.18 The unit JOSCC synchronises all OS resources in accordance with the unit commander’s plan. The allocation of organic OS is a relatively easy task at unit level. The task of securing external support is a critical task of the unit JOSCC.

Sub-unit Level

2.19 The JOST is normally allocated at sub-unit level. The JOST is responsible for adjusting land-based fire (indirect and direct) and naval surface FS, coordinating OAS, and relaying battlefield information. The JOST is commanded by an artillery officer and typically consists of a forward observer’s party and a mortar fire controller. A JOST may occupy a static observation post (OP) to provide point or area surveillance or conduct mobile patrols with other reconnaissance and surveillance forces. The deployment of JOSTs will normally be the responsibility of the BC in accordance with direction from the formation JOSCC. Requirements and considerations for the deployment of JOSTs are contained in Chapter 6 and in LWP-CA (OS) 5-3-2, Target Engagement, Coordination and Prediction – Duties in Action, 2003.

Joint Organisation for Control of Ground Based Air Defence

2.20 The responsibility for controlling the fire of GBAD weapons is given to the airspace control authority, who is appointed by the deputy commander Joint Operations Command at theatre level and by the JTF commander for the JTF tactical area of responsibility. The airspace control authority is responsible for
coordinating, integrating and regulating the use of the airspace within the controlled airspace. The airspace control authority is usually the JTF Air Component Commander, although a Navy or Army officer might perform this function in certain circumstances. For further details refer to ADDP 3.1, Offensive Support, 2004, ADFP 3.1.1, Offensive Support Procedures, 2004, and ADDP 3.14, Targeting, 2006.

2.21 The Air Defence Commander (ADC) is another key appointment for the control of GBAD. The ADC is responsible for developing an AD plan that meets the JTF commander’s intent, and integrating and coordinating the AD assets available to the JTF. The responsibilities of ADC and airspace control authority may be combined in the appointment of JTF Air Component Commander.

2.22 It is important to understand three parts of the ADF ABMS in order to understand the control of GBAD weapons. These organisations are as follows:

a. **Joint Task Force Air Operations Centre.** The JTF Air Operations Centre is the highest deployed air HQ. CO AD Regt normally deploys with the JTF Air Operations Centre to facilitate command of deployed assets and provide GBAD advice to the JTF Air Component Commander.

b. **Tactical Air Operations Centre.** The Tactical Air Operations Centre is located within the Regional Operations Centre. The Tactical Air Operations Centre provides the interface between the JTF Air Component Commander and air elements using positive control and executes the AD battle. The Army Controller represents Army at the Tactical Air Operations Centre.

c. **Joint Offensive Support Coordination Centres.** JOSCCs are established at each HQ (from JTF to battalion level) to plan, integrate and coordinate the activities of all OS elements assigned to the JTF, including GBAD. A GBADC or a Ground Based Air Defence Liaison Officer (GBADLO) will be allocated to JOSCCs where required.
The GBAD regiment includes a number of control-related elements and staff on its establishment. These include:

a. **Ground Based Air Defence Liaison Officer.** GBADLOs are deployed at agencies controlling GBAD resources and friendly aircraft movements, as well as airfields defended by GBAD units. They are also deployed to Army HQ and non-defended airfields as required. Their main task is to liaise with agencies controlling friendly aircraft so that aircraft and GBAD units have minimal restrictions placed upon them and friendly aircraft are not endangered by GBAD fire. This will involve passing information on friendly and hostile aircraft movement to GBAD CPs, opening and closing safe lanes and advising on the location and status of GBAD weapons. GBADLOs may also provide advice on GBAD matters in the absence of the GBADC.

b. **Army Controller.** The Army Controller is responsible for passing early warning information, changing control orders and assigning targets to GBAD units.

c. **Ground Based Air Defence Coordination Cell.** When GBAD is deployed to an AO, the GBAD unit establishes a GBAD Coordination Cell. The GBAD Coordination Cell consists of one or more GBADLO parties and is provided to the necessary JOSCC to establish liaison between the HQ and GBAD units, to pass control orders to GBAD CPs (especially on the local movement of friendly aircraft), and to pass air raid warnings to the HQ. The GBAD Coordination Cell is generally collocated with the airspace coordination element of the JOSCC.

d. **Ground Based Air Defence Command Post.** The GBAD CP monitors relevant early warning and control information and passes that information to assigned units. The GBAD CP is the senior GBAD unit CP within a formation area and is sited where it can best achieve communications with its GBAD weapons. It is also the GBADC HQ.
2.24 The artillery tactical tasking terminology derives from common formats and definitions set by ABCA Armies Standardization Program standards. The allotment of a tactical task, through the inherent responsibilities associated with each task, establishes in detail the relationship between an artillery unit and the manoeuvre unit and/or tactical group being supported. These inherent responsibilities include:

a. the priority in which calls for fire are answered,

b. the provision of liaison,

c. the requirement to establish communications,

d. the requirement to provide JOSCCs and JOSTs,

e. the authority to move and deploy weapons,

f. the authority to plan the zone of fire, and

g. the responsibility for planning fire.

2.25 Generally, tactical groups are assigned under a degree of operational authority of a formation or unit. These tactical groups may then exercise command, on behalf of the manoeuvre commander, of assigned gun groups or, more normally, exercise control of the fire of gun groups in accordance with the tactical tasks under which they are allotted. The artillery tactical tasking terms are as follows:

a. DS;

b. reinforcing;

c. general support reinforcing (GSR);

d. general support (GS);

e. non-standard tactical tasks; and

f. priority of fire support (POFS).

2.26 Direct Support. DS is the most decentralised standard tactical mission. An artillery unit in DS of a manoeuvre unit is primarily
concerned with the FS needs of that unit. The DS artillery commander is the OS planner for the supported manoeuvre unit. The DS artillery commander plans the fire of the artillery unit to support the manoeuvre commander’s intent and positions the unit where it can best support the scheme of manoeuvre. Artillery units should habitually support the same manoeuvre force to enhance coordination and training.

2.27 Reinforcing. Reinforcement involves one artillery unit augmenting the fire of another artillery unit. When a DS artillery unit needs additional fire to meet the support requirements of a manoeuvre force, another artillery unit may be assigned the reinforcing mission.

2.28 General Support Reinforcing. The GSR mission requires an artillery unit to furnish artillery fire first for the force as a whole, and then to reinforce the fire of another artillery unit as a second priority. A GSR unit remains under the control of the higher JOSCC having the priority of FS. The GSR task allows the force commander flexibility to respond to varied tactical situations.

2.29 General Support. GS is the most centralised of the standard tactical tasks. An artillery unit with a GS task supports the force as a whole and remains under the control of the higher JOSCC. Thus, the artillery is immediately responsive to the needs of the force commander. However, it normally provides only the FS of its guns. Therefore, GS and GSR tasks require the higher JOSCC to plan the FS of the supporting artillery unit.

2.30 Non-standard Tactical Tasks. When the assignment of standard tactical missions will not meet all the requirements of a particular situation, commanders create non-standard tactical tasks by changing, modifying or amplifying one or more of the inherent responsibilities or by explaining contingencies not covered by those responsibilities. Annex A provides further details and examples of the application of the artillery tactical tasking system.

2.31 Priority of Fire Support. Usually, an Australian artillery FU will answer calls for fire from its DS formation or unit, followed by
its own JOSTs and JOSCC as the priority. Other OS assets have their priority determined by their apportionment and subsequent allocation.

2.32 Within the tactical artillery tasking a simple method exists that allows the priority for artillery to be refined and the priority for other OS assets to be specified. This priority is normally specified for a period of time or a particular event. In this context, POFS is defined as the specified call sign (or unit or formation) that an artillery asset will give absolute priority to in answering calls for fire. Calls for fire from this unit or observer will take precedence over all other requests and provide a guarantee of FS. POFS may be allocated to either a manoeuvre unit or formation or a specified observer.

2.33 The controlling JOSCC will normally allocate the POFS to the main effort (ME) by phase, but it may be broken down further by use of ‘on order’ or ‘be prepared’ tasks.

Surveillance and Target Acquisition Support

2.34 The general scarcity and nature of STA employment limits the utility of applying artillery tactical tasking to assigned STA assets. There will be times when the STAC will require some control of OS to conduct tasks such as CBF. The allocation of OS to the STAC is determined and detailed through artillery tactical tasking. This approach identifies the FU allotted to the STAC, the degree of control provided to the STAC, and other control caveats such as time and ammunition allocation. In most cases, the STAC will be allocated OS assets either as GS or GSR.

Ground Based Air Defence Support

2.35 The GBAD capability contains more than just an AD regiment. GBAD comprises all Army weapons systems, processes, procedures and personnel designed to nullify or reduce the effectiveness of attack by hostile aerial platforms and munitions after they are airborne. In so doing, they prevent the enemy interfering with the conduct of land activities from the air, thereby enhancing a commander’s freedom of combat manoeuvre. It includes systems designed to acquire, intercept,
engage, destroy or neutralise weapons delivery platforms and/or the weapons themselves. The AD capability encompasses dedicated AD/anti-air systems, defensive counter-air systems and the use of fire by non-specialist weapons AAAD at aerial targets.

2.36 ABMS provides control of defensive and offensive aerospace activities in a tactical area of responsibility. As such, aerospace battle management is one aspect of integrated battlespace management, a key enabler described in ADDP 3.3, Joint Airspace Control, 2008.

2.37 Degrees of Operational Authority. The grouping of GBAD resources must be determined early in planning, so that the tactical and administrative responsibilities of commanders can be defined and communicated in operational and administrative orders. There are four degrees of operational authority which apply to assets in joint operations. The degrees of operational authority are described in LWD 5-1-1, Staff Officers’ Guide (Developing Doctrine), 2007. The levels and types of support for GBAD are as follows:

a. Full Command. GBAD units will only be allocated under full command of an Army formation. This degree of authority includes responsibility for administration.

b. Theatre Command. Administrative responsibilities should be clearly defined when GBAD units are allocated under TACOMD to a joint commander.

c. Operational Command. OPCOMD provides the authority to task the GBAD unit, including assigning separate employment. OPCOMD does not include responsibility for administration unless specified.

d. Tactical Command. TACOMD is similar to OPCOMD and is usable for combined operations across nationalities. In some respects this equates to a form of ‘national command’. GBAD units may be placed under TACOMD to other nationalities, but only for agreed tasks.
e. **Operational Control.** OPCON is more limited than OPCOMD and implies that the joint commander has the authority to issue orders to the GBAD unit within the limits of the assigned task. The GBADC remains responsible for detailed implementation of the task. All aspects of administration remain an Army responsibility.

f. **Tactical Control.** TACON is rarely used with GBAD forces.

g. **In Location.** Units may have AD assets located in their tactical area of responsibility, but will have no support obligations and can expect no priority of support from those assets.

2.38 GBAD needs to be integrated with other airspace users to avoid unnecessary restrictions on the weapons. Integration into the broader ABMS also allows GBAD units to receive, and contribute to, the composite air picture.

**Means of Ground Based Air Defence Control**

2.39 GBAD weapons are controlled using the following methods:

a. **Positive Control.** Positive control is exercised by passing information and orders to units on a minute-to-minute basis. This allows the ADC to react to the rapidly changing circumstances of the air battle.

b. **Procedural Control.** Procedural control is a system of prearranged control exercised by the issue of directives, SOP and ROE that dictate the conditions under which fire is to be withheld or engagements are permitted. Procedural control is used when, for whatever reasons, it is not possible to exercise positive control. Such instances may include periods of radio silence or where the communications are unreliable. Since procedural control is less flexible, positive control is introduced as soon as practical with procedural measures remaining as a stand-by.

c. **Combination.** Positive and procedural methods are combined.
2.40 **Weapon Control Orders.** The fire of GBAD weapons is controlled by weapon control orders. These orders, determined by the Director of Operations in the Tactical Air Operations Centre, are as follows:

   a. **Weapons Free.** At ‘WEAPONS FREE’, weapon systems may be fired at any target not positively recognised as friendly.

   b. **Weapons Tight.** At ‘WEAPONS TIGHT’, weapon systems may be fired only at targets recognised as hostile, or acting in a hostile manner as defined in the ROE.

   c. **Weapons Hold.** At ‘WEAPONS HOLD’, a weapon system may only be fired in self-defence or in response to a formal order.

2.41 The weapons control orders are complemented by fire control orders. Fire control orders may be issued regardless of the weapons control orders in effect, and normally require units to initiate, cancel or withhold actions against specific targets.

**Control of All Arms Air Defence**

2.42 The AAAD net is used to control the fire of non-GBAD weapons used in the AAAD role and to pass warning information on both friendly and hostile aircraft. The following points should be noted:

   a. The primary aim of AAAD is the defence of the parent unit, and therefore these weapons should not be tasked outside of this role.

   b. AAAD weapons are limited to ‘WEAPONS HOLD’ and ‘HOLD FIRE’. The stand-by weapons control order for AAAD is set out in the JTF ADC SOP; however, ‘WEAPONS HOLD’ is the minimum.

2.43 Doctrine for the planning and conduct of AAAD is contained in *LWP-G 7-7-9, All Corps Air Defence Procedures*, 2005.
2.44 Within artillery, units are referred to as regiments and sub-units as batteries. The artillery battery is generally considered the base FE or capability brick within the artillery structure. However, this sub-unit can be further broken down into troops, sections (two guns), or single guns depending on the task, threat and other factors that demand subdivision. Each artillery regiment has a CSS battery.

2.45 Artillery regiments are designated according to the type of gun or equipment they employ and the task they perform, as follows:

a. An artillery regiment operating the 155 mm gun is designated as a medium regiment.

b. An artillery regiment operating the 105 mm light gun is designated as a field regiment. Some field units and sub-units maintain different and specialised roles, including airborne, commando and mechanised.

c. An artillery regiment operating UAVs and locating radars is designated as an STA regiment.

d. An artillery regiment providing AD is designated as an AD regiment.

2.46 An artillery regiment is commanded by a lieutenant colonel. An artillery battery is commanded by a major.

Medium Regiment

2.47 An artillery medium regiment consists of an RHQ, two medium batteries and a CSS battery. It can deploy a total of six medium gun sections. The generic organisational chart for a medium regiment is shown in Annex A. A medium regiment usually supports mechanised and/or armoured activities and has a secondary role of CBF due to the range and weight of the ammunition fired.

2.48 The primary equipment of the medium regiment is the 155 mm Howitzer (see Figure 2–1). Personnel in a medium regiment
total approximately 350 and include specialist personnel from a variety of corps.

Figure 2–1: 155 Millimetre Howitzer of a Medium Regiment

Field Regiment

2.49 A field regiment consists of an RHQ, three field batteries and a CSS battery. It can deploy a total of nine field artillery sections. The field regiment usually supports light, airmobile and/or motorised forces. The primary equipment of the field regiment is the 105 mm L119 Hamel light gun (see Figure 2–2). Personnel in a field (light) regiment total approximately 320.
An STA regiment consists of an RHQ, an STA battery, a tactical UAV battery and a CSS battery. A STA regiment can expect to be task-organised to support a range of tactical actions. A typical force package is a battery sized organisation consisting of the following:

a. *Surveillance and Target Acquisition Battery Headquarters*. The HQ consists of the personnel required for the C2 of the battery.
b. **Surveillance and Target Acquisition Cell.** The STAC coordinates and plans the conduct of STA activities and will normally deploy with the JTF HQ.

c. **Target Acquisition Troop.** The TA troop can deploy two reconnaissance parties, each with two WLRs and four listening posts equipped with acoustic cueing for the radars. The WLRs will normally be collocated with other friendly elements for security. The listening posts will be deployed forward to provide acoustic cueing for the radars.

d. **Artillery Meteorological Survey Section.** The artillery meteorological (commonly referred to as met) survey section consists of a met detachment and survey pairs to provide meteorology and survey.

e. **Surveillance Section.** A surveillance section consists of two to four surveillance patrols, equipped with a variety of sensors, such as the thermal surveillance system, ground surveillance radar and unattended ground sensor. Each patrol represents a collection platform that can conduct surveillance tasks.

f. **Unmanned Aerial Vehicle Troop.** The UAV troop provides an airborne reconnaissance and surveillance capability.

g. **Combat Service Support Elements.** The CSS package is tailored to support the force.

### 2.51 Equipment

The STA regiment is equipped with a range of high-technology equipment. The principal items are as follows:

a. **Target Acquisition Troop.** The primary equipment of the TA troop includes:

   1. two AN/TPQ-36 WLRs, and
   2. acoustic cueing equipment for the radars.
b. **Artillery Meteorological Survey Section.** The primary equipment of the artillery met survey section includes:
   (1) met equipment, and
   (2) survey equipment.

c. **Surveillance Section.** The primary equipment of the surveillance section includes:
   (1) ground surveillance radar, and
   (2) an unattended ground sensor.

d. **Unmanned Aerial Vehicles Troop.** The current primary equipment of the UAV troop includes:
   (1) UAV (see Figure 2–3); and
   (2) support equipment.

![Unmanned Aerial Vehicle](image)

**Figure 2–3: Unmanned Aerial Vehicle**

### 2.52 Personnel

Personnel in an STA regiment total approximately 145 and include specialist personnel from a variety of corps.

**Air Defence Regiment**

### 2.53

An AD regiment consists of an RHQ, two RBS-70 batteries and a support battery. It can deploy a total of six GBAD troops, or
30 RBS-70 detachments. The AD regiment is usually grouped at JTF level but may be in location with any unit. The organisation consists of the following:

a. *Regimental Headquarters.* The GBAD RHQ includes a command cell, an operations cell and a controller troop. The controller troop, which is commanded by the OPSO, provides GBADLO parties to the formation JOSCC, the tactical air command and airfields.

b. *Missile Batteries.* A battery can conduct area defence tasks, coordinate the fire of three separate troop tasks or operate as part of a regimental defence. One troop can be deployed on an independent task (ie. at a significant distance from the battery echelon). Missile batteries include a command element and up to three missile troops. The battery command element includes the BC’s party, the CP, a controller cell and first-line logistics. This group allows the battery to maintain the three missile troops and to coordinate their fire in a battery defence.

c. *Ground Based Air Defence Troops.* Each GBAD troop has a CP, five missile detachments, a controller cell and a radar section.

d. *Support Battery.* The support battery provides the first-line supply, primary health care, second-line maintenance and a logistic planning capability to the regiment. The support battery can operate as a complete sub-unit in a regimental echelon or provide logistic support teams to deployed and dispersed missile batteries and troops.

2.54 The command arrangements, control organisation and organisational flexibility of GBAD allows its sub-units to fight as part of combined arms teams. One common grouping is the allocation of a troop to defend a vital point (VP). In this circumstance, the troop deploys with a command element, a CP, controller parties (for liaison) and logistic support. The troop will be largely self-sustaining but will need to draw combat supplies from the supported formation during protracted
attachments. The GBAD regiment and battery echelons will develop detailed missile resupply and repair plans for specialist equipment. Other matters such as mobility (particularly when supporting armoured units) and communications must be considered when GBAD is allocated.

2.55 A missile battery will be allocated for tasks requiring two or more troops. The battery provides second-line repair and a second-line holding of missiles, which extends the sustainability period for the GBAD unit. It also provides a broad liaison network to support the formation. A battery CP may command up to three troops. Beyond this, the span of command will generally warrant the deployment of the regimental CP and echelon.

2.56 The primary equipment of an AD regiment is the RBS-70 laser-guided ground-to-air missile (see Figure 2–4). Other principal equipment items include air surveillance radars, significant quantities of communications equipment, vehicles, advanced C2 and targeting systems, and a significant ammunition-carrying capacity. Personnel in an AD regiment total approximately 275.
Figure 2–4: RBS-70
ANNEX A TO CHAPTER 2

ARTILLERY TACTICAL TASKS AND RESPONSIBILITIES

Direct Support Artillery

1. Artillery has a primary task to provide fire requested by the supported unit. This implies the following:
   a. a high degree of guarantee of fire; and
   b. provision of observers, communications and liaison, including the responsibility for fire planning and the coordination of all OS at every level of command from sub-unit upwards.

2. During independent operations at the lower end of the threat spectrum, a formation will retain command of its close support regiment. The formation commander may then delegate command or control of elements of the regiment to subordinate manoeuvre commanders. An example of how the tactical task of DS could be applied is as follows:

<table>
<thead>
<tr>
<th>103 Mdm Bty</th>
<th>DS Battlegroup (BG) Leopard</th>
</tr>
</thead>
<tbody>
<tr>
<td>(This option would be indicative of a long term, widely dispersed operation of the battery supporting the BG.)</td>
<td></td>
</tr>
</tbody>
</table>
3. During major coalition operations at the high end of the threat spectrum, formations are likely to deploy with close support artillery and rely on major coalition partners to provide GS artillery. On such operations an example of how the task of DS could be applied is as follows:

<table>
<thead>
<tr>
<th>4 Fd Regt</th>
<th>DS 3 Bde</th>
</tr>
</thead>
<tbody>
<tr>
<td>(This is indicative of an operation where the Land Component Commander has sufficient GS artillery to decentralise the control of close support regiments to committed formations.)</td>
<td></td>
</tr>
</tbody>
</table>

**Reinforcing**

4. Reinforcing is the tactical task that allows the weight of fire of an artillery unit to be augmented by another artillery unit. Artillery units can only reinforcing other artillery units and not a combined arms unit or formation. The tactical task of reinforcing is likely to be accompanied by caveats on time or ammunition expenditure.

5. During independent operations at the lower end of the threat spectrum the tactical task of reinforcing could be used to provide a high degree of responsiveness to manoeuvre units or for the short-term augmentation of FS for a particular operation or phase. Some examples of how the tactical task of reinforcing could be employed are:

<table>
<thead>
<tr>
<th>103 Mdm Bty</th>
<th>DS BG Leopard</th>
</tr>
</thead>
<tbody>
<tr>
<td>101 Mdm Bty</td>
<td>Rft 103 Mdm Bty</td>
</tr>
<tr>
<td>(Using Rft allows the commander the ability to augment the fire of 103 Mdm Bty for a particular phase or operation.)</td>
<td></td>
</tr>
</tbody>
</table>
6. During major coalition operations at the higher end of the threat spectrum the tactical task of reinforcing is most likely to be used to augment the fire of the allocated DS FU to a manoeuvre formation or unit. It could be applied as follows:

<table>
<thead>
<tr>
<th>Unit</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/12 Mdm Regt</td>
<td>DS 1 Bde</td>
</tr>
<tr>
<td>2/48 Field Artillery (FA) Bn</td>
<td>Rft 8/12 Mdm Regt</td>
</tr>
<tr>
<td>48 FA Bde (–)</td>
<td>GS</td>
</tr>
</tbody>
</table>

(This option indicates that the Land Component Commander has sufficient artillery available to take up a relatively decentralised option, providing artillery to directly support the close contact battle, while reinforcing the ME and retaining artillery to influence the battle.)

7. A gun group allotted the tactical task of GSR the artillery of another formation or unit does not provide a high degree of guarantee of fire. The allotted gun group will respond to the reinforced unit only if the commanding HQ has no higher priority task for it. In this instance it could be applied as follows:

<table>
<thead>
<tr>
<th>Unit</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/12 Mdm Regt</td>
<td>DS 1 Bde</td>
</tr>
<tr>
<td>2/48 FA Bn (US)</td>
<td>GSRft 8/12 Mdm Regt</td>
</tr>
</tbody>
</table>

(This option indicates that the LC Commander has sufficient artillery available to allow the US artillery battalion to support the Australian artillery regiment when not undertaking other tasks or missions.)
General Support Artillery

8. GS artillery is that artillery retained by the senior manoeuvre commander to influence the battle. This artillery provides the commander the ability to fight the battle in depth, influence the contact battle and/or reinforce their ME. Examples of this are below:

<table>
<thead>
<tr>
<th>Unit 1</th>
<th>Unit 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/12 Mdm Regt</td>
<td>DS 1 Bde</td>
</tr>
<tr>
<td></td>
<td>(The most decentralised manner in which to provide the support of both Gun Groups and Tactical Groups to committed formations.)</td>
</tr>
<tr>
<td>2/48 FA Bn (US)</td>
<td>Rft 8/12 Mdm Regt</td>
</tr>
<tr>
<td></td>
<td>(The manoeuvre commander’s ME is effectively weighted by the fire of the US battalion’s guns.)</td>
</tr>
<tr>
<td>48 FA Bde (--)</td>
<td>GS</td>
</tr>
<tr>
<td></td>
<td>(GS artillery retained so that the manoeuvre commander has maximum flexibility to influence the battle.)</td>
</tr>
</tbody>
</table>

Variations to Tactical Tasks

9. Non-standard Tasks. Examples of non-standard tasks are:

<table>
<thead>
<tr>
<th>Unit 1</th>
<th>Unit 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/12 Mdm Regt</td>
<td>Rft 4 Fd Regt</td>
</tr>
<tr>
<td></td>
<td>Not to be deployed west of the 83 Easting.</td>
</tr>
<tr>
<td></td>
<td>(The manoeuvre commander’s ME is effectively weighted, but deployment of the Rft unit by the Formation JOSCC is restricted.)</td>
</tr>
<tr>
<td>8/12 Mdm Regt</td>
<td>GSRft 4 Fd Regt.</td>
</tr>
<tr>
<td></td>
<td>For phase two, no more than one first line to be expended.</td>
</tr>
<tr>
<td></td>
<td>(Additional reinforcement of the manoeuvre commander’s ME but restricted by time and ammunition allocation.)</td>
</tr>
</tbody>
</table>
10. **On Order Task.** An example of ‘on order’ task is as follows:

<table>
<thead>
<tr>
<th>8/12 Mdm Regt</th>
<th>DS 1 Bde on order Rft 4 Fd Regt</th>
</tr>
</thead>
</table>

(Provides decentralised artillery support to 1 Bde but allows for reinforcememt of 4 Fd Regt during a major activity being conducted by 3 Bde. In this instance it is most likely that at the time 3 Bde was committed and needing the reinforcement of 8/12 Mdm Regt, 1 Bde would not be committed to major contact with the enemy.)

**Priority of Fire Support**

11. In this example 8/12 Mdm Regt is DS to a given task force and the commander requires all FUs to support a specified BG. Therefore, the operations order will read; ‘Ph 1: POFS to BG Leopard’. This indicates that BG Leopard will receive the absolute priority in calls for fire. It will include DS and reinforcing artillery (if any) and any other allocated OS assets. It will not include mortars, as they are an organic asset to BG Leopard and the manoeuvre commander who commands them will decide POFS for mortars.
CHAPTER 3

PLANNING

SECTION 3-1. INTRODUCTION

3.1 Artillery is a key component of OS and is intimately involved in, and in many cases responsible for, the land component OS planning process. OS planning and coordination are continuous processes that seek the timely and appropriate application of force to achieve the desired results. The effectiveness of this planning and coordination is predicated on commanders providing clear and precise guidance. OS staff at each level are responsible for advising commanders on the best use of available OS resources, developing OS plans and implementing approved OS plans.

3.2 STA planners are involved in the operational and tactical planning process. These planning processes include the targeting process, OS planning and the MAP. STA planners ensure the effective integration of STA into both the planning cycle of the HQ and the commander’s overall plan.

3.3 This chapter details the planning and coordination considerations for the employment of artillery FEs. It also outlines the FE options of artillery, the key products from the planning process, the major threats to the provision of FS and the considerations planners must account for when involved in coalition operations.

SECTION 3-2. FORCE ELEMENT OPTIONS

3.4 Artillery will be task-organised as part of the combined arms team. Artillery FE deployment options range from the commitment of troop sized elements, to the entire land force artillery capability. The artillery battery is the base capability brick due to its organic CSS and C2. Batteries are self-sustainable in most areas except ammunition resupply.
3.5 A section of two guns may be employed when stepping up to a new location. This leaves part of the battery in a firm base until the remainder of the battery is established in the new location. SP guns can work independently in two gun sections or concentrate from dispersed localities to produce weight of fire.

3.6 All artillery in an administrative arrangement order that is within range can be employed in a single fire mission if required. This is not a normal activity.

SECTION 3-3. COMMAND AND CONTROL

3.7 In developing a C2 plan for artillery, the administrative command linkage of the artillery unit can be separated into functional commands. In other words, the tactical liaison groups (the JOSCC and the JOST at each level) and gun groups (gun line, CP and echelons) are treated as discrete, separate FEs and grouped or allotted accordingly. The exception to this is when groups are assigned to the tactical task of DS, as explained in Chapter 2.

Fundamentals of Task Organising Artillery

3.8 Artillery is task-organised to provide responsive and effective fire and to coordinate all available FS. The objective is to ensure that each artillery unit is in a tactical organisation and is assigned a tactical task. After analysis, the FS planner at the appropriate level recommends, and the manoeuvre commander approves, the artillery task organisation. This should be done on the basis that the following conditions are met:

a. adequate artillery support for committed units;
b. weight of fire to the ME (offence or defence);
c. artillery support is immediately available for the commander to influence tactical actions;
d. the capacity to provide future support; and
e. maximum, feasible, centralised control.
Aerospace Battle Management

3.9 Aerospace battle management provides control of defensive and offensive aerospace activities in an AO. As such, aerospace battle management is one aspect of integrated battlespace management, a key operational enabler described in ADDP 3.3, Joint Airspace Control, 2008.

3.10 AD and airspace control are part of aerospace battle management. AD is described as all measures designed to nullify or reduce the effectiveness of hostile air action, and may be categorised as active or passive. Airspace control is defined as a service provided to promote the safe, efficient and flexible use of airspace by all elements of the joint force.

SECTION 3-4. PLANNING

3.11 A manoeuvre commander must determine the outcome required by OS and artillery planners and then coordinate the OS. Artillery planners consider a range of principles and factors when coordinating OS.

Field Artillery Planning Considerations

3.12 Some of the considerations for OS planning are as follows:
   a. the principles of fire planning;
   b. the type of operation being conducted;
   c. the number of artillery FUs available and their capability;
   d. the availability of suitable deployment areas;
   e. the ability to concentrate the fire of more than one regiment or FU;
   f. positioning (including protection of the guns from threats);
   g. the amount and type of ammunition;
   h. the anticipated movement of manoeuvre elements;
   i. survey data;
j. met data;
k. the STA policy and assets;
l. logistics;
m. timings;
n. the environmental effects;
o. the communications capability;
p. likely threats;
q. the sustainment capability;
r. coordination measures; and
s. the force protection capability.

Surveillance and Target Acquisition Planning Considerations

3.13 The STA planning factors or considerations include:

a. Availability of Artillery Assets and Deployment Areas. These considerations encompass the type of operation being conducted, the amount and type of artillery assets available and their capabilities, and the availability of suitable deployment areas for indirect FS systems, TA and surveillance assets.

b. One Sensor to One Information Requirement. Each collection platform should be limited to one IR per time interval. Allocating more than one IR may jeopardise the overall collection plan. Collection planners must prioritise IRs.

c. Match Information Requirement to Collection Platform. The capability of the collection platform must fully satisfy the demands of the IRs. The collection platform may use single or multiple sensors to achieve the IRs.

d. Complementary Employment. Grouping distinct STA sensor capabilities allows the fidelity of the collection platform to match the requirements of the IRs. In this manner STA assets from distinct regions of the
electromagnetic spectrum are horizontally integrated. For example, radar characteristics permit detection and coarse-grain recognition in sufficient detail to cue complementary sensors with superior resolution that permit identification.

e. **Redundancy.** Surveillance planning must be sufficient to ensure that IRs are satisfied. Gaps in surveillance coverage through enemy action or equipment failure may compromise the commander’s plans. For this reason, collection platforms are sited in pairs achieving redundancy. Where planning assigns collection platforms to IRs without sufficient redundancy, the commander must be made aware of the inherent risk.

f. **Analysis of the Area of Interest.** Observation must be continuous over the period for which it is required. Once the main features of the zone of observation are known it should be examined systematically, from one flank to the other, beginning with the foreground, followed by middle distance and then the background. In areas where the prevailing colour is dark, careful examination is necessary because concealment is easy. This technique allows the observer to establish a pattern of normalcy in the zone.

g. **Identification of Change.** Analysis of the area of interest to establish a pattern of normalcy allows the identification of change. Dispositions, invisible in themselves, may be revealed by a change in the appearance of the object or the area. Surveillance of this nature is time consuming.

h. **Layered Surveillance.** Layered surveillance vertically integrates capability between strategic, operational and tactical levels. An ISR capability or activity at one level may directly affect or cue an activity at another level. For example, a strategic air reconnaissance may cue the tasking of a ground patrol at the tactical level.
Cueing. Cueing is a control system used to direct the location and timing of surveillance collection. Assets conducting area surveillance may cue fine-grain sensors to a specific location. Passive collection systems may cue the timing of active sensors, thereby improving survivability.

Zones of Coverage. The artillery intelligence coordination line delineates areas of responsibility between STA assets for information collection, reporting and responding both within the formation and adjoining units. Artillery intelligence coordination lines do not restrict the collection of information from other areas; rather they clearly establish primacy of responsibility for enemy activities or targets. Zones may also be used to link an activity or location to a reaction posture in order to meet the manoeuvre commander’s intent. These zones may be used to focus or censor search activities and include:

1. Critical Friendly Zone. A critical friendly zone is a friendly unit or location deemed critical to the mission, which generates a high priority of response.

2. Call-for-fire Zone. The call-for-fire zone is an area beyond the forward edge of the battle area that the commander wants affected.

3. Artillery Target Intelligence Zone. The artillery target intelligence zone is an area in enemy territory that the commander wishes to monitor closely.

4. Censor Zone. The censor zone is an area in which the commander wishes to ignore all target detections.

Sensor–shooter Link. A sensor–shooter link is a response architecture used to minimise the time from TA to response. C2 arrangements are established during
planning which promote rapid passage of information through intervening HQ.

I. **Real-time Information Requirements.** Prompt and reliable passage of information from the surveillance asset to the commander improves situational awareness (SA) and enables the engagement of targets in near real time.

m. **Commander’s Intent.** The surveillance capability must clearly understand the IRs within the framework of the commander’s intent. This facilitates battlefield commentary of information that may lie outside initial tasking but enhances achievement of the commander’s intent.

n. **Coverage.** The capabilities of the collection sensors must be understood to ensure that sufficient coverage is achieved. An IR linked to an named area of interest, whose boundaries or terrain characteristics exceed the capabilities of a single collection asset, requires additional assets to achieve coverage.

o. **Sensor Limitations.** The enemy will exploit the susceptibility of short wavelength systems to obscurants and the poor resolution of longer wavelength systems through a range of countersurveillance measures.

3.14 **Tactical Unmanned Aerial Vehicles.** UAVs will require special consideration due to their impact on airspace management. Special coordination and management measures are illustrated in Section 3-7.

**Ground Based Air Defence Planning Considerations**

3.15 GBAD also requires special consideration due to the complex air environment in which it operates. The task of GBAD is to deny and/or to cause attrition, as follows:

a. **Denial.** Denial is the protection of specific ground targets from damage or destruction by direct attack. Aircraft are either destroyed prior to their point of attack or deterred from pressing home their attack.
b. **Attrition.** Attrition is the process of destroying or damaging enemy aircraft in an effort to reduce their offensive capacity. Destruction or damage may take place before or after the point of weapon release.

3.16 GBAD units prefer to achieve denial, as it is less resource intensive. The use of attrition remains an option if sufficient resources are available. The balance between denial and attrition will depend on the stage of the tactical action and the air situation. It will also depend on the capabilities of the GBAD weapons and the degree of protection required.

### The Planning Process

3.17 OS planning corresponds to the ‘decide’ phase of the targeting process cycle as illustrated in [Figure 3–1](#). Intelligence preparation of the battlespace and the joint MAP are key elements of the artillery planning process. ISTAR planning and the OS planning process are conducted concurrently with the joint MAP and joint effects planning at the operational level. At the tactical level, the OS planning process is conducted concurrently with the MAP and the targeting process.

3.18 Artillery planners are responsible for the coordination and integration of this process into the overall plan. Moreover, as part of the OS plan, the artillery staff will determine artillery-specific aspects of the plan, such as identifying gun locations, tasks for JOSTs and deployment orders for gun batteries.
Targeting

3.19 Targeting is the process of selecting targets and matching the appropriate response to them, taking account of operational requirements and capabilities. The aim of the targeting process is to contribute to a collection plan in order to inform the intelligence preparation of the battlespace and/or MAP. The outputs of the intelligence preparation of the battlespace and/or MAP are then used to develop the products listed in paragraph 3.20. This should ensure the appropriate and timely prosecution of targets in accordance with the intentions of the commander.
Key Products or Outputs

3.20 The key products from the targeting process and MAP are as follows:
   a. a HPT list,
   b. a thermal surveillance system,
   c. an attack guidance matrix,
   d. a target synchronisation matrix, and
   e. a combat assessment.

Offensive Support Planning Products

3.21 The outcome of the planning process is to produce a flexible and robust plan to support the mission and scheme of manoeuvre. There are four steps of the OS planning process which produce outputs that are designed to inform the steps of the MAP. These outputs provide artillery staff and other key planners with useful tools to quickly identify the OS and artillery role in the overall plan. Key outputs of planning are the essential FS tasks.

3.22 Close Offensive Support Plan. The close OS plan provides close support to the scheme of manoeuvre. It is not a discrete plan, but rather a conceptual framework that synchronises all of the components and focuses them at the correct time and place. Its products will generally be found within the paragraphs of the OS annex of the operations plan. During a full MAP, a complete close OS plan should be produced for each COA, time permitting. The plan will subsequently be refined during wargaming and much of the detail will be resolved during the COA analysis step. It is important to maintain a detailed wargaming record of OS in relation to the manoeuvre force. The disposition of friendly force OS assets will be important during decisive actions in the COA. A list of factors that should be analysed for the production of the close OS plan can be found in Annex A.

3.23 Offensive Support Component of the Targeting Plan. This part of the plan is concerned with ‘shaping’, that is, attacking
3.24 The OS planning and fire planning processes are separate yet complementary. OS planning is conducted at the operational level while fire planning is conducted at the tactical level. A fire plan is the application of OS at decisive points. Fire planning integrates OS with other joint FEs at crucial points of the battle. The fire plan also incorporates those technical and tactical procedures required to integrate OS with the other combat arms at the lowest level. Fire planning is usually a bottom-up process. Force-level fire plans, such as harassment and interdiction and support of major JTF-level operations, are developed at higher levels.

3.25 To be successful, the fire plan must provide fire that meets the following requirements:
   a. timely,
   b. on target, and
   c. safe.

Artillery Orders

3.26 Artillery orders derived from planning are normally distributed in the form of an artillery annex to a manoeuvre OPORD.

SECTION 3-5. INFORMATION CONSIDERATIONS

3.27 Information actions consist of the following:
   a. influence actions,
   b. counter-command actions,
   c. command and information protection, and
Influence Actions

3.28 Influence actions are intended to influence the perceptions, will, attitudes and behaviour of target audiences (both enemy and civilian). Relevant tools include military public affairs, civil–military cooperation and psychological operations.

3.29 The majority of artillery activities are also influence actions. The role artillery plays in defeating armed aggression plays a major part in population security. The use of artillery will force the enemy to either fight or run and will cause casualties and damage. In population protection, members of the artillery FE can man checkpoints and provide protection to noncombatants.

Counter-command Actions

3.30 Counter-command actions include physical attack, deception, electronic attack and computer network attack. Counter-command actions are aimed at deceiving, disabling or destroying enemy commanders, and disrupting, degrading, destroying or denying the information systems and information they rely upon.

3.31 Artillery reconnaissance and surveillance missions seek to gain information, and this may be with or without the knowledge of the target group. Artillery is also ideally suited to the physical attack role, and the primary contribution of artillery to counter-command actions is to target the HQ and communications networks of an enemy force.

Command and Information Protection

3.32 Command and information protection includes electronic protection, computer network defence and operations security. Command and information protection actions are aimed at protecting our own commanders and the information systems and information on which they depend.

3.33 Artillery FEs maintain standard information protection measures for communications systems and will, when
necessary, fight to protect information that they have obtained through tasking. Artillery units may also assist in the fight for information by using fire to evoke an enemy response.

Deception

3.34 Artillery units have a significant signature, and artillery rounds can be tracked back to their source, which assists the enemy to locate and destroy artillery. This means that specific steps must be taken to reduce the signatures, and increases the importance of deception measures. Every plan involving the use of artillery must involve both signature reduction and a deception plan.

3.35 Deception will be integral to the commander’s plan and will normally be coordinated at formation level. Artillery can contribute to deception by the application of fire, the movement of equipment, the creation of dummy positions, or participating in electronic protection and deception measures. Where artillery fire is used, the implications of reducing ammunition stocks and unmasking must be balanced carefully against the advantages gained by deceiving the enemy. Some specific deception measures include:

a. Movement of Equipment. Moving equipment to areas that are not part of the plan and concealing the location of equipment that is part of the plan both contribute to deception.

b. Artillery Raids. The purpose of raids is to attack HPTs, to confuse and deceive as to where the main attack was to come from, and to practise fire coordination procedures. They will also affect enemy morale.

c. Deception Fire Plans. For a period before a battle that may last from hours to weeks, artillery can attempt to replicate the conditions that will occur at the time of the attack. In addition to its use as part of the deception plan, it will provide artillery with time to register targets accurately.
3.36 Artillery may often be an enemy HPT due to its ability to influence the close battle and enemy actions without numerous redeployments. Therefore, artillery may need to either counter or mitigate a range of threats. Some of these threats and the ways in which planners and commanders mitigate the risk are discussed in this section.

3.37 **Counter-battery Fire.** CBF, often referred to in coalitions as ‘counterfire’, is described as the attempt by enemy artillery to disrupt and, if possible, destroy artillery assets of our own OS. The careful siting of artillery can minimise target detection devices and also the response from associated CBF. Such masking may also be combined with concealment and movement. Accurate CBF requires the use of the following locating equipment:

   a. **Radar.** Radar relies on the ability to track the projectile. The best defence against radar is to ensure that the highest possible charge is used, therefore keeping the trajectory of the round as flat as possible and lower to the ground. If the round is close enough to the ground it may be lost in ground clutter or behind a crest between the gun and the radar.

   b. **Sound Ranging.** Sound-ranging devices or acoustic sensors rely on the undisturbed travel of sound waves from the firing guns to the sensors or microphones. Many systems can be defeated by dispersing guns and conducting all adjustments for ‘missions at fire’ for effect. This may confuse sound-ranging systems, as it will be very difficult to classify individual acoustic events.

3.38 **Air.** Continual redeployment reduces the threat from the ground and CBF but increases the threat from the air. The best counter to air threats is a reduced visible and thermal signature through the use of available cover such as buildings and camouflage nets. Where possible, hot barrels should be cooled or insulated.
3.39 Ground. Artillery regiments have only a limited ability to conduct local defence against ground attack. Mitigation of this threat could include tasking troops such as an infantry company to provide defence of the gun position and maximise the available cover, concealment and terrain in support of local defence.

3.40 Electronic. Artillery requires a reliable communication system to support tactical actions. Most fire orders are transmitted by VHF radio. The selected deployment areas should allow for reliable communications security and likely enemy electronic warfare (EW) activity. However, conditions that suit VHF transmissions may contradict the principles of communications security. Radio silence, net discipline, and effective radio procedures and policies are some measures that can further counter the enemy EW threat.

3.41 While these threats have been presented in a singular fashion, the enemy may combine a number of these measures to increase the likelihood of success against artillery. Artillery commanders must remain alert to such a possibility. Most of the threats covered in the preceding paragraphs concentrate on disrupting the artillery guns. Equally effective is targeting and neutralising the JOST and the JOSCC, which control and employ the artillery.

Threats to Ground Based Air Defence

3.42 GBAD is generally considered as a high-value target for the enemy, so units face a wide range of threats. Both the manoeuvre commander and the GBAD commander should take steps to reduce the threat through active or passive measures, including deception.

3.43 Some of the threats, and examples of mitigation, are as follows:

   a. Special Forces. SF can cause serious disruption to lightly armed and isolated GBAD detachments and radars. GBAD commanders mitigate this risk through sentries, intelligence and local warning devices. If the threat warrants, GBAD weapons could be sited within
defended localities, assigned protection parties or included in patrol plans.

b. **Ground Forces.** Ground forces, such as infantry and armour, can also destroy or disrupt GBAD defences. RBS-70\(^1\) detachments have a relative disadvantage in terms of mobility against armour or mounted infantry, so commanders should consider moving or reinforcing detachments well before they are decisively engaged. The measures described in the preceding paragraphs will also help protect GBAD from ground forces; while the ability to engage vehicles (including light armour) using RBS-70, and use their commanding positions to observe wide areas, will also help to increase survivability.

c. **Suppression of Enemy Air Defences.** Enemy forces can use a combination of indirect fire, obscuration and electronic attack to suppress friendly GBAD forces. The GBAD commander should plan for this type of attack by taking passive and electronic defensive measures to reduce the risk of detection and to have alternative plans, emission control procedures and procedural control measures in place in order to maintain a defence during such attacks. Manoeuvre commanders or ADCs may also consider allocating extra protective resources, including electronic defence and CBF, to reduce the impact of suppression of enemy air defences.

d. **Air.** Enemy aircraft and weapons, particularly stand-off weapons, can be very effective against GBAD. While the GBAD weapons are the best defence, GBAD commanders should ensure that GBAD weapons are mutually supporting, are able to engage enemy air in depth and have all-round protection. Camouflage and decoys can also help to reduce the risk of attack, while alternative positions and hardening can also increase survivability.

\(^1\) RBS is the commonly used abbreviation for ‘radar bombardment system’.
The two major ways in which STA mitigates threats is through the following measures:

a. active, and
b. passive.

Active. These measures include collocation with a manoeuvre or other force able to provide local defence, as most STA assets are unable to provide their own local defence. The exception to this rule are the listening posts and surveillance sections that rely on camouflage and concealment to provide a measure of security. While assets are deployable and can, therefore, move as a means of defence, continual movement hampers their effectiveness.

Passive. Passive measures include siting considerations of the WLR. These considerations establish a masking crest to enable the WLR to avoid detection. Other measures include:

a. An emission control or radiation policy to control emissions and reduce signatures.

b. The employment of camouflage.

c. For the WLR, the noise of the generator may compromise a well-concealed position. The shelter should be sited so that the noise of the generator is directed away from the enemy. The noise level can be reduced by screening with any solid construction around the generator.

d. Establishing dummy or decoy positions, in conjunction with a policy of frequent redeployment, can deceive the enemy as to the number and specific locations of radars.

e. If the STAC is controlling counter-battery assets, a silent or possibly semi-active policy may also provide a measure of defence against certain threats, such as enemy counter-battery.
SECTION 3-7. COORDINATION MEASURES

3.47 The application of FS poses a potential hazard to friendly forces, especially friendly airspace users. Effective coordination measures within the tactical area of responsibility provide the means to ensure adequate deconfliction between friendly forces. FS agencies at all levels maintain close coordination with relevant airspace control agencies. Detailed procedures for the coordination of indirect fire are developed according to the characteristics of the AO and the tactical situation. Some of these procedures include standardised coordination measures. The application of ROE to artillery may require the use of FS coordination measures that restrict the areas in which artillery can be employed, for example, the establishment of a restricted fire area around a civilian area.

3.48 Within their operational areas, commanders employ permissive and restrictive coordination measures to expedite the attack of targets; protect forces, populations, critical pieces of infrastructure, and sites of religious or cultural significance; and deconflict OS tactical actions and establish conditions for future activities. Along with other control measures, coordination measures and their associated procedures help ensure that artillery does not jeopardise troop safety, interfere with other attack means, or disrupt the activities of adjacent subordinate units. Manoeuvre commanders position and adjust coordination measures consistent with the location of friendly forces, the concept of the operation and anticipated enemy actions, in consultation with superior, subordinate, supporting and affected commanders. Coordination measures are either permissive or restrictive in nature.

Responsibilities

3.49 The artillery planner is responsible for recommending fire support coordination measures (FSCMs), with the exception of boundaries. Recommendations are based on the manoeuvre commander’s guidance, the location of friendly forces, the scheme of manoeuvre and anticipated enemy actions. The artillery planner coordinates all OS impacting in the area of
responsibility of the supported manoeuvre commander, including that requested by the supported unit. The artillery planner ensures that OS will not jeopardise troop safety, will interface with the employment of other OS assets and/or will not disrupt adjacent unit activities.

3.50 Further detail on airspace control is provided in ADDP 3.3, Joint Airspace Control, 2008.

Safety Measures to Minimise Fratricide

3.51 Artillery has the potential to cause extensive fratricide due to a combination of many factors, such as the size and lethality of its weapons systems and the degree of complexity of the coordination and application of fire. In many modern situations, the difficulty of accurately identifying and confirming the enemy or target has become a significant factor. For these reasons, reducing the chance of fratricide and contributing to force protection are paramount issues for commanders, artillery planners and controllers alike.

3.52 Current measures to avoid fratricide include the use of vests and patches, panel markers, and flags. For more detail see ADDP 3.1, Offensive Support, 2004.

Independent Check

3.53 The safe, timely, accurate and coordinated delivery of OS is underpinned by the conduct of the independent check. All personnel involved with the delivery of OS must make every effort to check the key data required to achieve the effect. For example, this may require an impartial check of CP calculations for an artillery fire mission or the readback of target locations from a pilot conducting OAS.
Coordination Measures for Unmanned Aerial Vehicles

3.54 UAVs require special consideration due to their impact on airspace management. Special coordination and management measures are illustrated in Figure 3–2 and are as follows, with further detail available in ADDP 3.3, Joint Airspace Control, 2008:

a. Restricted Operations Zone. A restricted operations zone will be established around the launch and recovery element to facilitate the launch and recovery of air vehicles. Air vehicles will be launched, controlled to mission altitude and then handed over to a ground control station for mission conduct.

b. Unmanned Aerial Vehicle Blanket. This area is established at the UAV operating altitude from the launch and recovery element restricted operations zone over the AO.

c. Flight Routes and Transit Altitudes. These may be established if additional control is required.
SECTION 3-8. COALITION OPERATIONAL CONSIDERATIONS

3.55 Artillery is well-equipped to make an effective and immediate contribution to coalition operations through the commonality of equipment, a common use of systems and interoperable battlespace management systems. Non-military agencies such as other government agencies or non-governmental organisations may request or require some form of protection. The protection afforded to these agencies may enhance military credibility and thereby provide the coalition with an opportunity to advance a cooperative environment. However, the protection provided must be in proportion to mission requirements.\(^2\)
Other considerations for artillery when operating with coalition partners include:

a. **Relative Communication Capability Considerations.** The Australian ABMSs allow integration of FS data through a fire direction centre.

b. **Support Arrangements.** Current artillery Howitzers are common through the US and UK forces, and the M198 is common with the US. Communication suites are common with the US but the support vehicles are different. Therefore, repair and maintenance is a critical consideration if deploying our own vehicles.

c. **Use of Liaison Officers.** Using LOs early to prepare staging areas, to adjust and agree to SOP and participate in the planning process is essential. Artillery officers are well practised in this role through training in BG and large-scale deployments. If artillery is being deployed, artillery officers should be attached as LOs to supported units and be deployed at the first opportunity.

**Annex:**

A. **Planning Considerations for the Close Offensive Support Plan**

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2. Ibid.

_LWD 3-4-1, Employment of Artillery, 2009_
ANNEX A TO CHAPTER 3

PLANNING CONSIDERATIONS FOR THE CLOSE OFFENSIVE SUPPORT PLAN

1. The OS tasks and factors considered essential by the commander for mission success include:
   a. commander’s concept for the employment of OS;
   b. battle positions for OS assets taking into consideration:
      (1) the ME;
      (2) scheme of manoeuvre;
      (3) adversary dispositions;
      (4) adversary counter OS capabilities;
      (5) whole of force protection requirements;
      (6) asset logistic requirements;
      (7) asset cueing requirements;
      (8) asset deployment/redeployment characteristics;
      (9) communications;
      (10) asset ranges;
      (11) asset capabilities;
      (12) asset technical requirements; and
      (13) asset tactical requirements;
   c. commander’s guidance for use of OS, including:
      (1) attack guidance;
      (2) engagement criteria listed as target selection standards;
      (3) priorities for target engagement;
(4) guidance for special munitions (illumination, smoke, copperhead);
(5) restrictions to include ROE and collateral damage considerations; and
(6) counter fire policy;
d. the observation plan to provide OS terminal coordination assets to the scheme of manoeuvre;
e. FSCM; and
f. C2 arrangements.
CHAPTER 4

ARTILLERY IN OFFENSIVE ACTIVITIES

SECTION 4-1. INTRODUCTION

4.1 The offensive is decisive in war. In offensive activities, artillery contributes most significantly to the maintenance of momentum, the application of firepower and the generation of tempo. In offensive activities, artillery’s ability to contribute to manoeuvre, mobility and surveillance makes it an essential component of the combined arms team.

4.2 There are three offensive actions, as follows:
   a. advance,
   b. attack, and
   c. pursuit.

4.3 The basic considerations for each action are explained in LWD 3-0-3, Land Tactics (Developing Doctrine), 2009. This chapter describes the employment of artillery in offensive activities. It will detail the concept of offensive manoeuvre; the various offensive activities, including the advance, attack and pursuit; and tactical techniques.

SECTION 4-2. ADVANCE

4.4 Artillery neutralises, harasses and suppresses enemy forces to enable the advance to maintain the initiative. In the advance, artillery also contributes to the situational knowledge of the force and protects HQ and other key assets from air attack.

4.5 There are two types of advance, as follows:
   a. advance to contact, and
   b. advance in contact.
4.6 **Advance to Contact.** An advance to contact is conducted when contact with the enemy has been lost or has yet to be made. The emphasis is on wide reconnaissance to find the enemy while the main force remains uncommitted. The advancing commander may not have sufficient information on enemy strengths and intentions to plan subsequent deployment groupings, and thus the provision of information by STA is critical to gaining and maintaining knowledge.

4.7 **Advance in Contact.** An advance in contact is conducted when contact has been made with the enemy’s security forces or main force. The emphasis is on maintaining contact, applying pressure and probing for weaknesses. The advancing commander should have more precise information on the enemy’s deployment and should be in a position to commence planning initial attacks. In this case, artillery will be providing FS to any attack, gaining information on in-depth positions, and harassing or interdicting objectives in depth.

**Deployment Groupings**

4.8 **Covering Force.** The covering force is normally a highly mobile, agile and well-balanced combat force and likely to include artillery. Artillery should be allocated to the covering force, with the FS of artillery from the main body also available where possible. Artillery is especially effective at contributing to SA, with the JOST and JOSCC located with the covering force.

4.9 **Advance Guards and Screens.** In planning FS for the advance guard, guns must be well forward in the order of march. In so doing, the gun and communications range is maximised, thereby increasing availability. For towed artillery to support a rapid advance, especially one with mechanised or armoured elements leading, the guns may be required to remain hooked in until contact is made. Once major opposition is encountered, artillery will progressively deploy forward to support the troops in contact. Delegation of the authority to move and deploy guns will enable the advance guard commander to support manoeuvre without reference to higher authority.

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*LWD 3-4-1, Employment of Artillery, 2009*
4.10 **Security Forces.** The strength of flank guards and rearguards must be consistent with the threat, as their provision weakens the main body and reduces the forces immediately available to the commander. The use of either UAVs or other sensors to afford early warning may provide an economical alternative in terms of the forces required. Some artillery with the main body must be positioned so that it is in range of the flank guards and rearguards.

4.11 **Main Body.** FS for the main body will be provided by the remaining artillery units, less assets allotted to the rearguard. A significant proportion of this artillery must move near the head of the main body so that it can deploy forward quickly when required. If a formation is advancing on a wide front and suitable routes including lateral routes are available and secure, some artillery from the main body should move centrally to the axes being used. This enables fire to be concentrated to support a number of forces on separate routes. In doing so, the availability of artillery support to the whole force is maximised and momentum maintained.

**Field Artillery in the Advance**

4.12 Artillery should be allocated to the covering force. Artillery neutralises and suppresses minor opposition to enable manoeuvre elements to either bypass or destroy these forces in situ. In the advance, JOSTs must have equivalent mobility and protection as the troops they are supporting and will usually move with a combat team HQ. Artillery is especially effective at contributing to SA. In addition to tactical information they will provide information on routes and locations for future gun positions. Artillery also supports the advance guard and flank security elements. A JOST is able to designate targets for armed reconnaissance helicopters (ARHs) and act as a joint terminal attack controller for OAS.

4.13 During the advance, guns must be well forward. SP artillery is preferable to support the speed and momentum of a mechanised advance. If advancing on more than one axis, sufficient laterals must be identified to allow the dispersion and aggregation of artillery, and to enable support to both flanks.
Surveillance and Target Acquisition in the Advance

4.14 During the advance the commander will employ STA to maintain momentum. This is achieved by the following means:

a. providing early warning of enemy dispositions along the likely avenues of approach and mobility corridors;

b. providing a measure of security by monitoring the flanks and rear of the force;

c. neutralising hostile batteries and/or HPTs that may interdict advancing elements; and

d. contributing to SA and the accuracy of FS.

4.15 The use of UAVs or other sensors on the flanks to afford early warning will allow manoeuvre forces to be relieved of that task in order to contribute to the advance.

Ground Based Air Defence in the Advance

4.16 The success of an advance is significantly influenced by the air situation. Air superiority provides advantages to the manoeuvre commander by reducing the risks to ground and aviation forces. Without air superiority, or at least air parity, an advance can be slow and costly. GBAD helps to achieve air superiority by reducing the air threat, while the absence of GBAD or air cover may threaten the force’s ability to advance.

4.17 Possible priorities for GBAD, and some considerations for assigning forces to the tasks, may include:

a. *Logistic Support Units and Facilities.* This would normally be an area defence.

b. *Critical Points on the Axis of Advance.* Critical points on the axis of advance would normally be defended by a troop as discrete VPs.

c. *Headquarters and Communications Facilities.* GBAD units generally treat HQ as a VP and allocate a troop to defend it. Communications facilities may vary in size, and an area defence may be more appropriate.
d. **Troop Concentrations.** GBAD may protect troop concentrations, particularly before they cross the start line. GBAD deployed on such a task would usually conduct an area defence.

e. **Advancing Forces.** If sufficient numbers are available, GBAD can create an ‘umbrella’ over advancing forces. Such GBAD would deploy in an area defence, and units may leapfrog forward to maintain coverage as the force advances.

f. **Offensive Support Assets.** OS assets can be defended as VPs or covered by an area defence.

g. **Mobility Assets.** Hides or bases for assets may be defended as VPs or areas. When these bases or hides move, the assets may need to adopt passive defensive means (such as dispersing) while the GBAD protection steps up.

**Planning Considerations for the Advance**

4.18 Artillery planners should consider the following:

a. C2,

b. manoeuvre requirements,

c. STA,

d. reconnaissance and deployment,

e. technical requirements, and

f. the application of FS.

**Command and Control**

4.19 Due to the speed and tempo of the advance, the artillery commander must decide whether command of artillery should include a degree of decentralisation, especially command of movement. The decision largely depends upon the ability of the lower level artillery HQ to control movement and deployment.
effectively. The degree of decentralisation will be dependent on the following factors:

a. the advance guard being responsible for its own road space, including that needed by its DS artillery;
b. the need for cooperation with other arms;
c. the number of manoeuvre elements to be supported;
d. the speed with which artillery will have to be redeployed;
e. the reliability of communications over long distances; and
f. whether administrative command of artillery can be exercised at force level.

Manoeuvre Requirements

4.20 Artillery manoeuvre in the advance is influenced by the following:

a. the frontage of the advance,
b. the number of axes to be used and the lateral distance between them,
c. the availability of gun positions,
d. the availability of GBAD positions,
e. the availability of UAV launch and recovery areas,
f. the condition of roads and tracks,
g. the enemy threat to routes,
h. the weather, and
i. the likely rate of advance.

Surveillance and Target Acquisition

4.21 In an advance, JOSTs may be unable to employ their full array of STA equipment and may require additional support from external assets such as WLR, ARHs and air observers. These assets can complement the JOST in acquiring tactical
information, providing SA, and observing, acquiring and engaging targets. Moreover, some JOSTs may be tasked to conduct force-level requirements.

4.22 When infantry are advancing on foot, JOSTs usually move with company reconnaissance groups. JOSTs supporting mechanised and armoured forces should work from armoured vehicles so that they have the same mobility and protection as the troops they are supporting.

Reconnaissance and Deployment

4.23 Artillery must move in such a way that maximum support is available at all times. Artillery reconnaissance parties should move just behind the lead battlegroups preparing positions so that the guns can keep within range as the advance proceeds. Gun positions must be prepared as close behind the vanguard as is practicable.

4.24 Staying close to the vanguard will usually be achieved by a series of leapfrog deployments into pre-planned areas, using routes kept clear for this purpose and for the movement of ammunition resupply. If the speed of the advance demands it, artillery can provide rapid FS by deploying from the line of march. However, the response is still slower than that achievable by artillery already deployed. Early reservation of gun positions is achieved by the use of artillery reserved areas and artillery manoeuvre areas.

Technical Requirements

4.25 There are two main technical requirements in the advance, as follows:

a. Survey. Accurate survey data is critical for the success of the offensive fire plan during the advance. Survey elements in conjunction with artillery reconnaissance parties will establish higher survey control along the axis of advance.

b. Meteorology. Met data is vital to accurate FS and assists commanders with future planning. During the advance,
met detachments need to be positioned so they can deploy quickly.

Application of Fire Support

4.26 The artillery planner, in applying FS to the advance, should consider the following:

a. **Fire Planning.** Target lists should be prepared at the outset of each mission or phase. The sensible grouping of these into target number blocks will permit successive blocks of targets to be cancelled as each becomes redundant. When FS is planned, the following targets might be considered:

(1) **Targets in Depth.** These include choke points, resupply routes and likely gun areas.

(2) **Targets for Hasty Attack.** These include enemy positions that cannot be bypassed.

(3) **Targets on Key and Decisive Terrain Features.** These include locations and infrastructure that, if occupied by the enemy, will cause significant delays or casualties to own forces due to their geographic and tactical advantage.

(4) **Flank Protection Targets.** These include enemy positions off the line of march, OPs and the use of smoke.

(5) **Reference Points.** These include easily recognisable natural or fabricated features.

b. **Fire Support Coordination.** As the nature of the advance is one of sustained movement, detailed FS coordination is required. In particular, the establishment and subsequent movement of an appropriate restricted fire line between the covering force and the main body will allow each element of the force the freedom to use artillery responsively, without incurring an unacceptable risk of fratricide.
4.27 Likely ammunition expenditure must be carefully assessed. Momentum may be badly affected by serious overestimates that choke supply routes with unnecessary vehicles. CSS artillery planners must also consider the plan relating to damaged equipment. Depending on the time available and the speed of the advance, equipment may be left for rear repair elements to fix.

SECTION 4-3. ATTACK

4.28 The attack is the essential focus of all offensive effort. The attack is a key activity aimed at destroying or neutralising an enemy’s capabilities by targeting critical vulnerabilities and undermining the centre of gravity. An individual attack forms part of the continuous process to break the enemy’s cohesion. At the completion of the attack, forces should be prepared for immediate further tasking.

4.29 There a variety of attacks: deliberate, hasty, night, silent and noisy. However, the principal task of artillery in the attack is to neutralise the enemy to such an extent that our own troops can assault without the enemy being able to bring effective fire to bear, and then hold their objectives with minimal casualties.

Field Artillery in the Attack

4.30 The preparation stage requires forces to gather tactical information, concentrate and conduct battle planning. Artillery will conduct the following tactical actions during this stage:

a. collect information, including that relating to the location of enemy FS assets;
b. prepare both the offensive and CBF plan;
c. adjust and record targets;
d. survey;
e. deception;
f. select and prepare main, alternative and temporary positions;
4.31 During the preparatory stage, normal artillery support will be provided for troops in contact by artillery already in action. The remaining artillery may be kept silent as part of the deception plan. Main positions should be occupied at the last possible moment. All movement and preparations must be carefully concealed. Preparatory fire is delivered prior to an attack in order to achieve either neutralisation or destruction. Such fire may also be used as part of a deception plan. The commander should direct whether preparatory fire is to be used (a silent fire plan may contribute to surprise).

4.32 During the assault stage of the attack, all artillery allotted to the attack is engaged on the fire plan. No guns are retained in reserve, although artillery in DS of the attacking troops will be superimposed on the fire plan to provide a firepower reserve. During the assault stage, quick fire plans may have to be prepared to support unit or sub-unit quick attacks. JOST and artillery commanders must be well forward so that this FS can be arranged quickly. Fire during this stage may include covering fire; DF; and the engagement of opportunity targets, such as withdrawing enemy forces, and cut-off points, such as bridges or defiles.

4.33 An attack should allow for the possibility of exploitation to take advantage of success in battle and to follow up initial gains. Artillery to be used in the exploitation should be nominated in the preparatory stage to allow it to deploy close to the routes selected for exploitation so that it can join the order of march in its correct position. The fire of this artillery should be superimposed in the later stages of the attack so that it can join the exploitation force without delay, and provision should also be made for additional ammunition.

4.34 Artillery planners must ensure that DFs are planned to cover reorganisation. Observation from the objectives and any adjustments to the original DF plan must be organised as soon as each objective is captured. JOSTs provide commanders...
with a useful means to maintain situational knowledge while assault forces reorganise.

4.35 CBF is essential to neutralise or destroy enemy artillery that can interfere with the attack. For a formation attack, this would be planned at force level and employ all available artillery in range.

Surveillance and Target Acquisition in the Attack

4.36 STA will be used to determine and monitor the enemy’s strength and dispositions, which typically include acquiring the location of reserves, FS and the routes that may effect their movement. The principal task of weapon-locating assets in the attack is to support the neutralisation and destruction of hostile batteries and/or HPTs to enable friendly troops to assault and hold or clear their objectives with minimum casualties from enemy indirect fire.

Ground Based Air Defence in the Attack

4.37 It is during the attack that the enemy will attempt to concentrate their air assets against the attacking formation to disrupt, delay, disperse, channel or destroy the assaulting forces and their support. GBAD contributes to attack by defending priority assets from air attack or reconnaissance throughout each stage.

4.38 Enemy Air Priorities. The enemy air effort is likely to be directed at disrupting our preparations for an attack. This may include denying reconnaissance, disrupting supply or striking at troop concentrations. These priorities could change once the assault starts and forces such as attacking forces, reserves and their counterattack force become more important to the battle.

4.39 Ground Based Air Defence Priorities. The priorities for GBAD during an attack will change in accordance with the stage of the attack, as follows:

a. Preparatory Stage. GBAD may be assigned to defend logistic elements, HQ and communications facilities, OS assets and troop concentrations during the preparatory
stage. Priorities may change if enemy reconnaissance is able to successfully locate any of these during this stage.

b. **Assault and Exploitation Stages.** GBAD may defend HQ and communications assets, OS assets, forming-up places and reserves during the assault and exploitation stages.

c. **Reorganisation Stage.** In addition to the priorities in the assault and exploitation stage, captured objectives may also warrant GBAD defence from enemy air attack during reorganisation.

### Planning Considerations

#### 4.40 Artillery planners should consider the following:

a. C2,
b. STA,
c. reconnaissance and deployment,
d. technical requirements,
e. the application of FS,
f. CSS,
g. the levels of support, and
h. night and silent attacks.

#### 4.41 Command and Control.** Command of artillery whenever possible will be centralised at force level. Attacking formations will be allocated reinforcement artillery, in addition to their allocated DS artillery. This reinforcement artillery may include units allotted in support of formations that are not involved in the attack or in the particular phase of the attack to which the allotment applies. Irrespective of when the CBF plan is initiated, artillery should be allotted to the appropriate STAC for the duration of the attack.

#### 4.42 Command of GBAD should be centralised at the highest level practicable in an attack. GBAD units that are protecting the
assault forces should be allocated so that the supported formation has authority to move the weapons.

4.43 Surveillance and Target Acquisition. During an attack JOSTs may be employed in the following roles:

a. Anchor Observation Post. An anchor OP is usually required to provide continuity of observation while other JOSTs are moving with the assaulting troops. Anchor OPs are especially critical in close country or where observation is limited. The main tasks of an anchor OP are as follows:

(1) to observe and correct fire,
(2) to obtain and pass back information, and
(3) to engage targets of opportunity.

b. Joint Offensive Support Teams with Assaulting Troops. The presence of JOSTs with the assaulting troops is essential. Their main tasks are as follows:

(1) to act as artillery adviser to the commander of the assaulting troops,
(2) to correct fire on planned targets,
(3) to engage targets of opportunity,
(4) to initiate requests for modification,
(5) to pass tactical information, and
(6) to provide artillery support when the assaulting troops are on the objective.

4.44 Technical Requirements. Accurate survey and met data is critical for the success of the offensive fire plan during the preparatory and assault stages. Without it, previous adjustment will be rendered ineffective and fire will be inaccurate. Artillery staff must be prepared to increase the frequency of met messages to ensure that accurate met data is available.

4.45 Combat Service Support. A fire plan to support a major attack will normally require the dumping of large amounts of gun
ammunition. This is a major logistics task, requiring the setting up of a control agency and close cooperation between logistics staffs and transport commanders. Artillery commanders and staff must watch the hourly expenditure of ammunition and, if the ammunition allotment for the attack looks like being exceeded, provide adequate warning to both the commander and logistics staff. A reserve of ammunition is required for all phases.

SECTION 4-4. PURSUIT

4.46 The pursuit is conducted aggressively to follow up a demoralised and withdrawing enemy. The pursuit requires maximum offensive action aimed at destroying the enemy’s cohesion and will to fight. The pursuit will maximise shock and surprise by penetrating deeply, neutralising C2 centres and disrupting sustainment. Thus, while the mechanics of a pursuit are the same as for an advance, the pursuit differs from the advance in the tenacity with which an enemy is followed up, as evidenced by the level of risk commanders are prepared to accept and the depth of penetration that is sought to ensure an enemy’s total destruction.

Field Artillery in the Pursuit

4.47 The imposition of necessary control measures must not cause undue delay. If the advance becomes a pursuit, the rate of movement may be so great that guns, especially towed guns, will not come into action until significant opposition is encountered.

4.48 Accurate, timely intelligence is vital during a pursuit, as is a reserve of combat power to deal with the unexpected. Artillery (delivery through SP platforms and ISTAR assets), OAS and ARHs are ideally suited to meeting this requirement. The artillery commander should consider the following when preparing a fire plan for such an action:

a. attacking in depth, particularly the enemy’s reserves, to prevent the enemy from reinforcing;
b. providing intimate support to assist the commander in preventing the enemy from disengaging; and
c. targets for hasty attacks.

4.49 In the pursuit, as in the advance, STA is a key contributor to and enabler of OS. It also contributes to the SA of the force, assists the force to manoeuvre and contributes to C2.

4.50 The main enemy air priority will be to create a clean break for the withdrawing forces. The main priorities for attack in this stage will be critical points on routes, such as bridges, HQ and logistics (especially fuel supplies). Once the break is achieved, enemy air will be directed to slow the pursuing forces to provide time to organise a defence.

4.51 Command of GBAD should be decentralised to the level where the forces can be most effectively employed during a pursuit.

SECTION 4-5. TACTICAL TECHNIQUES

4.52 Offensive tactical techniques include:

a. airborne;
b. ambush;
c. amphibious;
d. attack by fire (ABF);
e. cordon;
f. corridor thrust;
g. coup de main;
h. diversionary attack;
i. raid;
j. reconnaissance in force;
k. search;
l. support by fire (SBF); and
**Airborne**

4.53 The common types of airborne tactical techniques are as follows:

a. paratroop,

b. airmobile,

c. air, and

d. airdrop.

4.54 These techniques may be used to lodge a force, manoeuvre within the battlespace to gain advantage, assault an objective, or administratively move troops and materiel. Airborne insertions are usually a precursor to follow-on land forces.

4.55 Airborne techniques may involve a range of fixed-wing and rotary wing aircraft, some of which may land to deplane troops. The planning process and many of the considerations for the different types or airborne techniques are similar, except that an assault is expected to be strongly contested by the enemy whereas the other techniques are not.

4.56 **Airmobile.** Airmobile techniques include airmobile assault and airmobile movement in which combat forces and equipment manoeuvre about the battlespace in helicopters, under the control of a ground force commander, to engage in ground combat. An airmobile is generally planned to terminate in a secure landing zone for an uncontested landing. Any force inserted by airmobile will be lightly armed and unprotected, so the firepower of OS will be essential on most occasions. The guns and their ammunition may need to be pre-positioned to be within range of the landing zone. This pre-positioning may itself be by airmobile, in which case it would be a preliminary activity. This is also a useful technique when wishing to switch artillery between axes where the intervening terrain is rough and lateral routes are few or lacking. A Black Hawk or MRH90 can lift one gun; a Chinook can lift up to three. Infantry will need to secure the landing zone before the guns are inserted.
4.57 **Airmobile Assault.** Airborne assault is a tactical technique that delivers by air (fixed-wing and rotary wing aircraft) the assault force into the objective area and extends through an attack on the assault objectives and the consolidation of the initial airhead. Since an airmobile assault plans to land on or within range of an objective and the landing zone is therefore expected to be hostile, artillery does not undertake airmobile assault but artillery may be required to support it. When the objective is beyond the current range of artillery, a preparatory phase may be required to move the artillery to within range.

**Ambush**

4.58 An ambush is a surprise attack from a concealed position by a force lying in wait. It is usually a brief encounter and does not require the seizure or holding of terrain. It is a technique combining surprise and shock action to the fullest extent in order to destroy an enemy and/or obtain intelligence through the capture of prisoners, information and material. Ambushing is particularly useful in causing severe physical and psychological shock to an enemy force and, if used frequently enough, will cause moral dislocation of the enemy forces, restricting their movement and operations.

4.59 Artillery’s ability to concentrate fire is well suited to ambush. Artillery can either support a ground force ambush or conduct the ambush by fire alone. The usual technique for an artillery ambush is an ABF. The most effective ABF is to combine OS with aviation to form a joint air attack team. The joint air attack team concept is explained in greater detail in *LWD 3-3-1, Employment of Army Aviation*, 2004. GBAD can ambush enemy aircraft. Further information on ambushing is contained in *LWD 3-0-3, Land Tactics (Developing Doctrine)*, 2009.

**Amphibious**

4.60 The common types of amphibious tactical techniques are as follows:

a. amphibious assault,

b. amphibious raid,
c. amphibious demonstration, and
d. amphibious withdrawal.

4.61 The amphibious assault is a military mission launched from the sea by naval and landing forces embarked on ships or craft, with the principal task of landing forces ashore tactically into an environment ranging from permissive to hostile, in order to accomplish the assigned mission. Amphibious insertions are not limited to periods of conflict and may be employed across the spectrum of conflict.

4.62 Artillery planners will need to be involved early in the planning for the landing and subsequent tactical activity. UAVs may contribute to information gathering or specified tasking prior to lodgment. Artillery is unlikely to be included in the assault force, but may be transferred ashore by helicopter either prior to or during the assault phase. The ability to move the guns above deck will determine if an airmobile insertion is possible from an amphibious platform. The availability of landing craft and the suitability of the beach for disembarkation is a key limitation for the insertion of artillery.

Attack by Fire

4.63 A combined arms team may be required to neutralise or destroy a threat force from a suitable distance. A commander has the opportunity to destroy a threat force through the employment of the ABF technique. The purpose of the ABF is to employ direct and/or indirect fires to destroy a threat from a distance. This is normally used when the mission does not dictate, or support, occupation of the objective. It can have the aim of destruction, suppression, fixing or deceiving a threat. Artillery can conduct or support an ABF.

Cordon

4.64 A threat within any environment may need to be contained. This could be to allow the main body to bypass enemy positions or to undertake a containment and search of a specific area. When such an offensive action is required, the defender should be isolated from outside help and dominated. The cordon
provides one technique to achieve this effective physical and moral dislocation or disruption of the threat.

4.65 There are two key groupings in the cordon force, as follows:

a. Inner Cordon. An inner cordon, if required, contains targeted suspects and prevents outward movement. Its composition is determined by the nature of the threat but it will usually comprise dismounted infantry.

b. Outer Cordon. An outer cordon prevents inward movement and normally consists of movement control measures such as the deployment of vehicle checkpoints (VCPs), patrols, checkpoints and OPs. The outer cordon does not have to be a continuous ring of troops; the nature of the terrain and threat determine its layout. Artillery would normally support the outer cordon, but does not necessarily have to be positioned on the perimeter.

4.66 Tasks. The following tasks are likely for artillery as part of the cordon force:

a. denying or disrupting by fire;

b. supporting the defence of or ambushing of routes in and out of a designated sector; and

c. providing ABF/SBF.

Corridor Thrust

4.67 A corridor thrust is an advance on a narrow frontage. This may be because there are buildings, mountains or other key terrain to either side of the axis that must be captured and defended to provide security to the axis. So the force advances along a corridor, clearing in detail, securing and defending the axis to provide a cleared corridor. Concurrently, security forces manoeuvre on the flanks to disrupt the enemy’s scheme of manoeuvre and exploit opportunities. The use of this technique accepts high risk to the security of the lines of communication. It can be considered as a repetitive sequence of an obstacle crossing drill, close assault and hasty defence.
4.68 A wider offensive action employs a covering force to shape and know the battlespace. Two main forces, the thrust force and the security and support force, conduct any corridor thrust. Artillery would support both forces. Sufficient artillery would move at the head of the force to support the thrust force. The bulk of the artillery would move with the security and support force. Due to the limited range to the side of the corridor, the guns must be prepared to fire in the direct fire role should the threat require it.

Coup de Main

4.69 A coup de main is designed to seize an objective of such significance that its loss to the enemy may well win the current battle. It relies on speed, shock and surprise for its overall impact. As with raids, coups de main entail significant risk and require well-prepared and trained forces, as those forces habitually may be committed to an isolated location (such as a bridge or road crossing in depth) and risk destruction if not quickly reinforced.

4.70 Coups de main usually employ light forces. The inserted force may include GBAD and anti-armour assets. In a coup de main, artillery provides the weight of fire that cannot be generated by the inserted force. For objectives in depth, artillery may have to be prepositioned by air to be within range prior to the insertion of the combat force.

Diversionary Attack

4.71 A diversionary attack involves a show of force, whereby a force attacks or threatens to attack a target or objective other than the main target or objective for the purpose of drawing threat defences away from the main target. The diversion may take the form of a feint or demonstration.

4.72 A demonstration is an attack or show of force, without contacting the threat, and usually forms a part of an overall deception plan. A demonstration is planned at the highest level in concert with other battlespace deception measures to mislead threats into believing that a force is larger than it actually is and/or to mislead the threat into reassigning forces elsewhere to deal with a suspected friendly force ME. A feint is
an offensive technique involving actual contact with the threat. Demonstrations are designed to simulate the main attack.

4.73 Artillery is ideally suited to participate in any diversionary attacks. The firepower must be sufficient to simulate the ME without weakening the real ME. Because artillery is able to switch targets without changing the firing location, it is able to provide a full weight of fire to the diversion and then switch it rapidly to the ME.

Raid

4.74 A raid is an attack, usually on a small scale, involving swift penetration of hostile territory to secure information, equipment or people; to shape the battlespace; and/or to destroy an objective without any intention of holding ground. A raid ends with a planned withdrawal upon completion of assigned tasks.

4.75 Artillery can conduct raids by fire or provide supporting fire to other manoeuvre elements conducting the raid. For raids over great distances the artillery may need to be pre-positioned, possibly by airmobile.

Reconnaissance in Force

4.76 Reconnaissance in force is linked to the advance and the raid in that it is a tactical technique designed to discover and/or test the threat's strength, or to obtain other information. Battlegroup sized combined arms teams or larger usually conduct a reconnaissance in force with the clear intent to gain information and fight for it when required. A combined arms team of sufficient fighting power can conduct this technique in complex terrain where the threat is likely to ambush smaller reconnaissance forces such as patrols. A reconnaissance in force is an aggressive reconnaissance, with clearly stated objectives.

4.77 The less that is known about the threat, the stronger the force conducting the reconnaissance in force must be. Because of the lack of threat information, a commander normally conducts a reconnaissance in force as an advance to contact, or as a series of attacks across a broad frontage. The requirement for
4.78 The purpose of a search is to systematically scan and search areas, persons or objects of interest to locate, identify and, where necessary, retain information or any objects of interest. Search techniques can vary considerably depending on the type and aim of the search required.

4.79 STA is the primary contributor to search. UAVs and surveillance devices will be the primary methods. JOSTs and JOSSCs can also contribute to the search.

Support by Fire

4.80 The purpose of an SBF is to increase the supported force’s freedom of manoeuvre by placing direct fires on an objective that is to be assaulted or breached by a friendly force. SBF may be used to fix or suppress. The SBF can be supported by indirect fire, in which case a JOST would be located on the SBF position.

Sweep

4.81 Following a successful attack, large areas may need to be cleared. This will necessitate a sweep. The purpose of a sweep is to advance on a broad front, systematically clearing any residual threats, usually inferior in strength and capability, and likely to be demoralised. A sweep can be used in all terrain to clear specific small areas or larger areas.

4.82 The forces used in a sweep will depend on the terrain, threat and requirements for speed. However, UAVs will be a valuable contributor to the sweep.
CHAPTER 5

ARTILLERY IN DEFENSIVE ACTIVITIES

SECTION 5-1. INTRODUCTION

5.1 Defensive activities are designed to prevent, resist or destroy enemy attacks. They include:
   a. defensive battles conducted in specific areas in varying degrees of depth,
   b. blocking actions, and
   c. counterattacks.

5.2 Defensive activities are seldom decisive. Every opportunity must be taken to use artillery's unique characteristics in concert with offensive manoeuvre to influence the enemy's actions. The use of artillery must be carefully planned and controlled to permit the full exploitation of firepower and any potential for shock action. The fundamental aim for artillery in defensive activities is to prevent the enemy from developing sufficient combat power to breach friendly defences by breaking up assaults, suppressing enemy fire, and supporting counterattack and forces. Artillery capabilities are able to contribute to manoeuvre, mobility, firepower and surveillance.

5.3 STA will contribute to defensive activities by identifying enemy movements, approaches and likely ME. This will allow the commander to determine how best to counter enemy action. GBAD contributes to the defence by protecting priority assets and activities.

5.4 This chapter explains the artillery contribution to area defence, mobile defence, delay and withdrawal.
SECTION 5-2. SUPPORT TO DEFENSIVE TACTICAL ACTIONS

5.5 Military activities undertaken when the initiative lies with the enemy are essentially defensive in nature. Defensive activities range from those designed to retain terrain with the intention of engaging in battle under favourable circumstances, to those that provide a safe environment for civilian populations receiving HA. Land force defensive activities consist of two types of tactical actions, as follows:

a. *Defence*. Defensive actions include the tactical tasks of:
   (1) area defence, and
   (2) mobile defence.

b. *Retrograde*. Retrograde actions include the tactical tasks of:
   (1) delay, and
   (2) withdrawal.

SECTION 5-3. AREA DEFENCE

5.6 Area defence involves the planned occupation of ground of the commander’s choosing. There are generally two aims. The first is to draw or channel the enemy into selected EAs to destroy them by firepower, and the second is to resume the offensive as soon as possible. In area defence, artillery contributes to the destruction by firepower, the IRs of the force, and the protection of friendly assets. The area defence is fought in the following two stages:

a. the covering force battle, and

b. the main defensive battle.

Covering Force Battle

5.7 A covering force will be deployed in order to make and maintain contact with the enemy as it closes on the main defensive
position. In carrying out this task the covering force will normally employ delaying tactics. A covering force is likely to be composed of highly mobile combined arms teams including aviation, armour, mechanised infantry, and mobile artillery such as SP platforms.

5.8 The amount and nature of artillery supporting the covering force depends on the distance between the covering force and the main defensive position, the amount of delay to be imposed, the nature of disruption required and the mobility of the artillery. Artillery supporting the covering force will initially be deployed well forward of own troops. However, it is vulnerable in this situation and at the earliest opportunity it should redeploy to the protection afforded by the main defensive position while still able to support the covering force with fire. Units allocated to the covering force and screen must have mobility and protection commensurate with the assets they are defending.

5.9 Field artillery can make a major contribution by striking the enemy with concentrated fire at maximum range. Artillery can engage a wide variety of targets in a short time and should be used to inflict casualties, weakening the enemy’s offensive capabilities, and to create situations that permit aggressive manoeuvre of combat forces. Fire against follow-on forces can help to isolate the close battle. Artillery should be used to slow or halt the leading elements of an enemy attack and to permit the disengagement of elements of the delaying force.

5.10 Medium and SP artillery is best suited to support the covering force, for the following reasons:

a. It possesses a greater range, which reduces the requirement to redeploy guns.

b. It possesses the capacity to cover a wide frontage while still concentrating fire.

c. It permits friendly armoured vehicles to manoeuvre closer to enemy forces.
d. CSS – projectiles such as PGM, dual-purpose improved conventional munitions and field artillery scatterable mines, can damage, degrade and destroy any armoured reconnaissance force and tanks in the advance guard. Resupply of ammunition is critical for artillery supporting the covering force.

5.11 The STA contribution to the covering force is likely to include an allocation of WLRs. This will provide artillery intelligence and facilitate attrition of the enemy indirect fire before the main battle. The mobility and self-defence capability of the system may limit its employment in the covering force. The loss of a WLR before the main battle may jeopardise the successful prosecution of this critical event.

5.12 The number of WLRs supporting the covering force depends on the distance between the covering force and the main defensive position, the amount of delay, the nature of disruption to be imposed and the mobility of the force. In a mobile covering force battle, a minimum of two WLRs allows continuous coverage using step-up, step-back or leapfrog manoeuvre methods. If the covering force frontage is especially wide, a commander may consider placing up to three WLRs temporarily under command of the force.

5.13 UAV support to the covering force is also likely, as this will provide early indicators of enemy intent, avenues of approach, tactics and dispositions. UAVs can assist with the early identification and destruction of HPTs.

5.14 Likely priorities for GBAD within the covering force include:

a. HQ and communications facilities;

b. defiles and choke points along the withdrawal routes (including reserve demolitions);

c. offensive FS; and

d. manoeuvre elements.
Main Defensive Battle

5.15 The framework of the defence is based on the occupation of prepared positions on commanding ground, with mutually supporting firepower and obstacles to channel the enemy into planned EAs. Artillery is the commander's main weapon for breaking up enemy attacks before they reach the forward positions and slowing the advance of the enemy second echelons.

5.16 In terrain where armour represents the major threat, anti-armour weapons sited in relation to anti-armour obstacles, supported by PGM and concentrated high-explosive artillery fire (from medium and heavy batteries in particular) will constitute the framework for the defence. In terrain unsuited to armour, enemy infantry will constitute the major threat. In this environment, it is the coordinated fire of all weapons, but especially artillery firing high-explosive fused for airburst, which will defeat the infantry attack.

5.17 Interdiction fire will disrupt, delay and weaken the enemy and assist the commander to dictate the battle and control the tempo to the enemy. Some degree of penetration of a defended area is inevitable, and concentrated artillery fire is required to assist the counterpenetration tasks and support counterattacks. The commander's aim will be to force the enemy to the culminating point first, and artillery represents the key instrument in that design.

5.18 The transition between the covering force battle and the main defensive battle will often be indistinct and will occur at different times in different areas of the battlefield. Rarely will the battle be fought as planned. The enemy may attack unexpectedly or on a different approach, or the reserve may have to be committed, resulting in an unforeseen regrouping. Artillery provides the commander with the flexibility to influence widely dispersed areas of the battlefield without the need for redeployment.

5.19 During the enemy preparatory stage, the main defensive position is vulnerable to both reconnaissance and attack from
the air. GBAD will contribute to area defence by conducting point or area defence tasks to protect priority assets and activities. The allocation of GBAD in area defence is derived by assessing the likelihood of enemy attack on a particular target against the impact on friendly battle plans if that target is destroyed. Clear priorities are essential to the successful employment of GBAD in area defence. The relative priority of assets and facilities will change depending on the following:

a. enemy air priorities;

b. friendly groupings for the defensive battle, including the level at which the battle is being conducted (corps, division or brigade); and

c. the phases of battle.

5.20 Command of GBAD within the main defensive position should be maintained centrally at the highest level. Likely priorities for GBAD of the main defensive position at this time include:

a. C2 facilities,

b. OS assets,

c. logistic depots,

d. reserves,

e. defensive positions, and

f. logistic build-up supporting the main defensive position.

Planning Considerations

5.21 Artillery planners should consider the following:

a. C2,

b. STA,

c. reconnaissance and deployment,

d. technical requirements,

e. the application of FS,

f. CSS,
Command and Control

5.22 Command is centralised under the highest commander able to coordinate the deployment and tasking of artillery, usually the senior artillery commander at JTF level. The senior artillery commander is then able to deploy artillery in such a way that the fire of as many guns as possible can be concentrated on targets on the most likely approaches. If a covering force is initially deployed at a considerable distance beyond the forward edge of the battle area, some artillery will have to be temporarily grouped under its command. Force-level artillery units may be included in the covering force to augment the firepower of allocated artillery units.

5.23 In a coalition context the corps artillery commander will normally retain command of corps troop’s artillery. The control of its fire is usually made available to subordinate formations by allotting GS regiments to divisions. Force-level artillery commanders may further delegate control to formations. Control of fire from force-level artillery is delegated by allotting close support regiments DS to formations. If the corps reserve is provided from corps troops, GS artillery will usually be allocated to it.

5.24 When the enemy launches a main assault, the full weight of coalition DF is used to break up and separate the assaulting formations. Unit-level and force-level concentrations will obtain the best results. The force level artillery commander and, when applicable, the corps artillery commander can make impromptu changes to the allotment of artillery or even redeploy gun regiments to meet an enemy threat in any particular area. This may involve switching the POFS to the unit or formation most in need at the time.

5.25 Ground Based Air Defence Command. The grouping for command of GBAD varies during an area defence. In highly mobile operations, such as for the security forces and reserve, the supported formation should be given the authority to move.
the weapons. This will provide sufficient flexibility to meet the challenges of this type of battle. For other phases, command should be centralised to ensure the most efficient use of GBAD resources.

**Surveillance and Target Acquisition**

5.26 The artillery surveillance plan must accord with the overall ISTAR plan. The plan may involve an array of sensors. Within field artillery the primary sensors will be JOSTs and any associated equipment such as thermal imagers, lasers and ground surveillance radar. The plan may also require deployment of ‘stay behind’ JOSTs in depth, in order to acquire and adjust fire onto key interdiction targets.

5.27 DS unit commanders implement those parts of the plan for which they are responsible by ordering observation tasks or zones of observation to BCs. These zones will include coverage of any appropriate areas of interest.

5.28 JOSTs must be handled to the best advantage of the formation as a whole. The priority is to provide observation rather than to provide each supported arms sub-unit with its own JOST. Each of the JOSTs will establish one or more OPs to ensure coverage of the zone of observation given to them by their BC. Different OPs may be required for day and night observation. The JOST is unable to carry out its artillery tasks and simultaneously defend itself. Consequently, JOSTs require protection and are preferably sited within defended localities. The location of OPs will often prevent personal liaison with the supported arms commanders during battle. However, all JOSTs have a radio on the command net of the sub-unit they are supporting. This enables them to establish their OP in the most suitable sites, while remaining in contact with the supported arm.

5.29 In addition to FS tasks, JOSTs are required to collect and rapidly pass tactical information. Consequently, observation from OPs will be continuous by day and night. JOSTs may operate on the unit command net, or another net established
for the purpose, to speed the passage of tactical information back to formation HQ.

5.30 JOSTs will not usually be available to accompany patrols unless the employment of artillery fire is a key factor in the achievement of the patrol mission.

**Reconnaissance and Deployment**

5.31 There are two stages of reconnaissance and deployment that need to be considered by artillery planners. They are the enemy preparation stage and the assault and counterattack stage.

5.32 **Enemy Preparatory Stage.** During the enemy preparatory stage, artillery, in addition to that allocated to the covering force, is deployed well forward in temporary positions. This forward deployment enables artillery to provide additional support for the covering force, to support the screens and to disrupt enemy attempts to reconnoitre the main defensive position. In addition, firing from temporary positions means that the locations of the main gun positions are not disclosed. More than half of the available artillery, including GS artillery, may be so deployed, depending on the availability and the security of roads and gun positions. As the enemy closes up to the main defensive position and the covering force is withdrawn, gun regiments deployed forward in temporary positions are redeployed into their main positions. Regiments originally grouped with the covering force will be deployed where they can best influence the battle. The timing of the move to the main position must be carefully considered so that the enemy attack does not find the guns either on the move or in their temporary positions, which will probably have been disclosed to the enemy by firing.

5.33 **Assault and Counterattack Stage.** The deployment of artillery in the assault and counterattack stage of the defensive battle is conducted as follows:

a. **Main Positions.** The main gun positions are prepared during the preparatory stage. They are sited to fight the defensive battle in accordance with the formation...
commander’s design for battle. The variation between formation frontages and depth may be considerable when compared to the ranges of the available close and GS artillery. This can cause some conflicting requirements. First, there is the need to cover the whole formation frontage and reach well forward of the position. On the other hand, there is the need to have guns in depth so that any enemy penetration can be engaged by a heavy weight of fire. The first option is desirable, but depth is essential, otherwise guns may be required to move at a critical time in the defensive battle. Annex A contains a detailed description of artillery in area defence.

b. General Support Artillery. Some GS artillery should remain forward so that its greater range can be exploited by engaging targets well forward, especially follow-on echelons, hostile batteries and reserves. However, planners must ensure that the ability of guns to engage targets promptly over a wide frontage is not limited because they are too far forward, especially in the case of towed guns that are slow to re-lay outside of their primary arc of fire. As a guide, however, the following should apply:

(1) A major enemy penetration in any area should not constitute a simultaneous threat to all regiments. Close support regiments cover as much as possible of the force frontage out to the maximum depth. The most likely enemy approaches must be covered by the maximum possible weight of artillery fire, as should the likely deployment areas of enemy divisional artillery assets.

(2) The movement of guns should be kept to the absolute minimum during the enemy assault stage. If possible, the guns should not be moved at all.

c. Alternative positions are to be prepared as soon as possible after the main positions are prepared.
d. Counterattacks must be supported by the heaviest weight of fire possible.

e. All local defence measures, including artillery local defence plans and coordination of DF with any adjacent units, are to be implemented to ensure that batteries are protected and FS is not lost at a critical time.

5.34 Ground Based Air Defence Planning. Some planning and considerations for the employment of GBAD in the area defence include:

a. *Early Reconnaissance.* Reconnaissance must start as soon as possible, taking care to ensure that this action and the subsequent occupation does not compromise the location of assets.

b. *Coordination and Protection.* GBADC will coordinate GBAD, assess its effectiveness and take steps to protect detachments from ground attack. Any redeployments made as a response to changing enemy air attack priorities must be made in a timely manner, otherwise friendly forces could be exposed.

Technical Requirements

5.35 Survey and meteorology remain important technical requirements, as discussed in Chapter 4.

Application of Fire Support

5.36 The artillery DF plan must be closely coordinated with the direct fire resources of the formation. Artillery tasks should be chosen to target forming-up places and isolate the enemy's assaulting troops from their second echelon and follow-up forces. Direct fire weapons are particularly effective within the first 1000 m, but the artillery commander must be aware of obscuring sight lanes for these weapons.

5.37 The allocation of priority for artillery assets will usually follow the flow of the battle. The complexity lies in synchronising the transition of these assets to the relevant force without compromising the action of the other forces. The crucial
moment will be the commitment of the counterattack force, which will result in the loss of the majority of the blocking force’s support. Ideally, both the blocking force and the counterattack force will be within the range of artillery assets, as the movement of such assets will be an added complication.

5.38 Artillery must be able to concentrate the fire of as many guns as possible on the most important targets. Medium and heavy guns will normally be able to concentrate their fire on several approaches due to their longer ranges. However, if the force is widely dispersed, they may not be able to cover approaches to more than one formation. As a guide, fire plans will need to account for the following:

a. DF and the counter-preparation fire tasks;
b. depth fire for the engagement of second echelons;
c. the final protective fire;
d. the anti-armour plan;
e. the interdiction plan;
f. counterpenetration and counterattacks; and
g. CBF, particularly before the enemy commences the main attack.

5.39 Fire Support Coordination. The imposition of FSCMs will resolve the differing requirements of those fighting the defence.

Combat Service Support

5.40 Control of ammunition is critical during defensive operations. The artillery commander must strike a balance between the need to have sufficient ammunition available to support the planned battle and any contingencies and the risks involved in either ground dumping, or holding forward on wheels, large quantities of ammunition.
SECTION 5-4. MOBILE DEFENCE

5.41 Mobile defence is particularly suited to forces operating over wide areas with sufficient mobility to concentrate fighting power quickly. Artillery, especially mobile artillery, may be allocated to neutralise, harass and suppress enemy forces to gain space and time, disrupt the advance or attack, and destroy HPTs before they can be used. In mobile defence, artillery also contributes to the SA of the force.

5.42 A force conducting mobile defence comprises the following four main groups:
   a. the covering force,
   b. the blocking and holding force,
   c. the attack force, and
   d. the reserve.

5.43 Artillery support to mobile defence requires equipment with at least comparable mobility to the supported force and, preferably, superior mobility to the enemy. Artillery planners must identify and maximise the terrain advantages of the chosen ground. Planners must identify terrain with sufficient space for manoeuvre for artillery forces. With this in mind, SP artillery is best suited to mobile defence. Specific artillery support to the main groups within mobile defence is as follows:
   a. Covering Force. The artillery support required by a covering force in mobile defence is the same as described for the covering force in area defence.
   b. Blocking and Holding Force. The blocking force has the primary task of halting and holding the enemy’s advance until the attack force can attack. If the enemy advance is on a wide front covering a number of routes, there may be sizeable gaps between elements of this force which the blocking force must cover with obstacles and indirect fire. Artillery observation is essential to identifying and halting these secondary enemy thrusts. Artillery in the path of advancing enemy may move laterally rather than
rearward, so its ability to engage targets in depth is not greatly reduced.

c. *Attack Force.* The attack force consists of the bulk of the combat power of the mobile force and will generally be armour heavy. The principal task of the attack force is the destruction of the enemy. It will be committed when the blocking force has forced the enemy to halt and deploy. The maximum artillery effort must be allotted to the attack force. Rapid redeployment of guns, including lateral movement to bring them within range of the killing area, may be necessary. Massed artillery fire will be required as follows:

1. to assist with destruction of the enemy, and
2. to close off enemy withdrawal and reinforcement routes.

d. *Reserve.* A reserve will be established for each stage of the activity. The reserve will most likely be based on armoured forces. Artillery would only be allotted to the reserve if and when it was required to be committed.

**Ground Based Air Defence Considerations**

5.44 *Air Reconnaissance.* The air reconnaissance burden for the enemy during mobile defence is particularly high. The enemy will attempt, by using rotary wing aircraft, fixed-wing aircraft, UAVs and satellites, to locate the defending force’s killing areas and blocking forces to assist bypass or assault plans. The enemy will also attempt to locate HQ, reserves and communications facilities within the defending force for subsequent destruction by air or ground forces.

5.45 *Air Attack.* Due to the large areas over which mobile defence operations are likely to be conducted, the enemy is likely to employ their air attack assists as an extension of their artillery. The enemy will use air power to interdict and disrupt defensive preparations and to limit mobility, thereby reducing areas of superiority within the defending force.
5.46 **Ground Based Air Defence Priorities.** GBAD units will generally be allocated to a force as opposed to defending a particular asset. The priorities, however, will depend on the enemy air capabilities in the theatre, and may change to suit different stages of the mobile defensive battle. These priorities can include:

a. OS assets,
b. C2 facilities,
c. manoeuvre elements,
d. forming-up places, and
e. logistic units.

### Planning Considerations

5.47 Artillery planners should consider the following:

a. C2,
b. STA,
c. reconnaissance and deployment,
d. the technical requirements,
e. the application of FS, and
f. CSS.

### Command and Control

5.48 The fluid nature of mobile defence suggests that the command of artillery resources will remain centralised to coordinate the requirements of blocking and attack forces. In a widely dispersed mobile defence, the covering force will require artillery that is responsive to the covering force's separate manoeuvre plan. Artillery planners must maintain constant liaison with operations staff controlling movement.

5.49 **Ground Based Air Defence Command.** Given the fluid and rapid nature of mobile defence, the command of GBAD assets should be decentralised if possible, so that supported units
have the ability to move the weapons and possibly the responsibility to administer GBAD sub-units.

Surveillance and Target Acquisition

5.50 Even with modern surveillance equipment, the wide frontages of mobile defence will pose difficulties in establishing and maintaining artillery observation over all likely approaches. UAVs and sensors will be in great demand to supplement the observation plan.

Reconnaissance and Deployment

5.51 Artillery planners of reconnaissance and deployment groups need to consider the following:

a. frequent and rapid redeployment by day and night, with a consequent reconnaissance burden; and

b. widely separated gun positions or gun areas.

Technical Requirements

5.52 The nature of mobile defence may prevent the deployment and use of certain types of survey and met equipment. Survey may use GPS and other organic unit systems that require little time to provide orientation and fixation. Met coverage is unlikely to extend to artillery within the mobile defence group.

Application of Fire Support

5.53 When considering the application of FS, artillery planners must account for the following:

a. Fire Planning. The allocation of priority for artillery assets will usually follow the flow of the battle. The complexity lies in synchronising the transition of these assets to the relevant force without compromising the action of the other forces. The crucial moment will be the commitment of the counterattack force, which will result in the loss of the majority of the blocking force’s support. Ideally, both the blocking force and the counterattack force will be within the range of artillery assets, as the movement of such assets will be an added complication.
b. Fire Support Coordination. Artillery commanders will need to closely synchronise the application OS, particularly airpower, to enhance the shock of the counterattack force. FSCMs and sequencing arrangements must be implemented to prevent incidents of fratricide as the force nears the counterattack objective(s) while artillery systems are engaging.

Combat Service Support

5.54 Mobile defence will be characterised by short but frequent periods of intense firing, resulting in high ammunition expenditure, especially of PGM, improved conventional munitions and field artillery scatterable mines. The speed and tempo of mobile defence is expected to also cause high levels of human and equipment fatigue.

SECTION 5-5. RETROGRADE

Delay

5.55 The purpose of the delay is to trade space for time and to slow the enemy’s momentum while inflicting maximum casualties but avoiding decisive commitment of the delaying forces. Artillery can make a major contribution by striking the enemy with concentrated fire at maximum range. The ability of artillery to engage a wide variety of targets in a short time and to create minefields (via coalition artillery) should be used both to inflict casualties, so weakening the enemy’s offensive capabilities, and to create situations that permit the aggressive manoeuvre of combat forces. Fire against follow-on forces can help to isolate the close battle. Artillery can be used to slow or halt the leading elements of an enemy attack and to permit the disengagement of elements of the delaying force. In the delay, artillery also contributes to the situational knowledge of the force.

5.56 In delaying defence, the emphasis on causing casualties and maximising delay, demands that the optimum amount of artillery be deployed to support each delaying position. In
addition, all elements of the delaying force will require artillery when engaged with the enemy. Security forces will need significant support, and the location of artillery assets must cater for this requirement. Delay may be imposed by occupying the following:

a. successive positions,
b. alternative positions, or
c. a combination of the two.

5.57 Delay on successive positions requires a force to deploy most of its strength, including its artillery, on each position in turn. Movement between positions is protected by a covering force. This form of delay requires a marked advantage of mobility over the enemy.

5.58 Delay on alternative positions requires a force to occupy the first and second of the chosen delaying positions and to deploy a covering force. Most of the available artillery should be deployed to support the first position. When this position is abandoned, the force occupying it falls back through the second to occupy a third position while the artillery supporting it redeploy to cover the second position. This manoeuvre is repeated as necessary.

5.59 Close support regiments, because their primary task is to provide close FS, will tend to be tied to the plan for the supported arms. Force and higher level artillery will, therefore, be required to provide depth FS at the maximum possible range to disrupt and delay the enemy, and to neutralise or destroy enemy artillery. In addition, this artillery can often provide close FS while close support regiments deploy rearward.

5.60 Planning Considerations. Artillery planners should consider the following:

a. C2,
b. STA,
c. reconnaissance and deployment,
5.61 **Command and Control.** A delaying action requires a series of handovers as elements of the delaying force pass through or around one another. This requires detailed planning and coordination. The most critical part of the delay is likely to be the final break of contact and the handover of the battle to another formation. This will be particularly difficult if the delaying force has been unable to disengage. The overall OPCOMD will need to lay down a handover line. This should be positioned forward of the feature from which the enemy can first engage the next defensive position with observed fire and be situated so that the crossings and defiles used by the force breaking contact can be protected. When the delay leads to a defence, artillery assets from both the delaying and defending forces should be organised and positioned so as to be able to provide the maximum FS to the handover from the delaying force to the defending force. To avoid an unacceptable risk of fratricide, the defending force artillery commander must ensure that artillery fire is tightly coordinated. Nonetheless, it must be highly responsive.

5.62 **Surveillance and Target Acquisition.** The fluid nature of the delay may make continuity of observation and the movement of JOSTs difficult. As the delaying force approaches the handover line, tactical groups from the delaying force should ideally collocate on it with their opposite numbers from the ‘in-place’ formation until the delaying force has withdrawn completely. The collocation of JOSTs in positions of good observation would allow fire to be brought down on both sides of the restricted fire line as the handover battle draws to its conclusion.

5.63 **Reconnaissance and Deployment.** The coordination of movement should be centralised to ensure that maximum firepower assets are available. The possible need for a number
of gun positions to be prepared will place a high workload on reconnaissance parties.

5.64 **Technical Requirements.** The nature of the delay may prevent the deployment and use of certain types of survey and met equipment. Survey may use GPS and other organic unit systems that require little time to provide orientation and fixation. Met coverage is unlikely to extend to artillery within the mobile defence group.

5.65 **Application of Fire Support.** When considering the application of FS, artillery planners must account for the following:

a. **Fire Planning.** The DF plan in the area of the handover line would typically consist of a series of on-call DF tasks. Target details should be coordinated and disseminated by the defending force formation HQ. In this instance, much of the fire planning in a delay is similar to that in a defence, and techniques appropriate to either mobile or area defence might be employed depending upon the phase of the battle. The withdrawal from successive defensive positions may require the provision of smoke to conceal movement, the use of high explosive, bomblet and modern munitions to enable forces to disengage, and fire in support of a deception plan. While forces are moving rearwards, much may be achieved in further delaying the enemy by the use of an on-call fire plan concentrating on choke points, defiles and crossings. The control of this may be affected by JOST deployed with reconnaissance forces.

b. **Fire Support Coordination.** The establishment of a restricted fire line forward of the handover line, but in clear view of JOSTs from the in-place formation deployed on it, is likely to be necessary. An example of possible FSCMs in support of delaying missions is provided in Annex B.

5.66 **Combat Service Support.** The delay imposes a great burden upon the logistics system. Artillery planners must keep their
logistic counterparts up-to-date on ammunition, equipment and personnel issues.

Withdrawal

5.67 The purpose of a withdrawal is to disengage from the enemy and redeploy to a new position or task with a minimum of interference and casualties. Artillery is vital to achieving a clean break through massing fire at the moment the withdrawing force is most vulnerable. In the withdrawal, artillery also contributes to the SA of the force. A withdrawal can be conducted either in or out of contact and is demanding, especially if conducted after a local defeat.

5.68 Success in the withdrawal is aided by the maximum use of firepower to permit freedom of movement and assist our troops to make a clean break. A withdrawal does not mean a cessation of offensive action, and every opportunity must be taken to harass and inflict casualties on the enemy. Artillery will provide the main firepower to prevent the enemy from interfering with the overall conduct of the withdrawal.

5.69 The withdrawal commences with the rearward move of reconnaissance parties and ends with the redeployment of the force in its new defensive position. Delay is imposed on the enemy through the deployment of a covering force and the defence of an intermediate position. Critical stages in a withdrawal will be the thinning-out process at the old main position and the achievement of a clean break. A force will comprise a main body, a covering force and forces for the defence of intermediary positions. Elements such as rearguards and flank guards will also be required to maintain security for the withdrawing force, where there is the potential for substantial enemy interference or penetration.

5.70 During withdrawal, the enemy will use air power to prevent or interfere with attempts by friendly forces to achieve a clean break. This may be achieved in a number of ways. These include limiting or destroying the ability of the HQ to coordinate the withdrawal, and denying the use of routes.
5.71 **Ground Based Air Defence Priorities.** Possible GBAD priorities will include the protection of the following:

a. C2 facilities;
b. the covering force;
c. security forces (including flank guards and rearguards);
d. defensive positions (including intermediate positions); and

e. withdrawal route(s), particularly critical points along them, such as defiles and choke points.

5.72 Artillery must provide and coordinate FS for the following:

a. the old main position and thinning-out stage;
b. achieving the clean break;
c. the covering force;
d. intermediate positions;
e. the new main position; and
f. flank guards, should they be deployed.

5.73 **Old Main Position.** The majority of artillery supporting the old main position should be retained in action for as long as possible. The progressive reduction of strength and depth in the old main position through thinning out will increase the importance of firepower for the remaining troops.

5.74 Ideally, some guns should remain in action until after the last positions are abandoned or even until rear parties are withdrawn. An early follow-up by the enemy is thereby hindered and FS is available to assist the last withdrawing troops. The continued protection of this artillery is provided by their depth in the defence. The last guns to leave will be those in DS of the last troops to withdraw. Allocation of route space is likely to be critical and, because of this, some guns may have to be withdrawn earlier than otherwise desired.
5.75 Artillery should also coordinate any additional FS such as that available from Army aviation assets.

5.76 **Clean Break.** Ideally, disengagement should take place rapidly and at night. As much artillery as possible will be required to provide DF tasks to prevent the enemy closing in on the old position during the break clean. The artillery plan will include:

a. fire missions to deceive the enemy about our actions or act as a diversion; and

b. the use of CBF and harassing fire to suppress enemy artillery, hinder enemy forward movement and cover the noise associated with a withdrawal.

5.77 Once the artillery supporting the old main position is withdrawn, the nearest artillery in action will be as follows:

a. artillery supporting the covering force,

b. artillery in temporary gun positions forward of intermediate positions, or

c. artillery in main gun positions to the rear of intermediate positions.

5.78 Artillery will continue to provide DF, harassing fire and CBF, as in the defensive battle. DF plans must be reviewed at all levels and possibly extended rearward and adjusted to cover withdrawal routes.

5.79 **Covering Force.** The covering force will have the tasks of imposing delay, disruption and casualties on the enemy, and providing information and security between positions. It will initially be deployed behind the old main position. Some or all of the artillery allotted to the covering force is usually temporarily grouped under the control of the covering force commander for movement. SP artillery is most suited for this due to the manoeuvre required in a withdrawal.

5.80 As early as possible, either from the map or by reconnaissance, the covering force commander selects ground on which it is planned to delay the enemy. Gun positions should be selected, surveyed, reserved and, if necessary, stocked with
ammunition. However, the covering force may be forced to fight between such selected areas, and it may be necessary to select additional gun positions to ensure that artillery firepower is constantly available. Medium guns are of great benefit because of their increased range.

5.81 Intermediate Positions. The aim of a force holding an intermediate position is to delay the enemy by forcing deployment, and thus gain time for the preparation of the new main position. The intermediate force will often be required to cover a wide frontage and, as a consequence, will have little depth. This markedly increases the force’s reliance on firepower. Thus as much artillery as possible, including corps troops artillery, should be deployed to support this force. Guns allocated to intermediate positions will usually be the first to withdraw from the old main position.

5.82 In addition to supporting the force at an intermediate position, artillery allocated to that force will probably have to support the following:

a. the last troops withdrawing from the old main position, especially after the last remaining guns come out of action; and

b. the covering force as it withdraws.

5.83 Guns at intermediate positions should start to engage the enemy at their maximum possible range to force the enemy to disperse, to delay the advance and to prevent reconnaissance. When it is intended to delay the enemy for a considerable period at intermediate positions, deployment may occur in temporary and then main positions.

5.84 Gun positions should be fully prepared and surveyed, with ammunition dumped before the arrival of the guns. Ammunition may come partly from new stocks and from stocks backloaded from the old main position.

5.85 New Main Position. The employment of artillery at the new main position is planned and conducted as for an area defence. As for intermediate positions, some of the ammunition for the
new main position may be from stocks backloaded from the old main or intermediate positions.

5.86 **Flank Guards.** Artillery is likely to provide FS to flank guards, if necessary. JOSTs may be allocated to flank guards in accordance with the ISTAR plan. Alternatively, flank guards may provide protection for JOSTs to undertake tasks for the formation commander.

5.87 **Planning Considerations.** Artillery planners should consider the following:

a. C2,
b. STA,
c. reconnaissance and deployment,
d. technical requirements,
e. the application of FS, and
f. CSS.

5.88 **Command and Control.** Where possible, command should be centralised at force level. However, in the withdrawal it will often be necessary to temporarily decentralise the command of artillery (especially command for movement) to formations because of the difficulty of controlling movement from force-level artillery HQ.

5.89 It may be necessary to temporarily decentralise command of some GBAD to formations or manoeuvre forces due to the possible difficulties with controlling the movement and deployment of GBAD during the withdrawal.

5.90 **Surveillance and Target Acquisition.** As the old main position thins out, some JOSTs may be required to remain in abandoned positions so that they can engage the enemy on approaches no longer covered by armour or infantry. Rear parties that stay behind after the time of denial to close minefield gaps, fire reserved demolition or provide early warning on a vulnerable approach will require the assistance of a JOST. In addition, demolition guards at reserved demolitions
Commanders should consider the employment of airborne observers. JOSTs and the forward air controller may work in conjunction with Army aviation assets during this phase.

5.92 Reconnaissance and Deployment. Artillery staff must be aware of the need for timely reconnaissance and disciplined movement. Artillery reconnaissance parties for the main force, for intermediate positions and for the new main position must move back as soon as possible. In addition, artillery representatives must be included in formation and supported arm unit rear reconnaissance parties for the following purposes:

a. to act as artillery advisers to formation and supported arm unit representatives,

b. to prepare DF plans for the intermediate and new main positions, and

c. to site and prepare OPs.

5.93 Technical Requirements. The two main technical requirements are as follows:

a. Survey. Survey elements will be able to establish survey control along the planned withdrawal routes.

b. Meteorology. Met troops must be deployed to provide adequate support for each successive combination of covering force and intermediate positions until the new defensive position is finally occupied.

5.94 Application of Fire Support. When considering the application of FS, artillery planners must take account of the following:

a. Fire Planning. The tasks that may be relevant are:

(1) the provision of smoke to conceal movement;
(2) the concentration of coordinated fire, where appropriate, with offensive EW, air and aviation to enable forces to disengage;

(3) fire to support the obstacle or barrier plan;

(4) fire on enemy approach routes and choke points to force delay once the security forces have disengaged;

(5) fire in support of a deception plan; and

(6) the continuous attack of the enemy in depth to hamper movement, deplete strength and, in conjunction with EW, disrupt C2.

b. **Target List.** A target list covering the full extent of the intended withdrawal and linked with the DF plan for the next position should be prepared and circulated.

c. **Fire Support Coordination.** The correct application of FSCMs will be essential in such a fluid and potentially confused situation. As far as artillery is concerned, this will be particularly important as the covering forces' delaying action ends as it begins to break clean at a handover line forward of the next main body defensive position. The measures necessary are illustrated and discussed in Annex C. During the withdrawal itself, the sooner that the no-fire line established forward of the covering forces' initial positions is re-established further back, the sooner artillery can support the deep battle.

### 5.95 Combat Service Support

A detailed ammunition plan for the entire withdrawal will be necessary to allow the maximum number of logistic vehicles to withdraw as early as possible, commensurate with security requirements and anticipated ammunition expenditure. It may be necessary to arrange for ammunition to be pre-positioned on future gun positions.

### 5.96 Tight ammunition control is essential. Stocks of ammunition are reduced progressively as the time for withdrawal approaches, either by carrying it to the rear or by use without replenishment. However, sufficient ammunition must be available to meet an
unexpected surge in activity. This is achieved by maintaining gun ammunition points (APs) forward for as long as possible.

5.97 Ammunition that cannot be carried by artillery units may be fired, backloaded by logistics elements or destroyed. The need to maintain security and the availability of ammunition and transport elements will determine the course to be adopted. Artillery staff should plan on stocking the appropriate number of field artillery scatterable mines rounds to support the withdrawal for minefield gap closing.

SECTION 5-6. TACTICAL TECHNIQUES

5.98 Tactical techniques include:
   a. battle handover,
   b. break-out from encirclement,
   c. convoy escort,
   d. counterattack,
   e. counterpenetration,
   f. defend a battle position,
   g. defend a strongpoint,
   h. defend in sector,
   i. reserved demolition,
   j. route security, and
   k. spoiling attack.

Battle Handover

5.99 The purpose of the battle handover is to ensure a smooth handover of responsibility to another force, either passing to the rear on completion of its task, or to meet a replacement force at the battle handover line. As such, they are considered control measures.
Break-out from Encirclement

5.100 A force is considered to be encircled when it has lost its freedom to manoeuvre and all ground lines of communication are cut by threat actions. The purpose of breaking out of encirclement is to enable the commander of an encircled force to regain the initiative.

5.101 There are two types of break-out: the deliberate break-out and the break-out by stealth.

5.102 Deliberate Break-out. The deliberate break-out is conducted as a deliberate attack by an advance guard to create, or secure, a gap in the encirclement, followed by the movement of the main body through the gap. The encircled force should be organised as for an advance, including a strong advance guard, a main body, a flank guard and a rearguard. The creation of a gap is the decisive event in a break-out, and is likely to require the tasking and close coordination of all OS.

5.103 Break-out by Stealth. A break-out by stealth is achieved by small groups breaking out in several directions, using stealth to pass through the encirclement. OS is not used until or unless the break-out is discovered.

5.104 The task for STA is to assist in finding an appropriate point at which to break-out. The tasks for field artillery include preventing the enemy from reacting, protecting friendly troops and to holding open the gap.

5.105 GBAD will continue to protect key assets. GBAD also makes a positive contribution to the morale of the encircled force by defeating enemy attacks. Once the break-out gap has been established, GBAD should be tasked to defend that gap from air attack. The inability to deploy to optimal positions should be considered when judging the likely effectiveness of such a defence.

Convoy Escort

5.106 Road convoys require protection in tactical situations. The purpose of a convoy escort is to act as a security force which is task-organised to provide support to a convoy. It is likely to be
a combined arms team and include forces such as cavalry, tanks, mechanised or motorised infantry, and OS.

5.107 OS is ideally suited for convoy escort because of its ability to set up quickly and switch fire to any point within range in a short period. SP artillery is preferred for this task because of its mobility.

Counterattack

5.108 At any time during the conduct of a defensive battle, the enemy is likely to gain a foothold within the defensive perimeter, requiring them to be dislodged by a counterattack. The purpose of the counterattack is to regain lost terrain or disrupt a threat attack. In the defence, counterattacks can be pre-planned and deliberate but often they will be quick attacks to stabilise the situation. The grouping and size of the counterattack force will depend on the terrain, the vegetation and the threat being countered. If possible, it should be a combined arms team. Artillery will support any counterattack, to inflict damage and to prevent the enemy force from developing combat power.

Counterpenetration

5.109 During the defensive battle, the enemy can penetrate the defended area and threaten the integrity of the defence. The purpose of counterpenetration is to block the attacking force that has achieved the penetration, and stabilise the situation in preparation for a subsequent counterattack to restore the position. Counterpenetration positions can be pre-prepared in vulnerable areas or the counterpenetration can be undertaken as an ‘as required’ task where no pre-planned positions exist. Dismounted infantry and cavalry forces are ideally suited to the task, but should be supported by anti-armour weapons, OS and ARHs. Artillery will play a key role in preventing follow-on forces from reinforcing the penetration, and in cutting off the lines of supply to the enemy force.

Defend a Battle Position

5.110 Battle positions are defended locations from which fire can be applied into an EA. Defence of a battle position is more
important for the achievement of fire domination in an EA, than in the retention of the terrain itself. Combined arms teams may be allocated individual battle positions, or be integrated into a single battle position.

5.111 Forces occupying battle positions conduct their defence as for an area defence. The considerations for artillery are the same as for the area defence.

Defend a Strongpoint

5.112 Strongpoints are usually associated with the defence of specific areas, such as weapon sites or gun emplacements; important CSS facilities, such as stores and ammunition; or other key installations, such as power plants, dams and railway yards. Strongpoint defence can also include those located in coastal defence installations, ports, harbours and airfields, and differ from battle positions in that they can be a single fortified defended post or a series of posts grouped into a detachment or section locality. The purpose of a strongpoint is the retention of specific terrain in order to deny its use to a threat for example, the use of key terrain to dominate, influence or move through an area. While guns can provide their indirect FS as usual, they can also be employed in a direct fire role when defending a strongpoint.

Defend in Sector

5.113 The purpose of a defend in sector task is to prevent threat forces from passing beyond the rear boundary of the assigned sector while retaining flank security and ensuring integrity of effort within the parent unit's scheme of manoeuvre. Infantry may be asked to defend an assigned sector when flexibility is desired and retention of specific terrain is not necessary. This technique may incorporate elements of both an area defence and a mobile defence. It relies on the ability of the defending force to manoeuvre and have maximum freedom of action within assigned sector boundaries. Artillery is able to bring fire to bear in a sector without necessarily moving.
Reserved Demolition

5.114 The purpose of a reserved demolition is to provide a prepared demolition on a critical feature, such as a bridge, crossing or other feature, for blowing on the instructions of the formation commander, as delegated to the commander of a demolition guard. The main task of the demolition guard is to ensure that the enemy does not capture the demolition before it has been fired. The demolition guard commander commands all troops at the demolition site, including the engineers forming the firing party.

5.115 Threat reconnaissance is likely to close rapidly on these entry points, closely followed by the advance guard. At the same time, or in advance, the threat may mount a coup de main to seize an entry point or points. The friendly formation’s demolition guard is likely to be subjected to attacks by OS and attacks to seize these points. Parties of saboteurs may also seek to destroy important bridges, cutting off any potential withdrawal by friendly forces.

5.116 Defenders must be prepared for OS at every stage of the demolition site’s defence, and for the possibility of an enemy coup de main. Medium and heavy artillery must be ready for the CBF plan. A JOST must be deployed to cover likely approaches. Possible airmobile landing sites should be registered with the guns, and GBAD should be sited to cover likely approaches from both fixed-wing aircraft and helicopters. Guns may initially position forward of an obstacle to provide depth of fire, but should be withdrawn to the near side at the earliest opportunity.

Route Security

5.117 The purpose of route security techniques is to protect lines of communication and friendly forces moving along them. Security should be provided by a combination of techniques, including fixed strongpoints, patrolling, route reconnaissance, the establishment of VP checks and VCPs, cordon security, convoy protection, and convoy escorts. Artillery (field, STA and
GBAD) should be placed in fixed strongpoints at intervals that allow for superimposition.

**Spoiling Attack**

5.118 During the defence, a commander may be able to seize the opportunity for a spoiling attack to disrupt enemy preparations for an attack. They are normally launched against an assault force that is forming up or assembling for an attack. They are usually conducted against opportunity targets to destroy personnel and equipment, but not to secure terrain. A spoiling attack may also be achieved by an ABF.

5.119 Mechanised forces, supported by armour, aviation and OS, are preferred for spoiling attacks if space and terrain will allow. OS will be key to disrupting the enemy and protecting friendly forces.

**Annexes:**

A. Diagrammatic Layout of Artillery in Area Defence
B. Artillery in the Delay
C. Artillery in a Rearward Passage of Lines
1. **Figure 5–1** provides a diagrammatic layout of artillery in area defence when in a coalition environment.³

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**Figure 5–1: Artillery Deployed in Area Defence**

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³ From *United Kingdom Artillery Training Volume 1, Pamphlet 1, The Tactical Handling of Artillery*, 1999 [Annex A to Chapter 8].
1. Figure 5–2 illustrates the coordination measures required to assist movement, control of assets and handover during the delay. 

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4. Extract from United Kingdom Artillery Training Volume 1, Pamphlet 1, The Tactical Handling of Artillery, 1999 [Annex A to Chapter 9].
Figure 5–2: Artillery in the Delay

Note:
Delaying action - successive positions
1. NFL (1) effect at outset.
2. NFL (2) effect on withdrawl of BGs to PL GOLD.
3. NFL (3) effect of withdrawl BGs tp PL TIN.
4. NFL may be removed or maintainance within boundaries to cater for slower withdrawl by one BG than the other.
ANNEX C TO CHAPTER 5

ARTILLERY IN A REARWARD PASSAGE OF LINES

1. **Figure 5–3** illustrates a typical series of moves required for elements of two forces during a rearward passage of lines.\(^5\)

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5. From *United Kingdom Artillery Training Volume 1, Pamphlet 1, The Tactical Handling of Artillery*, 1999 [Annex C to Chapter 10].

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LWD 3-4-1, Employment of Artillery, 2009
1. NFL permits divisional deep operations to be conducted in safety.
2. JOSTs with the delaying force ideally collocate with JOSTs with the in-place forces. BG HQs and BG tactical groups may also collocate towards the end of the operation to effect coordination.

Figure 5–3: Artillery in Rearward Passage of Lines
CHAPTER 6
ARTILLERY IN STABILITY ACTIVITIES

SECTION 6-1. INTRODUCTION

6.1 Stability activities are designed to maintain or establish a secure environment, creating the conditions for the provision of essential government services, emergency infrastructure reconstruction and humanitarian relief. Stability activities may or may not involve the use or threat of force. Tasks range from HA, to training indigenous forces and to the transition to a satisfactory endstate after major combat. Conducted throughout all campaigns in conjunction with offensive and defensive activities, they may be the ME to achieve a campaign objective.

6.2 Stability activities are usually conducted in complex physical terrain, with mixed populations and within a complex information environment. They are manpower and time intensive, and incidents at the tactical level can have significant higher level consequences.

6.3 This chapter describes the role of artillery in stability activities.

SECTION 6-2. SUPPORT TO STABILITY TACTICAL ACTIONS

6.4 Stability activities are undertaken to establish control so that the whole-of-government effort can be applied to reform the security forces, restore essential services and assist normal government to function. Interagency cooperation is fundamental to achieving stability. The tactical actions that achieve stability are as follows:

a. control,
b. reform,
c. restore, and
d. assist.

6.5 Considerations for artillery include:

a. **Reconnaissance.** Patrolling with UAVs can provide information that contributes to a supported commanders’ ISTAR plan to determine likely enemy targets and vulnerabilities that may undermine the enemy’s centre of gravity.

b. **Surveillance.** JOSTs can establish OPs and maintain surveillance on likely or known hostile locations, movements, activities and intentions.

c. **Community Engagement.** Gunners can deploy without their guns and act either as infantry or as liaison between the military and other agencies. This presence can provide a feeling of security and confidence for the local population and provide valuable intelligence.

d. **Human Intelligence.** The interaction with the indigenous population in the AO provides exploitable information not obtainable by normal means.

**SECTION 6-3. CONTROL**

6.6 Control aims to reduce disorder and violence to an acceptable level. Establishing a secure environment achieves the conditions for non-government organisations and civil agencies to operate; provides opportunity for the development or resumption of normal social, political and economic activity; and allows dialogue between the opposing factions. The purpose of control is to create the conditions in which reform, restore and assist can occur. Artillery supports control through the provision of information, firepower, rapid reaction and personnel.

6.7 The tactical tasks associated with control include:

a. conflict containment,
6.8 Conflict Containment. The purpose of conflict containment is to prevent the spread of conflict to neighbouring areas and states. Conflict containment requires interposition by either or both military forces and monitoring organisations to restore law and order, to protect human rights, to facilitate humanitarian relief, and to perform other reform, restore and assist tasks. Artillery contributes to this through the use of, or threatened use of, armed force, including:

a. Field artillery and UAVs can contribute to counterinsurgency and counter-terrorist tasks.

b. Gunners without their guns can supplement infantry in a number of ways, including:
   (1) patrolling and the establishment of strongpoints,
   (2) the protection of human rights,
   (3) recording and collecting evidence of violations, and
   (4) arresting designated war criminals.

6.9 Crowd Control. Public order involves security forces managing and containing groups and crowds intent on confrontation or violence in order to achieve specific outcomes. Responses to incidents of public disorder vary from tolerance, escalating through riot control, to the use of discriminate force.
to protect human life. Military forces are restrained by international law and the need to apply reasonable and proportional force. Gunners can contribute to crowd control either as a military force or in support of law enforcement agencies. This support can be armed or unarmed depending on the situation. Further information on crowd control TTP is contained in LWP-G 3-8-2, Population Protection and Control Techniques (Restricted), 2001.

6.10 Curfew. A curfew is a means by which movement can be controlled for short periods. It is one of several actions that underpin the establishment and maintenance of the rule of law. It may be general and imposed over a wide area or it may be restricted to a small area such as a town centre or housing estate. While the threat of firepower may still be useful, gunners may be better used for cordons and manning roadblocks and checkpoints. UAVs can still be used for ISR monitoring vehicle movement bans and patrolling to supplement the police. They may also provide the unskilled manpower to assist the civil authority in the maintenance of essential services.

6.11 Enforcement of Out-of-bounds Areas. Enforcement of out-of-bounds areas is a key component of conflict containment and also underpins the maintenance of the rule of law. A commander or civilian authority may make the assessment that the only practical means of preventing and containing further conflict through protecting key infrastructure or vulnerable communities is by declaring the area out-of-bounds and restricting all access to, or through, the declared area. Artillery can enforce out-of-bounds areas by assisting with cordons, roadblocks and checkpoints. UAVs can also conduct patrols.

6.12 Internment and Detention. The ADF may be required to assist law enforcement agencies with internment and detention tasks. It is a generic term that encompasses all persons other than ADF members. Internment and detention tasks comprise all actions which ensure the safe, secure movement and humane treatment of captured persons from the point of capture through exploitation and classification, to internment or detention, and
ultimately release or repatriation. Gunners can be used for all these duties; however, this is most likely to be in support of law enforcement agencies.

6.13 **Key Point Protection.** Important buildings and installations may be targeted for hostile action because they are vital to the functioning of the government or the economy, or because their damage or disruption is likely to be politically embarrassing. Additionally, key points vital assets may include buildings or areas of cultural and religious significance. Artillery may be required to assist infantry with key point and vital asset protection. This includes the use of field artillery in the direct fire role, although the ROE would be very restrictive.

6.14 **Population Protection.** Control involves the protection of civilians and general populations from conflict apart from the other control measures as described in this section. These measures include activity to provide immediate security to threatened populations in order to control residence, identity, movement, assembly and the distribution of commodities, therefore setting the conditions for the re-establishment of law and order and the rule of law. Artillery personnel are able to assist with this.

6.15 **Refugee and Internally Displaced Person Movement.** The purpose of refugee and internally displaced person movement control is to provide military assistance to specialist agencies for the movement and protection of refugees. Artillery vehicles can be used to transport refugees and internally displaced persons if necessary. Personnel can act as guides for non-government organisations transporting refugees and internally displaced persons and provide assistance in establishing camps.

6.16 **Separation of Hostile Forces.** Military forces conduct separation of hostile forces tactical tasks to support the administration, monitoring and enforcement of agreed ceasefire lines. Artillery can assist with marking separation lines and erecting fences, arms control, and verification of compliance with agreements.
6.17 Supervision of Ceasefire. Military forces may be deployed to supervise any commitments agreed to by the parties as part of a truce, ceasefire or other peace plan. The purpose of ceasefire supervision is to prevent further conflict, through a suitable structure and organisation. Artillery is able to supervise ceasefires through the establishment and manning of OPs and flights with UAVs.

SECTION 6-4. REFORM

6.18 Reform is a tactical action to transform or train legitimate indigenous security sector forces and agencies to which responsibility for national defence and internal security will be transferred. It necessarily includes police and paramilitary forces; security management; and oversight bodies such as legislators and management bodies. The purposes of reform is to ensure the following:

a. that the quality of governance in the state, in terms of relationships between security institutions, the wider government and the general public is established and maintained; and

b. that the technical competence and professionalism of those within the security institutions is established and maintained.

6.19 The tasks associated with reform include:

a. the allocation and control of equipment and infrastructure;

b. disarmament, demobilisation and reintegration;

c. the selection and recruitment of future security forces; and

d. training, mentoring and the transfer of responsibility.

6.20 Allocation and Control of Equipment and Infrastructure. The rebuilding indigenous security forces normally requires the issue of, and training on, new equipment and critical
The allocation and control of this equipment and these facilities requires distribution and accounting by coalition forces. In addition to new equipment, indigenous forces may require new or modified infrastructure. This also requires coalition management and a system to manage the handover of infrastructure to host nation (HN) authorities. Artillery is able to transport new equipment in artillery vehicles, distribute the equipment, and then train indigenous police and army on its use. The primary task will be the provision of training teams.

6.21 Disarmament, Demobilisation and Reintegration. Disarmament, demobilisation and reintegration is one element in a wider and longer term transition designed to reform the indigenous security sector and to reintegrate those military personnel considered surplus to military requirement back into their society. The task invariably involves many civil and military agencies in a fully integrated reform plan. The following might be key tasks for artillery personnel:

a. Disarmament. This is the collection, documentation, control and disposal of weapons, ammunition and explosives belonging to combatants.

b. Demobilisation. This is the formal and controlled discharge of active combatants from the armed forces or other armed groups.

c. Reintegration. Reintegration assists civilian agencies with the process by which ex-combatants acquire civilian status and gain sustainable employment and income.

6.22 Selection and Recruitment of Future Security Forces. The purpose of the selection and recruitment of future security forces is to ensure the establishment of an effective and capable military and security force that has a culture grounded in national laws. Artillery personnel, working among the people, can assist with identifying those individuals who might be suitable for recruitment and assist with their recruitment.

6.23 Training, Mentoring and Transfer of Responsibility. Following the vetting process, Army training teams can facilitate the selection, recruitment and subsequent training of
indigenous forces as part of the disarmament, demobilisation and reintegration program. Artillery can provide the training teams to train the armed forces, paramilitary forces, presidential guards, intelligence and security services, border guards, and reserve or local security units.

SECTION 6-5. RESTORE

6.24 Restore is the process of 'post-conflict reconstruction' or 'provincial reconstruction'. Initially restore involves the provision of immediate health assistance and essential services and facilities, and it is often associated with disaster relief. The purpose of restore is to re-establish essential services, facilities and infrastructure and provide HA and health assistance.

6.25 The primary contribution of artillery to restore is the provision of protection and support to personnel and organisations undertaking restore. Some artillery personnel may have specialist trades that enable them to assist with the restoration of utilities and infrastructure. But, as a collective group, infantry forces are not trained or equipped to provide essential services or infrastructure. However, they can still assist with the provision of unskilled manpower, and they can assist with civil–military cooperation and liaise with the various community groups and councils.

6.26 The tactical tasks associated with restore include:
   a. immediate health assistance,
   b. the restoration of essential public utilities,
   c. the restoration of essential public services,
   d. the restoration of essential facilities and infrastructure,
   e. the restoration of post-conflict special services, and
   f. the restoration of intellectual and institutional infrastructure.
6.27 Artillery medics are able to assist with the provision of immediate first aid and supplement medical staff in medical facilities. Individual gunners may act as stretcher-bearers and orderlies. Artillery can also provide unskilled labour to assist other military forces (RAE and RAEME) with the restoration of essential public utilities. They can also assist with those labour-intensive public services that do not require high levels of training, such as sanitation and debris removal.

SECTION 6-6. ASSIST

6.28 Assist aims to preserve the rule of law, enable the conduct of elections, and provide humanitarian and environmental assistance in the form of selected services. Examples of assist conducted abroad include Australian assistance to elections in Cambodia, and HA to Somalia which involved infantry providing route security, the establishment of security points, checkpoints and patrolling.

6.29 Artillery, as part of the combined arms team, primarily establishes the control that allows assistance to be provided by other agencies. The use of UAVs and JOSTs also enables artillery to supervise, monitor and provide information.

6.30 The provision of assistance requires commanders to liaise closely with civilian authorities and military counterparts, establish links with communities and agencies providing support, and establish communications networks if required. Assist tasks include:

a. support to the rule of law – specifically against criminal activity;

b. support to elections; and

c. enabling HA.

6.31 Artillery, as part of a task-organised group, may be required to provide a measure of internal security and fill the vacuum while indigenous forces are being trained, at least as an interim measure. Where this is necessary, they should be
complemented by civil law enforcement capabilities and replaced entirely by an appropriate civilian organisation as soon as practicable.

6.32 While military involvement underpins the electoral process, largely through the creation of a secure environment, it cannot do so effectively without an election framework, which is a collaborative responsibility of the UN and HN bodies. Artillery involvement is likely to be the establishment and protection of voting centres and the possible transportation of votes.

6.33 A military force is likely to provide HA only when the security conditions in an area preclude the involvement of non-government organisations and other civil agencies. HA is not always conducted in a permissive or benign environment, requiring a peacekeeping force or other force for protective tasks. Artillery participation might include protection of the homeless from lawlessness, the provision of emergency shelter, victim registration, the delivery of food and potable water, and the provision of immediate first aid.

SECTION 6-7. TACTICAL TECHNIQUES

6.34 Stability activities tactical techniques are military 'methods' for accomplishing a result in particular situations. They are intended to improve efficiency and uniformity of action, and to ensure consistency. These techniques provide an opportunity for commanders to exercise a series of options according to the dictates of the situation. Stability tactical techniques include:

   a. cordon and search,
   b. noncombatant evacuation,
   c. the recovery of personnel and equipment, and
   d. traffic control posts and VCPs.

Cordon and Search

6.35 Cordon and search involves the isolation of a chosen area and then its systematic search. The establishment of the cordon
and the conduct of the search are two separate tasks that should be conducted as a joint military and interagency (including police forces) task.

6.36 Artillery can assist with both these tasks. Their presence during both the cordon and the search may also help other agencies undertake their tasks because of their ability to also provide protection to the force conducting the task. The considerations for cordon and search are contained in Chapter 4.

**Noncombatant Evacuation**

6.37 Noncombatant evacuations may be conducted in either permissive or non-permissive circumstances and seek to relocate threatened noncombatants to a safe place. Noncombatant evacuation requires land forces, as part of a JTF, to conduct, participate in or contribute to the evacuation of Australian nationals and/or other approved foreign nationals from a threat area. The artillery contribution to noncombatant evacuations includes:

a. the provision of intelligence with UAVs,

b. networked communications,

c. the transport or movement of civilians,

d. the establishment and manning of evacuee handling centres, and

e. liaison with other government agencies.

**Recovery of Personnel and Equipment**

6.38 There are times when personnel or equipment may be cut off in an area from which they cannot extract themselves. In a non-permissive environment, or when a terrorist organisation is involved, the extraction of those assets may require a special recovery operation. Depending on the tactical situation, this may incorporate elements of a raid, attack, airmobile and withdrawal in contact. Artillery may provide information through STA assets or FS if appropriate.
Traffic Control Posts and Vehicle Checkpoints

6.39 Traffic control posts and VCPs form an integral part of general road and track movement control. They can be established by security forces or any other land-based force across the range of military activities. A higher planning HQ is generally responsible for establishing traffic control post and VCPs on all route networks through an established control organisation. Artillery can provide the personnel and firepower to establish both traffic control posts and VCPs under the direction of the control agency.
CHAPTER 7

ARTILLERY IN ENABLING ACTIVITIES

SECTION 7-1. INTRODUCTION

7.1 Enabling actions are never conducted in isolation. Their purpose is to link and create the conditions for the conduct of offensive, defensive and stability actions, ensuring continuity and maintaining tempo. They do not have any associated specific tactical actions.

SECTION 7-2. SUPPORT TO ENABLING ACTIVITIES

7.2 Enabling activities include those intended to make, or break, contact with the threat and those that can be conducted out of contact. Enabling activities may be conducted as missions in their own right. Detailed planning considerations for enabling activities are contained in LWD 3-0-3, Land Tactics (Developing Doctrine), 2009.

7.3 The following are enabling activities:
   a. link-up,
   b. march,
   c. obstacle crossing and breaching,
   d. passage of lines,
   e. patrol,
   f. reconnaissance,
   g. relief in place, and
   h. surveillance.

Link-up

7.4 Link-up is a task conducted to join two friendly forces and may occur frequently as part of regrouping. It may be necessary to

LWD 3-4-1, Employment of Artillery, 2009
destroy the threat between these two forces before a link-up can be established. Both forces may be moving toward one another, stationary or encircled. They may have the same or different missions, but the task itself is always part of the overall tactical plan. As both forces attempt to link up, there is an inherent danger of fratricide; therefore, the planning and coordination must account for these increased risks and it is preferable that one force is stationary.

7.5 The integration of FS as the link-up occurs is critical and must be coordinated centrally by the artillery component of the JOSCC. The re-centralisation of the command of artillery is a tool that can be used to expedite the process.

March

7.6 The movement of land forces from one location to another is inherent in all military activity. The essence of battlespace agility is the capability to conduct rapid and orderly movement to concentrate fighting power at decisive moments and locations. The term ‘march’ does not necessarily involve dismounted troops, but is more appropriately used to describe movement of the force as an entity while adopting appropriate formations. A march is conducted to move a military land force to its place of tactical employment efficiently. The underlying intent for every march is to reach the destination in the best possible condition to execute the mission.

7.7 Artillery involvement in the march will include:
   a. route reconnaissance with a UAV,
   b. supporting the march by fire, and
   c. providing GBAD.

Obstacle Crossing and Breaching

7.8 An obstacle may be natural, artificial or a combination of both. ‘Crossing’ is the term applied to movement across natural obstacles. ‘Breaching’ is the term applied to securing passage through artificial obstacles. A breaching to clear an obstacle is planned in the same way as an attack. The aim of a crossing or
breaching is to minimise the loss of momentum and maximise protection of the force. A crossing or breaching action can be either hasty or deliberate, and the crossing or breaching action will be either quiet or noisy.

7.9 Artillery supports a breach or obstacle crossing in the following tactical phases:
   a. preparation;
   b. execution, including:
      (1) suppress,
      (2) obscure,
      (3) secure,
      (4) reduce, and
      (5) assault;
   c. build-up; and
   d. break-out.

7.10 Preparation. Artillery supports the preparation stage in the same manner as for the attack, by establishing gun positions, identifying and registering targets and calculating ammunition support.

7.11 Execution. The artillery support to the phases of execution is as follows:
   a. Suppress. Artillery coordinates indirect FS, ARHs, OAS and electronic attack to suppress enemy personnel, weapons and equipment from engaging or observing friendly forces involved in the breach.
   b. Obscure. Artillery supplies obscuration to degrade enemy observation of the obstacle removal or reduction and the passage of the assault force. Obscuration is a two-edged weapon and the obscuration plan will seek to minimise the impact on own-force weapon systems and observation.
c. **Secure.** Artillery supports the crossing guard to secure the crossing area and far side of the obstacle through supplementing direct fire by suppressing the enemy within direct fire range of the crossing guard.

d. **Reduce.** Artillery continues to neutralise and suppress enemy attempts to hinder the opening of lanes and gaps in the obstacle.

e. **Assault.** Artillery provides support to the attack through neutralising objectives and enemy defences and providing covering fire.

7.12 **Build-up.** Artillery contributes to this phase in the same manner as for the exploitation and reorganisation after an attack. Artillery prepares to move to support forward troops and may also task JOSTs to provide EW and surveillance for likely counterattacks.

7.13 **Break-out.** This could be an attack or the continuation of an advance. Artillery provides support in accordance with either of these options, previously described in this chapter.

**Passage of Lines**

7.14 The purpose of a forward passage of lines is to pass one force through another while maintaining the overall momentum of a tactical action. During a forward passage of lines, a force advances or attacks through another force which is often in contact with the enemy. The in-place force must provide the advancing force with as much assistance as possible, including tactical and logistical support.

7.15 The key consideration for artillery during a forward passage of lines is the planned transfer of the control of fire from one force to the other. Usually, artillery with the in-place force will continue to support the incoming formation until such time as the incoming artillery units are fully established. Artillery staff of the advancing and in-place forces will need to liaise closely with the higher formation providing coordination of real estate. These must be far enough forward to support the operation without redeployment during critical stages of the battle and not
normally in positions that have already been located by the enemy. There may be an increased ammunition requirement.

7.16 During some stages of a passage of lines, artillery may be the only force capable of reacting quickly and effectively to unexpected enemy action. The artillery commander must consider the following when preparing the plan:

a. the provision of LOs by the passing formation to the HQ of the in-place formation,
b. the clear allotment of resources to both formations concerned,
c. the application of FSCMs, and
d. a fire plan that includes:
   (1) the use of smoke to obscure and/or screen;
   (2) fire for any deception plan;
   (3) covering fire to neutralise enemy attacks in the area of the passage;
   (4) covering fire to support any obstacle or barrier plan;
   (5) attack in depth against enemy artillery; and
   (6) the restriction of movement by enemy reinforcements.

7.17 It will be usual to position a no-fire line forward of lead elements and continually update it as lead elements progress through the passage. Once the advancing force has completed its passage, there may well be a need to establish a restricted fire line forward of the original in-place elements to enable them to continue either to advance or hold the area of the line of departure without endangering forward elements. Factors that must be carefully coordinated when artillery formations and units are conducting a passage of lines are as follows:

a. arrangements for reconnaissance,
b. methods of providing security for guns during the passage,

c. the selection of areas for the passage and the provision of guides,

d. priorities for the use of routes,

e. the status of command of the in-place and in-transit artillery and the control of their fire,

f. the extent of FS to be provided by the in-place units, and

g. liaison with flanking formations.

Patrol

7.18 Patrolling is the responsibility of all corps and is carried out not only in the forward areas, but also in rear areas to counter enemy infiltration and to protect installations and administrative areas. There are two types of patrols: fighting patrols and reconnaissance patrols. Fighting patrols are designed to engage the enemy. They contribute to gaining and retaining the initiative and to force security. Reconnaissance patrols are designed to gain information by observation. They operate by stealth, avoiding contact except for self-protection. Artillery supports patrolling by using UAVs, and static OPs, and the provision of FS.

Reconnaissance

7.19 Reconnaissance is undertaken to obtain, by visual observation or other detection methods, information about the activities and resources of an enemy or potential enemy threat, or to secure data concerning the met, hydrographic or geographic characteristics of a particular area. It may be land, aerial or maritime. Artillery supports reconnaissance with STA assets (UAVs) and supports other reconnaissance assets with FS.

Relief in Place

7.20 A relief in place is conducted to replace one force with another, usually in static defensive positions. It is a force preservation measure used by a commander to rotate forces that are
suffering from fatigue or to employ them on other tasks. A relief in place passes responsibility for an occupied locality or area from one force to another.

7.21 The in-place artillery element will always provide FS to the relieving formation or unit. If the relief is for the purpose of continuing the attack, FS resources from both formations, especially artillery, are likely to remain in support. Normally, the force-level artillery or the unit DS to the outgoing formation remains in position until the forward units or sub-units have been relieved. By this means, existing fire plans can be fired quickly during the dangerous period when the forward units are being relieved. The method of relieving artillery units must be clearly established as follows:

a. **Field Artillery.** Incoming artillery will normally occupy positions that have been allocated and reconnoitred by the in-place formation. Deception and the avoidance of detection are enhanced when relieving batteries take up nearby positions and carefully integrate their fire with that of the outgoing unit. Normally the guns of the in-place formation will remain in position until the end of the operation and all artillery should remain under the control of the outgoing commander until the change of command has been effected. When sufficient gun positions are not available, the same positions will be used and the relief may have to take place by sections to avoid congestion.

b. **Surveillance and Target Acquisition.** LOs and JOSTs from incoming units should arrive early in the outgoing units’ areas to become familiar with the details of the FS plan:
   (1) command status,
   (2) tactical tasks,
   (3) target lists,
   (4) FSCMs,
   (5) observation schemes, and
(6) the readiness of FS.

c. Fire Planning. The in-place force must ensure that all DF lists and fire plans are passed to the relieving force in sufficient time for the information to be passed to all concerned.

d. Fire Support Coordination Measures. FSCMs will be put in place by the in-place force and passed to the relieving force. The JOST with the relieving force will need to be briefed on the relevant FSCMs during the handover from the in-place JOST.

Surveillance

7.22 Surveillance is a tactical task to systematically observe the aerospace, surface or sub-surface areas, places, persons or things by visual, aural, electronic photographic or other means. It provides an enduring and systematic observation to inform a higher commander’s critical IRs for a specified tactical action or task and to increase command SA. It can be undertaken as part of a broader activity, and can be land, aerial or sea based (maritime), or a combination of all three as part of an integrated surveillance network. Artillery supports surveillance with STA elements such as UAVs, static OPs and mobile OPs (JOSTs).
CHAPTER 8

COMBAT SERVICE SUPPORT

SECTION 8-1. INTRODUCTION

8.1 The support provided by CSS assets must facilitate mission sufficiency that will satisfy the tempo of military activity and provide the linkage to the supply chain and CSS outside the artillery element. Much of the CSS for artillery is similar to that for other arms and services; however, there are specialised requirements for ammunition handling for field artillery and the maintenance of highly specialised equipment.

8.2 This chapter details the different CSS considerations for supporting artillery, including organisations, functions, the application of CSS, coalition considerations, tasks and responsibilities.

SECTION 8-2. ORGANISATION

8.3 Each artillery regiment has a CSS battery.

Staff

8.4 Within an artillery unit there are dedicated logistics personnel. At higher levels artillery specialists provide logistic information to CSS staff. All artillery personnel concerned with logistics are responsible for conducting a continuous running review of artillery CSS estimates, the development of detailed CSS plans and the control of their execution. The artillery staff ensure that detailed CSS reports, statistics and data are translated into tactical capabilities and limitations from which options can be deduced. They must also give adequate warning of impending logistic problems that could seriously affect the sustainability of fighting power.
SECTION 8-3. FUNCTIONS

8.5 The CSS functions are as follows:
   a. supply support,
   b. transport support,
   c. maintenance support,
   d. engineering sustainability support,
   e. personnel support, and
   f. combat health support.

Supply Support

8.6 Critical Classes of Supply. There are four critical classes of supply required for conducting successful artillery support during periods of high tempo: Class 1 – subsistence, Class 3 – POL, Class 5 – ammunition and Class 9 – repair parts. These classes of supply require intensive supply management at all levels. The efficient delivery of these classes of supply is paramount in exploiting the full lethality, tempo and manoeuvre capability of artillery.

8.7 Other classes of supply ensure the sustainment of artillery units during deployment. The artillery first-line CSS assets are responsible for distributing these classes of supply through their internal echelon system. This supply chain is established in accordance with CSS doctrine detailed in LWP-CSS 4-0-1, Combat Service Support in the Theatre (Developing Doctrine), 2003.

8.8 GBAD units generally operate in areas distant from the main regimental echelon. Consequently, GBAD units require a flexible system for CSS that must be able to work through single service and joint logistic systems.

Transport Support

8.9 First-line Ammunition. First-line ammunition must be immediately available to units and, therefore, is held on or close to gun positions. First-line transport organic to artillery units
should be sufficient to carry ammunition in accordance with the first-line scales used for planning purposes. If it is not, or if the first-line scale is increased for operational reasons, additional vehicles from second-line transport resources should be temporarily allocated for the carriage of first-line ammunition.

8.10 **Second-line Ammunition.** Second-line ammunition must be immediately available to replenish first-line ammunition held by units normally in their echelon area. Second-line gun ammunition is usually carried by second-line, third-line and even fourth-line transport resources.

8.11 **Unit Load Ammunition Container.** For the field artillery, complete rounds of high explosives, other natures and improved conventional munitions may be packed into 155 mm unit load ammunition containers. Normal inspection and maintenance of ammunition contained within unit load ammunition containers is permitted prior to the unit load ammunition containers reaching the gun position.

**Maintenance Support**

8.12 Maintenance elements provide first-line repair support to artillery. The repair capability at unit level is governed by the time available for repair and the complexity of the task. Servicing is the key to maintenance support. Adequate time for daily, weekly and other servicing must be factored into the operational plan if at all possible. Commanders must balance the real risks of missing servicing with any temporary advantage gained in tempo.

8.13 The key driver of repair limits is a commander’s appreciation for the evolving battle. Notice to move to an element enables commanders to enact servicing or maintenance or restricts such activity. Accordingly, the commander setting the notice to move for artillery units and sub-units must do so as accurately as possible. Equipment that is beyond the scope of first-line assets to repair is backloaded using second-line assets.
Engineer Sustainability Support
8.14 Engineering sustainability support is an engineer responsibility, which is integral to the delivery of CSS. Detailed information on the employment of engineers is contained within LWD 3-6-1, Employment of Engineers, 2009. Typical engineer sustainability support tasks for artillery would include:
   a. mobility support, particularly where routes are likely to become damaged (this may include bridge support and route improvement);
   b. the bunding of ammunition storage sites;
   c. water supply; and
   d. bunding and defence work for artillery units and sub-units such as FS base and CP construction.

Personnel Support
8.15 Artillery has no unique requirements for personnel support.

Combat Health Support
8.16 Artillery units have an ambulance and medical staff in the regiment A echelon.

SECTION 8-4. APPLICATION

Planning for Artillery Sustainment
8.17 When planning for the sustainment of artillery, both artillery and CSS staff should consider the characteristics of artillery CSS and apply the principles of logistics to ensure a robust plan to achieve the commander’s plan.

8.18 During planning, CSS and artillery staff consider the support available from the HN and the role of contractors in the delivery of equipment and services. This may be especially relevant for the provision of critical parts for specialist equipment and the distribution of field artillery ammunition.
Characteristics of Artillery Combat Service Support

8.19 The artillery commander must be informed immediately of any unexpected supply situation identified that could affect the available combat power. The four headings ‘destination’, ‘demand’, ‘distance’ and ‘duration’, commonly referred to as the 4Ds, are a useful framework for gauging capability and planning requirements to support missions.

8.20 Destination. The destination sets the overall environment in which the mission is to take place. Should the destination be offshore, this will have certain implications for artillery, as follows:

a. Force Preparation and Strategic Deployment. CSS units supporting artillery elements must be configured to permit rapid deployment using strategic transport. Staff procedures and planning must take account of the requirements to deploy by strategic transport. Units should be trained and exercised in its use.

b. Sustainment In-theatre. Circumstances may dictate that sustainment from the national support base may not be established immediately on deployment to a theatre. The artillery and support CSS units should therefore:

(1) be sustainable in accordance with current sustainability planning guidelines for limited periods without recourse to external support;

(2) be capable of integration with joint, multinational and HN logistic infrastructure and CSS capabilities;

(3) have appropriate communications and information technology assets to interface with both deployed and home-based logistic infrastructure; and

(4) have the necessary specialist CSS capabilities to support artillery. Such capabilities include, but are not limited to, ammunition tonnages, equipment maintenance and transportation assets.
c. **Modularity.** Depending on the type and nature of the deployment, artillery may be deployed in multiple locations in support of the force or formation. The CSS elements within the unit must be modular to an extent whereby the minimum support commensurate with the size of the fighting force can be deployed to provide robust CSS.

8.21 **Demand.** Artillery commanders and their staff should apply the principles of foresight, responsiveness and economy to ensure mission sufficiency in their planning for resources, as in the following examples:

a. **Ammunition.** Field artillery ammunition expenditure is potentially very high. Artillery staff, in concert with CSS staff, must monitor daily expenditure rates and be prepared to use dumping and other measures to maintain support.

b. **Transport and Fuel.** The artillery need for high levels of ammunition will cause a drain on both transport and fuel resources. Consequently, logistic areas represent high-value targets for enemy artillery. Planners may need to source additional assets through coalition partners, HN support, maritime or air assets. The dispersion of STA places an additional burden on CSS transportation assets. The protection of small CSS elements servicing dispersed elements may cause force protection problems.

c. **Repair Parts.** Due to the likely high rate of tempo for artillery and the need to maintain the equipment at high availability rates, the accurate and responsive resupply of repair parts will be a high priority. It will be necessary to ensure visibility and priority of effort for artillery repair parts.

8.22 **Distance.** The possibility of artillery ammunition resupply becoming priority or even sole users of particular routes must be considered. Fuel will become a major determinant both for transport and for the movement of units and provision of the
extra refuelling necessary. The security and protection of scarce CSS assets will become a paramount concern for both the operational and CSS commanders.

8.23 **Duration.** Duration is inextricably linked to assumptions concerning attrition and AER. Stockpiles and the rate at which supplies must be moved forward will have to be calculated. Formations will require refurbishment if they are to be used continuously. Personnel and materiel replacements will have to be provided.

**Principles of Ammunition Supply**

8.24 Within the AO, the ammunition resupply system is based on a daily resupply cycle. Supply is based on movement by road, although other movement methods, including air, can be used should the situation demand it and if the resources are available. The principles on which the supply of ammunition is based are as follows:

a. Ammunition is passed automatically from rear to front.

b. Ammunition is available from second-line resources at all times in the AO.

c. Formal demands are not usually required from units. Issues are effected on unit authorisations and receipts are obtained.

8.25 The artillery operations staff advises the formation operations staff of the estimated quantity of ammunition required for a mission. The formation logistics staff, in conjunction with the Services, is responsible for its supply. **Annex A** diagrammatically illustrates various ways in which ammunition is resupplied to artillery units.

8.26 Units are not required to forecast expenditure since replenishment from stock is automatic and ammunition is continually available at APs.¹ There may be occasions when

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¹ The number of APs established will depend on the tactical situation, the location of gun areas, and the level of second-line holdings. APs vary in size depending on the amount and type of ammunition required.
certain natures of ammunition are in short supply or when movement facilities are restricted and, therefore, an increased degree of expenditure control may have to be exercised.

8.27 As soon as a vehicle in an AP is emptied, it should be replaced by a vehicle from second-line transport containing a similar load. Whenever possible, artillery ammunition is delivered directly to the gun position by second-line transport to avoid double handling. The overstocking of APs should be avoided, as it leads to congestion and depletes the transport resources of the force.

Supply Process

8.28 Third-line transport will usually replenish ammunition for force artillery. However, the grouping and tasks of transport within the force will be influenced by several factors, including the grouping of artillery for administrative command.

8.29 For reasons of dispersion and to permit the ready turnaround of transport, the logistic staff of force HQ select sites where a limited tonnage of ammunition and other combat supplies can be held to await second-line transport. These sites are called replenishment parks (RPs). Resupply of RPs is effected directly from the force area.

8.30 Exchange Points. RPs are usually sited to be within daily reach of third-line transport. When this is not possible, other transport is used to bring combat supplies to an exchange point within reach of third-line transport. At the exchange point, either vehicles or their loads are exchanged.

8.31 Distribution forward of the RP is carried out by second-line transport. Alternatively, it may be issued to artillery units at a distribution point.

8.32 The supply of artillery ammunition forward of RPs is the responsibility for the formation CSS staff. When command of force artillery for daily replenishment is retained at force level, the supply of artillery ammunition for force artillery is the responsibility of the logistic component commander. The force CSS staff are responsible for the collection of ammunition from
the rear and its delivery to units at some convenient point; the sitting of distribution points is allocated by the formation staff responsible for the holding and distribution of the formation’s second-line stocks of ammunition, in accordance with the staff plan. The artillery logistics staff should advise on the siting of artillery APs, especially when command of artillery for daily replenishment is centralised.

Dumping of Ammunition

8.33 Dumping is the placing on the ground of stocks of ammunition additional to first-line and second-line scales. The ammunition required for a dumping program is often drawn from the force combat reserve. Alternatively, it may be drawn from third-line stocks, in which case third-line transport may deliver directly to dumping sites from the forward mounting base or mounting base. The most usual circumstances under which dumping is ordered are as follows:

a. to provide additional gun ammunition at, or near, the guns for specific tasks; or

b. to stock areas with ammunition in order to:
   
   (1) provide forward stocks ready to support an advance,
   
   (2) prepare for a protracted defence, or
   
   (3) provide stocks on which to fall back when withdrawal is likely.

8.34 Dumping is usually not economical because it involves considerable handling and may eventually lead to wastage through deterioration, forced destruction or enemy capture. On the other hand, it may free transport for subsequent critical tasks. Some risk is involved and it is the commander’s responsibility to decide if the risk can be accepted. Close attention must be paid to the siting, the quantities to be dumped and subsequent control in order to reduce the risk.
Ammunition Usage

8.35 The availability of field artillery ammunition is a major factor affecting the conduct of operations. The effect of any shortfall between the amount of ammunition that the artillery commander estimates is required for a battle and the amount available must be carefully determined. The shortfall will result in a diminished allotment to subordinate artillery commanders and the imposition of measures resulting in the tighter control of expenditure. It may result in significant changes to the tactical plan or even the delay of a mission until ammunition stocks are built up.

8.36 Estimating and controlling ammunition expenditure is the responsibility of artillery commanders and staff, in conjunction with the staff of the supported organisation. Artillery commanders and their staff are responsible for the following:

a. estimating the total ammunition requirement for a mission; and

b. the allotment and control of the ammunition available between artillery units and the commander’s reserve, between phases of a mission and, eventually, between targets.

8.37 Usage Estimate. The artillery staff estimates ammunition expenditure as follows:

a. They obtain advice from the operations staff on:

   (1) the likely duration and sequence of the mission on a day-by-day basis, and

   (2) the estimated intensity of fighting on each day.

b. Using AER as a guide, the artillery operations staff then estimate the likely ammunition expenditure for each day of the activity. A reserve of approximately 20 per cent, to provide for unforeseen circumstances, should be allowed for in each phase of the battle. Ammunition estimates should, if necessary, be weighted to reflect
any specific factors that will influence ammunition expenditure.

8.38 Operational Planning Rate. The operational planning rate is determined by artillery staff as part of the MAP and is the average quantity of ammunition required to sustain battle in an AO. There are three major methods to assess the operational planning rate, as follows:

a. historical analysis of usage in scenarios which are deemed to be similar to those expected in the future;

b. analysis of the expected scenario, using simulation such as wargaming; and

c. comparison with operational planning rates assessed as appropriate by comparable armies for similar scenarios.

8.39 Unit Entitlements. Unit entitlements are the ammunition stock levels required to provide units with the capacity to sustain themselves in battle for a limited period, even if the resupply of ammunition is temporarily disrupted. Unit entitlements for administrative convenience are divided into first-line and second-line scales. These scales are not fixed but may be altered as the nature of the activity changes. The following definitions are applicable.

8.40 Unit Entitlement. The unit entitlement is the amount of ammunition required to sustain a unit for a stated time at a given AER. It is divided into first-line and second-line scales:

a. First-line Scale. The first-line scale is the amount of ammunition required to be immediately available to a unit’s weapons and to sustain that unit for a stated time and at a given AER without replenishment.

b. Second-line Scale. The second-line scale is the remainder of the unit entitlement and is under the control of the formation HQ responsible for the daily replenishment of the unit.
Ammunition Stocking Plan

8.41 An ammunition stocking plan is developed to provide commanders at all levels with the ammunition required for the successful completion of their tasks, commensurate with economic usage.

8.42 Field Artillery Ammunition Stocking Estimate. The operations and logistics staff, advised by the artillery staff, are responsible for making the initial appreciation of artillery ammunition stocking requirements and for making new estimates as necessary. The stocking appreciation takes account of both operational and logistic factors as determined by the staff. The ammunition stocking estimate leads to a series of decisions on stocking matters, and those decisions are expressed in the ammunition stocking plan. The main matters covered by the ammunition stocking plan are as follows:

a. the number of lines of stock to be established,

b. the variety of artillery ammunition which may be held at each line of stock holding,

c. the planned maximum and minimum levels between which operating stocks are to be held at each line of stock holding,

d. the level of reserve stocks, and

e. the policy for deployment and dispersion of stocks.

Lines of Stock Holding

8.43 In an AO, ammunition stocks are usually divided into the following lines:

a. First-line Stocks. First-line stocks are stocks of ammunition held by units.

b. Second-line Stocks. Second-line stocks are normally held under the control of the formation HQ responsible for replenishment of first-line stocks.

c. Third-line Stocks. Third-line stocks are held under force control for the replenishment of second-line stocks. They
normally consist of a given number of days’ expenditure at the predetermined operational planning rate.

Types of Stocks

8.44 There are two major types of stocks, as follows:
   a. operating stocks, and
   b. reserve stocks.

8.45 Operating Stocks. Operating stocks are those stocks required at each line of stock holding to enable routine issues to be made in the intervals between replenishment deliveries from the rear. Operating stocks also avoid the breaching of reserve stocks for purposes other than those for which the reserve stocks are held.

8.46 Reserve Stocks. The staff may decide that it is necessary to guard against major disruption of the supply line, the loss or destruction of stocks, or major fluctuations in demand (including dumping). The required reserve ammunition stock levels will be determined by the formation staff, advised by the artillery staff, to meet the specific requirements and risks of the situation. The reserve stocks usually held are as follows:
   a. Unit Reserve Stocks. First-line scales include unit reserve stocks of ammunition.
   b. Combat Reserve Stocks. Combat reserve stocks are held under the control of the senior combat formation HQ and are usually located in the rear of the force area. A portion may be allotted to subordinate formations.
   c. Force Reserve Stocks. The remainder of reserve stocks in an AO are termed ‘force reserve’ stocks. They are held under the control of the force commander.

Annex:
A. Artillery Ammunition Resupply
ANNEX A TO CHAPTER 8

ARTILLERY AMMUNITION RESUPPLY

1. There are many ways to resupply ammunition within the AO, notwithstanding the tactical situation. Figure 8–1 diagrammatically illustrates various modes of resupply.
Figure 8–1: Artillery Resupply
9.1 Different environments have a unique impact on vehicles, personnel and equipment that changes groupings, tactics and procedures. Personnel will require special training for each environment and vehicles will require specific preparation. Failure to undertake the required training and/or modifications will compromise the artillery capability.

9.2 This chapter describes the nature of the physical environment and its impact on artillery. It considers activities in the urban, tropical, desert, cold weather and CBRN environments.

9.3 Doctrine. The key publication relating to tropical, desert and cold environments is LWD 3-9-1, Operations in Specific Environments (Developing Doctrine), 2004. The key publication relating to urban environments is LWD 3-9-5, Urban Operations (Developing Doctrine), 2005.

SECTION 9-2. TROPICAL

Impact on Capability

9.4 Tropical environments will impact on the employment of artillery as follows:

a. Equipment Performance. Higher temperatures and humidity will affect the performance of guns and other specialist equipments, especially radios, optics and artillery-specific devices. Consequently, there may be an impact on the maintenance schedule.
b. **Geospatial Data.** Mapping tends to be inaccurate or outdated and survey is harder to provide despite a GPS, which may be affected by denser canopies.

c. **Meteorology.** Weather and met conditions are subject to rapid and violent change that can adversely affect the prediction of fire.

d. **Target Acquisition.** Observation and TA can be extremely difficult and slow.

e. **Gun Positions.** Gun positions are not always easy to find in the jungle and close country. The clearing of ground or landing strips takes time and may cause concern after clearing the position, as there is little protection from air observation.

f. **Crest Clearance.** This can be a serious problem and proximity fuzes could be activated prematurely.

g. **Fuzes.** The jungle canopy may prevent rounds from reaching their intended target unless delay fuzes are used. Even then these are not always effective. Some 10 per cent of delay fuzes do not detonate in jungle conditions.

h. **Short-range Air Defence.** The problems of achieving short-range AD engagement in the tropics are considerable and will probably need resolution at JTF HQ or national level, where tri-Service arrangements can be integrated.

i. **Movement of Guns.** The difficulties of moving artillery which cannot be air lifted should not be underestimated.

j. **Range.** This may decrease due to STA difficulties.

k. **Local Defence.** The ability to provide effective local defence is hampered by the density of vegetation.

l. **Combat Service Support.** CSS restrictions due to the conditions will also require artillery units to be more self-sufficient.
m. Acclimatisation. All troops need to undergo a period of acclimatisation, including reinforcements coming into theatre.

Planning Factors

9.5 The following factors need to be emphasised when planning to employ artillery in this environment:

a. tempo,
b. the preparation and location of FS bases,
c. the need to decentralise C2,
d. resupply,
e. the difficulty of supporting close combat,
f. a reduced STA capability due to vegetation and weather,
g. equipment serviceability rates and the maintenance regime,
h. engineer support for the clearing of routes to gun positions,
i. acclimatisation and in-theatre training, and
j. the use of waterways and airlift to enhance mobility.

SECTION 9-3. DESERT

Impact on Capability

9.6 Desert environments will impact on artillery in a number of ways, including:

a. Equipment Performance. Higher temperatures will affect the performance of the guns and other specialist equipments, especially radios and artillery-specific devices. Sand and dust will have a marked effect on exposed surfaces and moving parts. It may also undermine efforts to maintain equipment. Consequently, there will be an impact on the maintenance schedule.
b. **Geospatial Data.** Inadequate or non-existent mapping and a lack of reference points may hamper navigation. Alternatively, the use of a GPS for navigation and survey control will be a combat multiplier.

c. **Meteorology.** Current met data is necessary if ammunition is not to be wasted and own troops’ safety endangered. Weather conditions can change rapidly, so weather corrections must be recomputed frequently.

d. **Gun Positions.** Gun positions will be vulnerable to air attack due to the lack of cover and concealment.

e. **Fuses.** The deadening effect of sand needs to be taken into account when determining the type of artillery support required for a task. Soft sand can cause blinds and reduce the effects of fragmentation for point detonating fuzes.

f. **Smoke.** The dry, hot conditions can reduce the effectiveness of smoke and white phosphorous.

g. **Target Acquisition.** The distances over which battles will be fought will often require artillery to engage targets over long distances, making accurate TA difficult. Further problems will be caused by the environmental conditions on delicate electronic equipment and optical sights and the constant threat posed by enemy aircraft and CBF.

h. **Weapon Signatures.** Readily seen weapon signatures demand that the guns move quickly and often.

i. **Short-range Air Defence.** It is easier to coordinate short-range AD in the desert than in other complex terrain, although the large areas and limited AD resources will necessitate the clear allocation of priorities from force-level HQ.

j. **Combat Service Support.** Distances in the desert and the dispersion required of artillery units will generate significant resupply problems. Extremes of temperature may cause personnel health issues.
Planning Factors

9.7 The following factors need to be emphasised when planning to employ artillery in this environment:

a. short-range AD capability will be a significant factor in a commander’s decision on routes and objectives, as the enemy air threat in open ground will be sufficient to restrict or prevent friendly movement;

b. concealment from satellite, aerial and visual observation;

c. local defence of the gun position;

d. the weather;

e. equipment serviceability;

f. combined arms synchronisation and training, especially with ARH and aviation assets;

g. personnel fatigue; and

h. acclimatisation and in-theatre training.

SECTION 9-4. COLD CONDITIONS

Impact on Capability

9.8 Cold weather environments will impact on artillery in a number of ways including the following:

a. Geospatial Data. Accurate survey is difficult in a cold weather environment due to the short hours of daylight in winter, weather conditions, low temperatures, difficult terrain and the sensitivity of the instruments. Survey processes may therefore take longer and be less accurate, resulting in the use of more ammunition for adjusting fire.

b. Target Acquisition. Poor visibility may affect observation and TA for longer ranges. Alternatively, visibility may improve due to the lack of humidity reducing heat haze.
This may improve the performance of some STA sensors. Weapon and shell characteristics are affected by low temperatures, particularly when they change quickly.

c. **Meteorology.** The speed with which weather conditions can change will require weather corrections to be recomputed frequently. However, extremely cold weather (minus 20 °C or colder) often offers more stable weather.

d. **Fuzes.** Conditions such as snow can dampen the effects of fuzes.

e. **Movement of Guns.** The need for great care and deliberation in occupying a gun position in deep snow or icy conditions virtually precludes quick actions, unless these can be done on a road or track.

f. **Equipment Performance.** Consideration of barrel freezing and the use of antifreeze may be required.

g. **Combat Service Support.** CSS may be difficult if vehicle access is limited by snow and ice.

**Planning Factors**

9.9 The following factors need to be emphasised when planning to employ artillery in this environment:

a. the amount, availability and effectiveness of ammunition;

b. cold weather equipment, such as heavy boots and gloves;

c. weather and environmental effects on equipment;

d. equipment serviceability; and

e. acclimatisation and in-theatre training.
SECTION 9-5. URBAN

Impact on Capability

9.10 Significant factors that impact on artillery in urban environments include:

a. restrictions to the observer’s zone of observation because of infrastructure or battlespace obscurants,

b. difficulties in acquiring and prosecuting targets because of the difficulty in distinguishing between friend and foe,

c. the collateral damage produced by dumb ammunition is not acceptable in urban areas, and

d. a higher risk of civilian casualties by indiscriminate fire.

Planning Factors

9.11 The following factors should be considered when planning to employ artillery in urban terrain:

a. **Surveillance and Target Acquisition.** Artillery commanders will need to produce detailed STA plans, including making maximum use of airborne sensors and OPs, reconnaissance troops and other resources such as ground surveillance radar.

b. **Adjustment of Fire.** The adjustment of fire in built-up areas will be difficult because buildings will tend to block the view of adjusting rounds from the observer. Airborne OPs are likely to be particularly useful for this task.

c. **Reconnaissance and Deployment.** As a general rule, direct deployments are not practicable. Major roads and approaches for friendly and enemy forces must be identified. High ground or tall buildings may be used as vantage points, but appropriate liaison must be established with adjacent friendly units and local officials early. Gun positions tend to be located in suburban housing estates or industrial complexes. These areas are characterised by regular street patterns that afford
good cover and concealment, while providing clear fields of fire.

9.12 The advantages of urban deployment include:
   a. it limits detection by infra-red and radar;
   b. the effectiveness of enemy sound ranging is reduced because of sound wave distortion; and
   c. the availability of local resources, which may include water, building materials and camouflage materials.

9.13 The disadvantages of urban deployments include:
   a. the urban environment may assist an advancing enemy in isolating artillery,
   b. increased cresting problems for the guns, and
   c. C2 of local defence is difficult if guns are dispersed.

SECTION 9-6. CHEMICAL, BIOLOGICAL, RADIOLOGICAL AND NUCLEAR HAZARD ENVIRONMENTS

Impact on Capability

9.14 Persistent chemical agents have proved to be particularly effective in suppressing artillery units in campaigns from WWI to the Iran–Iraq War. Artillery units, except those lying on the enemy’s immediate objectives, can expect to be attacked with persistent agents with the following impact on capability:
   a. FS response times will increase,
   b. the rate of fire will decrease,
   c. deployment and redeployment times will increase,
   d. a degradation of performance and an increase in fatigue of personnel wearing protective equipment, and
   e. difficulty in supplying and handling bulk ammunition.
Planning Factors

9.15 The following factors need to be considered when planning to use artillery in this environment:
   a. the type of agent and extent of contamination,
   b. the level of training and extent of equipment allocation,
   c. individual protective equipment for guncrews,
   d. decontamination,
   e. tempo, and
   f. CSS.
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