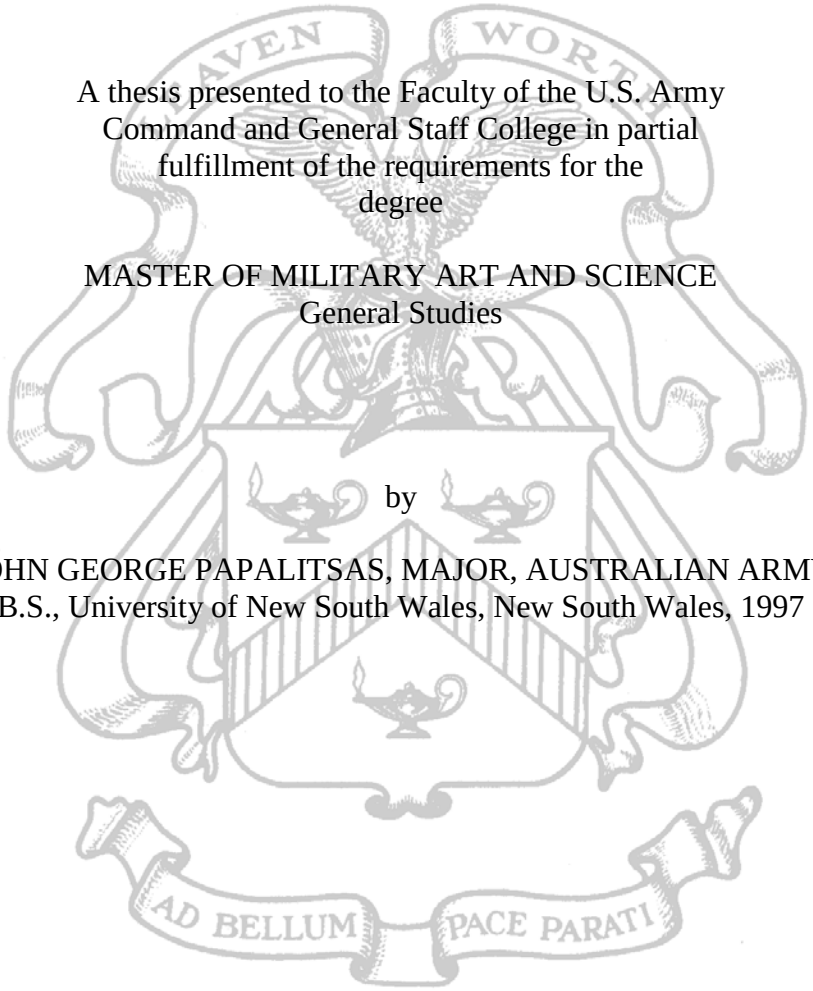
WILL THE CURRENT SOLUTION SURVIVE THE FUTURE BATTLESPACE? AN EXAMINATION OF THE COMBATANT ROLE OF THE AUSTRALIAN ARMY'S PROTECTED MOBILITY CAPABILITY

A thesis presented to the Faculty of the U.S. Army Command and General Staff College in partial fulfillment of the requirements for the degree

MASTER OF MILITARY ART AND SCIENCE
General Studies

by

JOHN GEORGE PAPALITSAS, MAJOR, AUSTRALIAN ARMY
B.S., University of New South Wales, New South Wales, 1997



Fort Leavenworth, Kansas
2011-01

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. REPORT DATE *(DD-MM-YYYY)*	2. REPORT TYPE	3. DATES COVERED *(From - To)*
10-12-2010	Master's Thesis	FEB 2010 – DEC 2010

4. TITLE AND SUBTITLE

Will the Current Solution Survive the Future Battlespace? An Examination of the Combatant Role of the Australian Army's Protected Mobility Capability

5a. CONTRACT NUMBER

5b. GRANT NUMBER

5c. PROGRAM ELEMENT NUMBER

6. AUTHOR(S)

John George Papalitsas, MAJ, Australian Army

5d. PROJECT NUMBER

5e. TASK NUMBER

5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
U.S. Army Command and General Staff College
ATTN: ATZL-SWD-GD
Fort Leavenworth, KS 66027-2301

8. PERFORMING ORG REPORT NUMBER

9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)

10. SPONSOR/MONITOR'S ACRONYM(S)

11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION / AVAILABILITY STATEMENT
Approved for Public Release; Distribution is Unlimited

13. SUPPLEMENTARY NOTES

14. ABSTRACT

In 1994 the Australian Army purchased 347 Bushmaster Infantry Mobility Vehicles (IMV) in a bid to develop a Motorized Infantry Capability. The IMV, a four wheeled armored vehicle, was designed and developed to provide organic protected mobility to an infantry section. The development of this capability was aimed at remediating an assessed shortfall in the Australian Army's ability to move light infantry forces rapidly, with adequate armored protection. This capability was developed to support Australia's continental defense policy, however, within a decade of procuring the IMV, the Australian Army found itself thrust into the modern era of persistent conflict, facing non-state actors who possess a level of lethality never envisaged by Australian defence planners. The Bushmaster was pressed into service to provide a Protected Mobility Capability (PMC), which enabled the deployment of light infantry in environments well beyond those envisioned for the motorized infantry. As the lethality and complexity of the modern operating environment continue to evolve, the Australian Army's in-service capabilities will continue to be challenged. This thesis will examine the emerging role of the Australian Army's PMC in the evolving operational environment to 2030 when the next generation of armored capability is due to enter service.

15. SUBJECT TERMS
Protected Mobility Capability, Australian Motorized Infantry, Protected Mobility Vehicle, Australian Army

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			19b. PHONE NUMBER *(include area code)*
(U)	(U)	(U)	(U)	117	

Standard Form 298 (Rev. 8-98)
Prescribed by ANSI Std. Z39.18

MASTER OF MILITARY ART AND SCIENCE

THESIS APPROVAL PAGE

Name of Candidate: Major John George Papalitsas

Thesis Title: Will the Current Solution Survive the Future Battlespace? An Examination of the Combatant Role of the Australian Army's Protected Mobility Capability

Approved by:

_____, Thesis Committee Chair
Lieutenant Colonel Michael Hanna, MMgt

_____, Member
John M. Curatola, Ph.D.

_____, Member
Charles D. Vance, M.A.

Accepted this 10th day of December 2010 by:

_____, Director, Graduate Degree Programs
Robert F. Baumann, Ph.D.

ABSTRACT

WILL THE CURRENT SOLUTION SURVIVE THE FUTURE BATTLESPACE? AN EXAMINATION OF THE COMBATANT ROLE OF THE AUSTRALIAN ARMY'S PROTECTED MOBILITY CAPABILITY by Major John George Papalitsas, 117 pages.

In 1994 the Australian Army purchased 347 Bushmaster Infantry Mobility Vehicles (IMV) in a bid to develop a Motorized Infantry Capability. The IMV, a four wheeled armored vehicle, was designed and developed to provide organic protected mobility to an infantry section. The development of this capability was aimed at remediating an assessed shortfall in the Australian Army's ability to move light infantry forces rapidly, with adequate armored protection. This capability was developed to support Australia's continental defense policy, however, within a decade of procuring the IMV, the Australian Army found itself thrust into the modern era of persistent conflict, facing non-state actors who possess a level of lethality never envisaged by Australian defence planners. The Bushmaster was pressed into service to provide a Protected Mobility Capability (PMC), which enabled the deployment of light infantry in environments well beyond those envisioned for the motorized infantry. As the lethality and complexity of the modern operating environment continue to evolve, the Australian Army's in-service capabilities will continue to be challenged. This thesis will examine the emerging role of the Australian Army's PMC in the evolving operational environment to 2030 when the next generation of armored capability is due to enter service.

ACKNOWLEDGMENTS

This thesis represents the culmination of seven years of close association which I have had with the Bushmaster Protected Mobility Vehicle (PMV), and subsequently the Australian Army's Protected Mobility Capability (PMC). From the first days establishing Motorized Combat Wing (MCW) and the Training Continuum for the PMV, through to command of a motorized company, I have been privileged enough to watch the capability grow and to play some small part in its development. I wish to take this opportunity to thank those individuals who I have seen work tirelessly throughout this journey to ensure the success of the PMV. Thanks to my staff at MCW, particularly WO2 Phil Sutherland, Bob Behrndt, Pat Hall and Craig Tyson who ensured that the Army's soldiers would be provided the best training possible despite numerous challenges. Thanks also to LTCOL Sam McPhee for his countless hours of unsung work which enabled the delivery of such a significant capability for Army. Your tireless assistance, stewardship, and counsel through 2004 and beyond have been greatly appreciated. My thanks also to WO2 Darryl Egen and the Officers and Men of Support Company 6 RAR (Motorised), who helped to further develop specialized infantry elements of the Motorized capability. Sincere thanks to my committee, LTCOL Mick Hanna, Dr John Curatola and Dave Vance for your patience, guidance and stewardship of this process. I owe a great debt of thanks to my daughters Alexandra and Victoria for sacrificing time with their father at the beginning of the journey and over the year of this work; I love you dearly. This thesis would not have been possible without the support, advice and editing of my wife, Kate, to whom I am eternally grateful. I also dedicate this work to the Australian Army's combat arms who have deployed this capability and have always sought to do their *Duty First*!

TABLE OF CONTENTS

Page

ACRONYMS

AAR	After Action Review
AATT-I	Australian Army Training Team – Iraq
AC-FLOC	Adaptive Campaigning – Future Land Operating Concept
ADF	Australian Defence Force
AMTG-1	Al Muthana Task Group
ANAO	Australian National Audit Office
APC	Armored Personnel Carrier
ATL	Amphibious Tactical Lodgment
AVA	Armoured Vehicles Australia
A21	Army into the 21st Century
BCOF	British Commonwealth Occupation Force
CA	Chief of Australian Army
CAFS	Combined Arms Fighting System
CSA	Chief of Staff of the United States Army
CSS	Combat Service Support
DCCC	Defence Concept and Capability Committee
DCP	Defence Capability Plan
DESO	Domestic Event Security Operations
DFAC-A	Defence Force Aid to the Civil Authority
DJFHQ	Deployable Joint Force Headquarters
DOTMLPF	Doctrine, Organization, Training and Education, Materiel, Leader Development, Personnel and Facilities
FIC	Fundamental Inputs to Capability

FoV	Family of Vehicles
FSO	Full Spectrum Operations
HMSP-A	Head of Modernisation and Strategic Planning–Army
IED	Improvised Explosive Device
IIMV	Interim Infantry Mobility Vehicle
IMV	Infantry Mobility Vehicle
INTERFET	International Force East Timor
LOE	Lines of Effort
LWD-1	Land Warfare Doctrine 1
MAJGEN	Major General
MCO	Major Conventional Operations
MEAO	Middle East Area of Operations
MTF-1	Mentoring Task Force 1
NDS	National Defense Strategy 2008 – United States Department of Defense
ODA	Operations in Defence of Australia
ODF	Operational Deployment Force
PMC	Protected Mobility Capability
PMV	Protected Mobility Vehicle
POR	Post Operational Report
PWS	Protected Weapons Station
RAR	Royal Australian Regiment
RFT	Request for Tender
RTA	Restructuring the Army
SBCT	Stryker Brigade Combat Team
SOTG	Special Operations Task Group

TTP	Tactics, Techniques and Procedures
VAP	Vital Asset Protection
VIP	Very Important Person
WMD	Weapon of Mass Destruction
WW2	World War Two
5/7 RAR	5th/7th Battalion, The Royal Australian Regiment
6 RAR	6th Battalion, The Royal Australian Regiment
8/9 RAR	8th/9th Battalion, The Royal Australian Regiment

ILLUSTRATIONS

Page

CHAPTER 1

INTRODUCTION

In the era post the Vietnam conflict the Australian Army grappled with the issue of restructuring its combat forces. The Army sought to balance its light infantry capability against the requirement to generate sufficient armored tactical mobility to meet the potential challenges of a changing world. By the late 1980s the inherent lack of embedded tactical mobility provided to Infantry units was identified as a key risk in the Army's operational capability. To remedy this situation the conduct of trials for motorizing selected Infantry units was authorized. Whilst the requirement to provide the Infantry with some protection and mobility had been identified, few strategic planners could have predicted the change in the operational environment that would be witnessed over the following two decades. Today's highly complex and lethal environment requires forces which are capable of operations across the entire spectrum of conflict. The lethality available to both military and non-state actors has necessitated ever-increasing levels of protection for combat troops deployed to violent, unpredictable and complex areas of operation. Current operations have demanded that Australian combat troops possess sufficient protected mobility to successfully undertake a full range of missions in support of the Australian national interest.

Research Questions

Primary Question

Given the Australian Army's projected future operating environments, how well does the current Protected Mobility Capability meet the emerging requirements of the Australian Army's Combat Arms?

Supporting Questions

1. As the future operating environment evolves, what role will the Protected Mobility Capability play in the Australian Army's Combat Capability through to 2030?

2. Given the emerging requirements of the Australian Army through 2030, and the predicted future role of the Protected Mobility Capability, what unfulfilled capability requirements exist which the Army may need to address as it develops towards 'Force 2030'?

Critically, this paper aims to analyze the future requirements for the Protected Mobility Capability (PMC) within the Australian Army in a bid to ensure that evolving and developing capability solutions meet the emerging operational needs of the force. Given the unforgiving and rapidly evolving nature of the operational challenges we face, the provision of the appropriate protected solution is critical to the achievement of the mission. While mission success is vital, the Army also has a responsibility to provide those men and women deployed to serve the nation with the best force protection solution possible.

Historical Background

The 1994 Australian Defence White Paper, *Defending Australia* 1994, represented a fundamental shift in Australian strategic defense policy.[1] Following the end of the Vietnam conflict, the Australian Defence Force (ADF) had witnessed large scale downsizing and a trend of near constant defense spending at approximately two percent of GDP. With the end of the 'Cold War' in the early 1990s, and following the re-election of the Keating Labour Government in 1993, it was determined that a revision of the previous White Paper (Defending Australia 1987) was to be undertaken. The 1987 White Paper, shaped by Paul Dibb's 'Review of Australian Defence Capabilities', identified three pillars on which Australian Defence Policy was to be based:

Self-Reliance

This was the recognition that combatant assistance from major allies was not guaranteed and that Australia would need to remain capable of independent military operations.

Defense in Depth

This concept firmly established the defense of Australia, that is, the Australian continent, as the primary role of the ADF. Specifically, this was to be achieved by the adoption of a strategically defensive posture.

---

[1]Commonwealth of Australia, Department of Defence, *Australian Defence White Paper: Defending Australia 1994* (Canberra, ACT: Commonwealth of Australia Printing Service, 1994).

Alliance

The existing major alliance with the United States would be maintained; however, emphasis was to be placed on non-combatant support.[2]

Following the conclusion of the Vietnam Conflict, it was clear that successive Australian Governments were pursuing a policy of 'strategic defense,' a move away from expeditionary operations. The 1987 review firmly set the focus on "practicing a strategically defensive posture intended to deny potential enemies use of the sea-air gap which separates Australia from its neighbours."[3] In this climate, the tenet of the sea-air gap was born. This concept related to the use of the natural barrier provided from the northern edge of the Australian continent by the Indian Ocean, ARAFURA Sea, and Coral Sea, to the Indonesian archipelago, Papua New Guinea (PNG), and the islands of the South East Pacific.

The release of the 1994 Defence White Paper (Defending Australia 1994) served to further reinforce the policy of maintaining a strategic defense posture which was anchored against the natural sea-air gap. Defending Australia 1994 set the strategic tone by identifying that there were no nations that had intent to use force against Australia in the near term. Against these prevailing circumstances "Australia therefore needs to maintain a Defence Force which can defeat those capabilities which could credibly be brought to bear against us in our sea and air approaches and on our territory" Defending Australia 1994 had also set a priority for greater regional engagement rather than reliance

[2]Ibid., 2.

[3]Parliamentary Research Service, Research Paper No. 19 1994/95, *Defending Australia: Issues in Australia's Post Cold War Defence Policy* (Canberra, ACT: Department of the Parliamentary Library, 1995): 2.

on the US alliance alone.[4] Further, it sought to amend the concept of defense 'self reliance' by identifying that the government sought to be capable of defending Australia without the assistance of foreign combat forces. This was to be further supported by establishing a viable and functional defense industry base within Australia which was capable of meeting existing and emerging strategic needs, less some high-end capability systems and technologies.

The establishment of a strategically defensive posture over successive Defence White Papers was to have significant ramifications for the Australian Army. The clear focus for defense capability development had become the establishment of maritime and air capabilities which were capable of defeating threats against the Australian mainland before they were able to lodge on shore. In this paradigm, the development of 'high end' warfighting capability within the Australian Army was viewed as being unnecessary. Given that expeditionary operations were outside the strategic framework set by the government, and that any major 'conventional' threats facing Australia would be neutralized in the sea-air gap, Army's likely operational requirement was to deal with any 'small scale' raiding parties that could infiltrate to the Australian mainland and seek to pressure the government by targeted raids and offensive actions. Therefore, Australia required a mobile, integrated, and responsive Army which was capable of rapid deployment over vast distances in harsh conditions to counter any such threat to

[4]Commonwealth of Australia, *Defending Australia 1994*, Paragraph 4.7

Australia's north. This strategic outlook resulted in the birth of the Operations in Defence of Australia (ODA) concept.[5]

The Imperative for an Organizational Change

The ODA concept saw the Australian Army focused on countering low-level threats from raiding parties in the north of the continent. ODA re-focused the Army on Vital Asset Protection (VAP) of key national infrastructure, protection of disparate outback communities, and rapid response to small-scale threats. With the end of the 'Cold War,' this alteration of focus from high-end conventional operations and counterinsurgency within South East Asia to a low-level threat-based scenario provided the catalyst for organizational change. The Army's response to this developing guidance was the 'Restructuring The Army' (RTA) initiative and the Army into the 21st Century (A21) trials. RTA looked to task organize the Army via the creation of integrated units which incorporated capabilities previously held at Brigade level or higher. The RTA trials units included embedded armored, artillery, and combat service support (CSS) assets within an expanded infantry battalion construct. These units were designed to offer the combat commander with sufficient assets at his disposal to meet the dispersed threats envisioned under the ODA construct. The A21 initiative was subsequently intended to identify the structure which Army would need to adopt to remain relevant into the 21st century given the strategic parameters which had been set. The challenge now was to ensure that the light infantry were able to move over vast distances and respond to a

[5]David Honer and Jean Bou, ed., *Duty First. A History of the Royal Australian Regiment* 2nd ed. (Crows Nest, NSW: Allen and Unwin, 2008), 280-281.

rapidly adaptive enemy. The conceptual solution to this dilemma of tactical mobility became the development of the modern Motorized Infantry capability.

Development of the Modern Motorized Infantry

The strategic environment developed in Defending Australia 1994 had given rise to ODA which, as discussed, had necessitated the Army examining its force structure. The RTA initiative and A21 trials were the Army's response to force tailoring for the emerging strategic environment. With the threat construct set for low-level incursions, the Army sought to design and develop a force capable of meeting such a potential adversary. Lack of organic mobility had been identified as a serious shortcoming by the Infantry Directorate in their post-Vietnam analysis of infantry battalion capabilities. The Directorate identified that "the philosophy of infantry dependent upon ad hoc rather than organic troop lift in a potential mobile warfare situation is anachronistic and an anomaly when compared with the mobility of other maneuver elements of the Division."[6] Since the Second World War (WWII), Australia had maintained a predominantly light infantry force. By the mid-1980s, of six regular infantry battalions in the Royal Australian Regiment, only one unit was permanently mechanized, with the remaining five battalions comprised of light infantry (one dual-tasked as an airborne unit).[7] The remaining battalions relied on the provision of external lift support dependent on the type of operation to be undertaken. The Battalions of the Operational Deployment Force (ODF- the Australian ready reaction force raised in 1980 to meet with short notice threats) were

[6]Ibid., 249-250.

[7]Ibid., 258-279.

predominantly geared to airmobile operations or the conduct of Amphibious Tactical Lodgment (ATL). The drawback of these methodologies was that once troops were deployed or dismounted, they reverted to tactical movement by foot. Any protected mobility in a high threat environment for non-mechanized units would be provided by 'mounting' troops in a supporting Armoured Personnel Carrier (APC) Regiment, equipped with the aging M113.

Coupled with the effects of the ODA construct on force modernization and the trial restructure under the A21 initiative was the reality of Army's "force in being." The post WWII environment had seen the Australian Army in a state of near constant operational deployment until 1972. Following WWII, the Army had seen employment as part of the British Commonwealth Occupation Force (BCOF) in Japan, then subsequent deployment to the Korean War, the Malayan Emergency, and nearly a decade of operations in South Vietnam. Over this period, Australian forces had embarked on "nearly 20 years of constant warfare in Southeast Asia."[8] After the 1972 withdrawal of Australian forces from South Vietnam, the Army began a process of downsizing. The unpopular system of "national service" (conscription) had been repealed, and capabilities were gradually scaled back over the next decade. Australia's policy had shifted from one advocating "forward defence" against communist elements in the region, to a focus on "strategic defence." Whilst it was acknowledged by both the 1987 and 1994 White Papers that fighting abroad as a member of an alliance or coalition may be necessary, primacy was given to the defense of the sea-air gap. In this climate, the Army's strength fell from

[8]Jeffrey Gray, *A Military* History of Australia (Melbourne, VIC: Cambridge University Press, 1999), 213.

some 77,829 in 1970, to 32,460 by 1985.[9] A year after the release of the 1994 White Paper, the Army's strength had been whittled to some 23,377 personnel.

The commensurate downsizing of the Army saw a reduction in Infantry Battalions, Armoured Regiments, Artillery Regiments, and Combat Support elements. Critically, the Army had seen a reduction from two APC Regiments during the Vietnam conflict, to a single Regular Army APC Squadron by 1994. In effect, the Army had reduced its capacity to mount nearly two brigades of troops in armored vehicles to a capability of mounting a single battalion at any one time. Further, given the age and tracked mobility capability of the M113, rapid deployment and redeployment over the vast expanses of Northern Australia in support of ODA was not preferable. The terrain, requirement for speed of deployment, and vast distances envisaged called for a wheeled capability which was more reliable and presented less of a sustainment footprint than the M113. Moreover, any unit provided "lift" support by an APC Squadron would lose that mobility as soon as they dismounted and the vehicles withdrew for subsequent tasking. If the APCs were to remain on task, this removed the flexibility to mount other units. Given the scarcity of Mechanized Infantry within the Australian Army at this time, the application of APC assets to an ODA scenario would render that capability unavailable for employment against a higher threat should it emerge. This thought process was demonstrated by the deployment of a Squadron of the 3rd/4th Cavalry Regiment (3/4 Cav Regt) to Somalia on Operation Solace in 1993. The squadron was deployed in support of the 1st Battalion, The Royal Australian Regiment (1 RAR), a light Infantry Battalion, that required protected mobility in order to operate within the high threat environment which

[9]Ibid., 271.

existed in Baidoa.[10] This deployment seriously eroded Army's follow-on capacity for the provision of protected mobility to the remainder of the Infantry should another contingency arise.

By the early 1990s, it had become apparent that a capability gap in the provision of protected mobility for the infantry existed within the Australian Army. The requirement to provide an additional mobility capability for the Royal Australian Regiment (RAR) had also been identified as early as the late 1970s by the Infantry Directorate, with mechanized trials being conducted by the 5th/7th Battalion (5/7 RAR).[11] In fact, trials on the establishment of a 'Motorized Infantry' capability had begun in 1989 with Brisbane-based units being equipped with the Perentie 6 x 6 'Interim Infantry Mobility Vehicle' (IIMV) to prove the concept. This vehicle, loosely based on the light-skinned Land Rover 110 (Defender), was an interim modification consisting of a modular troop compartment with eight seats, providing a degree of mobility to an Infantry section and their associated equipment. The Australian Army defines a Motorized Unit as "a unit equipped with complete motor transportation that enables all of its personnel, weapons, and equipment to be moved at the same time without assistance from other sources."[12] The Motorized Infantry would employ its vehicles for the purpose of battlefield mobility, but would dismount in order to conduct Light Infantry operations. Where the Mechanized Infantry would fight intimately with their vehicles in direct

[10]Honer and Bou, 282-288.

[11]Ibid., 249-250.

[12]Australian Government, Department of Defence, *Australian Defence Glossary Online*, http//adg.eas.defence.mil.au (accessed 16 July 2010).

support, the Motorized Infantry would use their vehicles as a battlefield mobility asset, but not as a deliberate, integral part of the fight.

By the early 1990s, the concept of Motorized Infantry had gained a degree of traction within the Army as it was seen to provide a degree of flexibility at the operational and tactical levels. As the Army searched for a mobile force solution to meet the requirements of ODA, it became apparent that a Motorized Infantry force would have the range, speed, and mobility to operate successfully within the ODA construct. The key issue was the requirement to provide a greater degree of protection, mobility, and combat endurance than was being afforded by the interim light-skinned vehicle fleet. Thus, by 1994, due to a combination of the projected force capability requirements under the emerging ODA doctrine and the identified capability gap in tactical mobility for light infantry forces, the Infantry Mobility Vehicle (IMV) requirement was born.

The Infantry Mobility Vehicle-Platform Solution to a Capability Requirement

In concert with Australia's developing shift in strategic policy and the A21 trials, the requirement for a platform-based mobility solution had been identified by the early 1990s. This process began with the 1991 Defence Force Structure Review which identified, and pivotally fused, the concepts driving Army development at the time, principally:

> The 1991 Defence Force Structure Review commented on the need to provide protection to important civilian and military assets and infrastructure. It also noted that the ADF could be required to respond to land incursions across the north, from the Pilbara to north Queensland. It identified the need to enhance mobilisation planning, to provide options for increasing readiness and expanding the Defence Force when necessary. One of the specific requirements of the Army

was to develop proposals for a new IMV to support independent brigade group operations.[13]

The Defence Force Structure Review had begun the process of examining the requirement for a platform which would support independent operations over the vast distances of Northern Australia. Conceptually, it was recognized that the conduct of ODA and the changes proposed under the A21 trials called for a niche capability which sat between the mechanized and light infantry paradigms. In 1992, the Defence Concept and Capability Committee (DCCC) gave formal endorsement of the requirement to increase the mobility of the Australian Infantry. This requirement was then further identified in Defending Australia 1994, which stated that "new land force vehicles would be acquired, to give greater mobility and better personnel protection during land operations. One of these projects was a lightly armored transport vehicle acquired to provide mobility to infantry brigades."[14]

In response to the identification of a capability need for an "Infantry Mobility Vehicle" (IMV) and the allocation of funding within the Defense Budget, Project Land 116 was raised in 1994. Land 116 ('Project Bushranger') was tasked to "increase Army mobility by equipping selected infantry battalions and their supporting elements with Infantry Mobility Vehicles (IMVs)."[15] In its initial phase, the project would provide the

---

[13]Commonwealth of Australia, Australian National Audit Office (ANAO), Audit Report NO.59 2003-04, Performance Audit Defence's Project Bushranger: Acquisition of Infantry Mobility Vehicles (Canberra, ACT: Commonwealth of Australia Printing Service, 2004), 27.

[14]Commonwealth of Australia, *Defending Australia 1994*, 27.

[15]Australian Government, Department of Defense, Defence Materiel Organisation Website, http://www.defence.gov.au/dmo/dmo/function.cfm?function_id=72 (accessed 25 April 2010).

6x 6 “Perentie” IIMV as an interim solution to allow for doctrine and concept development. The follow-on requirement was for the identification and acquisition of the IMV. This niche capability required a combination of protection against small arms and land mines, the ability to carry an infantry section and their integral stores and equipment for multiple days of operations, and a combat endurance of some 1000 kilometers. The nature of the request for tender (RFT) requirements saw two vehicles taken to trial; the “Bushmaster” IMV (built by Australian Defence Industries, now THALES Land Systems Australia) and the “Taipan” (built by Australian Specialised Vehicle Systems). Neither vehicle completely satisfied the trial criteria, with the ADI Bushmaster finally selected as the preferred tender in 1999.[16] The difficult genesis of the platform and Project Land 116 is beyond the scope of this paper; however, it is worth noting that the design, development, and roll-out of the vehicle to the standard required was a costly and difficult process which resulted in time, budgetary, and project overruns. A detailed analysis of the issues faced by the program is presented in the Australian National Audit Office (ANAO) report referenced in this paper.

[16]Commonwealth of Australia, ANAO Audit Report 59 2003/04, 11

Figure 1. Bushmaster IMV Deployed to Iraq in 2005 with AMTG 1
Source: Army Newspaper (Department of Defence - Australia).

The result of this elongated procurement process was a contract for the provision of 299 IMVs to the Australian Army, with roll-out of the platform beginning in 1994. This figure had been revised from the original concept of 370 vehicles, to 347 vehicles, and then 299 vehicles on contract re-negotiation due to cost overruns.[17] The Bushmaster was produced in six variant types (Troop, Command, Pioneer, Direct Fire Weapons, Mortar, and Ambulance) to support the specialized roles of the Motorized Infantry. In all instances the vehicle was designed to carry the weapons systems and troops, and dismount them to undertake operations in keeping with Motorized Infantry tactics, techniques, and procedures (TTPs). The first production variants were delivered to the Australian Army in early 2005, though low rate production vehicles had been utilized for the development of the Bushmaster IMV training system since 2004. This represented a significant delay in the project, which was designed to deliver vehicles by June 2000.[18]

[17]Ibid., 28-29.

[18]Ibid., 28.

By the time, the vehicle had begun its delivery to Army Units; however, the Australian strategic landscape had shifted significantly.

A Strategic Shift

With the election of the Howard Liberal-National Government in 1996, the Australian Strategic policy outlook began to shift while the Bushranger Project was entering its trial and procurement phase. With the release of a new White Paper, Defence 2000: Our Future Defence Force, the "Government had become concerned that a mismatch had arisen between our strategic objectives, our defence capabilities and our levels of defense funding."[19] Pivotally, this White Paper identified that while a regional focus was imperative, Australia's strategic interests lay globally. Moreover, the government was far more directive when it came to the issue of ADF capability, identifying in the Defence Capability Plan (DCP) that:

> The emphasis will be on a professional, well-trained, well-equipped force that is available for operations at short notice, and one that can be sustained on deployment over extended periods. This type of force will provide the flexibility to deal with operations other than conventional war, and contribute to coalition operations.[20]

Defence 2000 further articulated that the Army would be structured, equipped, and resourced to generate the capacity for the deployment of a Brigade-sized element on extended operations, whilst maintaining a battalion-sized group capable of meeting sundry contingencies.[21] Crucially, the 2000 White Paper also articulated the intent to

---

[19]Commonwealth of Australia, Defence 2000: Our Future Defence Force (Canberra, ACT: Department of Defence, 2000), vii.

[20]Ibid., xiii-xiv.

[21]Ibid., xiv.

continue with the development of a Motorized Infantry Battalion within the RAR and for the 7th Brigade to remain an integrated and highly mobile organization.[22] The establishment of the Motorized capability had now achieved acceptance at the highest levels. However, the nature of the capability would be shifted as the operational environment transformed against the backdrop of regional and global events which unfolded over this period.

Defence 2000 was released during the largest ADF deployment since Vietnam. The Australian contribution to the International Force East Timor (INTERFET) in September of 1999 was the largest military contingent to conduct operations offshore since 1972. A Brigade group would spearhead the INTERFET deployment, with the Deployable Joint Force Headquarters (DJFHQ) forming the INTERFET Force Headquarters. The force peaked at approximately 5000 Australian personnel, including the first deployment of a Bushmaster IMV (a prototype vehicle) in a limited Very Important Person (VIP) transport capacity.[23] The strategic environment had shifted markedly as the IMV entered its low-rate production stage. The ADF found itself committed to long-term operations within East Timor, and subsequently to an unstable environment within the Solomon Islands. Further, distant operational challenges would shortly mould the development of the Protected Mobility capability well beyond its initial conceptualization.

---

[22]Ibid., 80.

[23]John Hunter Farrell, *Peacemakers. INTERFETs Liberation of East Timor* (Rocklea, QLD: Fullbore Magazines, 2000), 76-86.

During 2003, the materialization of the 'watershed' change in Australian strategic policy occurred, with the government contributing combat forces to support coalition operations in Iraq (Operation Catalyst).[24] The expeditionary deployment of forces into a high threat environment in the Middle East was a major shift from the White Paper strategies of 1987 and 1994. By 2005, the environment had become increasingly lethal with the outbreak of insurgent activities and the proliferation of Improvised Explosive Devices (IEDs). In this degrading security environment the Chief of Army, Lieutenant General Peter Leahy, decided to deploy the IMV into Iraq as an urgent force protection imperative. The vehicle would initially support the Al Muthana Task Group (AMTG-1) in a logistic role, replacing the unprotected UNIMOG utility truck fleet, which was grossly underprepared to handle such a threat environment.[25] This deployment occurred completely outside the vehicle initial concept of employment and before it had been fielded within Australia. The IMV was tasked to support protected logistic resupply and convoy operations, including the towing of trailers, which had never been envisaged in the conceptual development of the platform.

Within twelve months of operating in this environment, the IMV's performance had been such that it was re-tasked to provide protected mobility for troops, including infantry force elements. The platform was now performing tasks that matched the original intent for its capability, although in an environment of threat well above that envisaged in its design and development. By mid-2007, a Motorised Combat Team

[24]Commonwealth of Australia, Department of Defence Website, http://www.defence.gov.au/opEx/global/opcatalyst/index.htm (accessed 16 July 2010).

[25]Department of Defence, "Masters of the Desert. Aussie-Made IMV a Success on First Deployment," *ArmyNews: the Soldiers' Newspaper*, 2005.

(company group) in Bushmaster IMVs was embedded within a Cavalry Battle Group (battalion-sized group) in Talil, Iraq (Overwatch Battlegroup West), representing the first deployment of a fully-embedded Motorized element on operations. With the platform's success in Iraq, it was subsequently deployed into Afghanistan supporting Operation Slipper, swiftly becoming the mainstay of infantry protected mobility for Australian forces in theatre. To meet with the changing employment of the platform, it was redesignated by Army as the Bushmaster Protected Mobility Vehicle (PMV). Fortunately for the ADF, the PMV's off-road mobility, coupled with its high degree of mine blast protection, combined to provide a platform which was tailored to operate within the threat scenarios facing coalition forces in both Iraq and Afghanistan. Whilst other coalition members, namely the United States and United Kingdom, scrambled to meet the urgent operational requirement for a mine resistant and ambush-protected vehicle, by 2005 the ADF had begun receiving a platform designed for this very purpose. Over-engineered for the perceived requirements of ODA, the PMV was more than able to meet the current threat environment, with sufficient growth capacity to accept the necessary capability upgrades. The deployment of the PMV in such an increased threat environment necessitated some force protection modifications and rapid acquisitions. Its original concept of employment had not envisaged the vast array of destructive systems and tactics brought to bear by the enemy within the Middle East Area of Operations (MEAO). To date, Project Land 116 has provided "72 Protected Weapon Stations, 116 Automatic Fire Suppression Systems, and 116 removable SPALL Curtain Systems."[26]

[26]Defence Materiel Organisation, Land 116-Project Bushranger Web-Page. http://www.defence.gov.au/dmo/lsd/land116/index.cfm (accessed 16 July 2010).

Coupled with command and control system upgrades and continuing protective modifications, the platform has evolved markedly since its inception, design, and development. The current fleet purchase stands at 737 vehicles, following subsequent orders by the ADF to increase protected mobility across Army and elements of Air Force.[27]

Whilst the Motorized Infantry capability continues to exist, with both 6 RAR and 8/9 RAR now designated embedded Motorized Infantry Battalions, the original concept for employment of the vehicle has altered significantly. Recent operational experience in both Iraq and Afghanistan has seen the employment of specialist Motorized Infantry, Light Infantry Mounted in the PMV crewed by Armoured Corps soldiers. From a position of near project cancellation, the Bushmaster PMV is currently the most deployed armored vehicle within the Army's inventory and stands as the Army's largest armored vehicle fleet. This is a remarkable turn-around in perception and employment for the capability in the space of just five years. The protected mobility offered by the PMV has seen the genesis of a discreet PMC. The PMC is defined by this paper as the employment of the Bushmaster PMV by Combat Arms personnel in either the Motorized or Mounted role for the purpose of conducting combat-orientated operations in an environment requiring protection, mobility, and combat endurance. Rather than a temporary grouping of infantry with PMV support, the PMC implies that the combatant unit has trained intimately with the vehicles and has integrated tactics, techniques, and procedures to a degree where the grouping provides a capability outcome.

[27]Ibid.

The current complex operational landscape would seem to remain a constant for the foreseeable future with the 2009 Defence White Paper (Force 2030) articulating that the ADF must "be prepared to contribute to military contingencies in the rest of the world, in support of efforts by the international community to uphold global security and a rules-based international order, where our interests align and where we have the capacity to do so."[28] This latest White Paper underscores a degree of bi-partisan political support for Australia's current defense posture. Further, the incumbent government has clearly articulated its position regarding Protected Mobility with the 2009 White Paper outlining that "The Government places a high priority on the survivability and mobility of our land forces. To meet this priority, Defence intends to acquire a new fleet of around 1,100 deployable protected vehicles."[29]

[28]Commonwealth of Australia, Department of Defence, *Defending Australia in the Asia Pacific Century-Force 2030*, Defence White Paper 2009 (Canberra ACT: Department of Defence, 2009), 13.

[29]Ibid., 75.

Figure 2. A modified Bushmaster PMV with CROWS Remote Weapon Station in Iraq during 2008
Source: Department of Defence – Australia

Scope

As identified in the preceding definition of the PMC, this paper will focus on an examination of the capability from a Combat Arms perspective. The paper will therefore primarily examine the PMC as employed by the Australian Army's Motorised Infantry Battalions and the PMV Lift Squadron. The focus of this research is the examination of the use of the PMC in a combat role. This research is not an examination of the PMV's procurement to augment force protection for Combat Support or Combat Service Support elements under Project Land 121 (Project Overlander). Further, whilst this paper provides some details of Project Land 116 as background, it does not undertake a detailed analysis of this project. The difficulties faced over the ten-year design and development period for the platform is outside the scope of this research.

The timeline to be examined within this research paper incorporates current operations through to the year 2030. Both the current Australian Defence White Paper, Force 2030, and the Australian Army's Future Land Operating Concept (Adaptive

Campaigning 2009 - AC-FLOC) provide assessments of the Army's capability requirements through until 2030. This time frame also nests with the projected introduction of Army's Future Land Combat Vehicle System (Project Land 400), which is predicted to replace the current in-service major armored vehicle fleets, including the PMV. An analysis of the PMC through to year 2030 provides research, analysis, and recommendation regarding the Australian Army's emerging protected mobility needs in both the current operating environment and as the Army approaches the introduction of next generation capabilities in 2030.

Limitations

The critical limitation imposed on this research is the requirement to maintain the information contained within this paper at an "unclassified" level. Given the current operational deployment of the Protected Mobility capability and the 'Restricted' classification of Australian Army doctrine, some key and source documentation cannot be incorporated or cited in this research. The reader should be aware that there are elements of this paper which are deliberately vague for reasons of national security. Where an appropriate reference can be sourced this has been done; however, the requirement for detail has been balanced against the requirement to ensure that any information released is not classified. Certain performance characteristics, tactics, techniques, and procedures, doctrinal guidelines, and operational lessons learned are at a classification level which may not be represented in this document. The reader must be aware of this limitation and the necessary constraints that this places on the conduct of research.

Assumptions

The Australian Army's Combined Arms Fighting System (CAFS - LAND 400) is a project which is designed to provide the next generation of fighting vehicles for the Army. This project is still in the process of scoping, but is envisaged to replace the existing Armored, Mechanized, and Motorized vehicle fleets with a next-generation capability. Given the time lines and costs involved, it is assumed by the author that the Australian Army will need to continue the operation of 'legacy' Protected Mobility systems until the roll-out of LAND 400 in approximately 2030.

CHAPTER 2

THESIS RESEARCH METHODOLOGY

Thesis Structure

In providing an examination of the combatant role of the Australian Army's Protected Mobility Capability this thesis will question the capacity of the current capability solution to survive the emerging conditions of the future battlespace. This single overarching supposition has been deconstructed to formulate the primary research question and two supporting questions. The reader will recall that the introductory chapter outlined the research questions as follow:

Primary Research Question

Given the Australian Army's projected future operating environments how well does the current Protected Mobility Capability meet the emerging requirements of the Australian Army's Combat Arms?

Supporting Question

As the future operating environment evolves what role will the Protected Mobility Capability play in the Australian Army's Combat Capability through to 2030?

Given the emerging requirements of the Australian Army through to 2030, and the predicated future role of the Protected Mobility Capability, what unfulfilled capability requirements exist which the Army may need to address as it develops towards "Force 2030"?

This thesis has been structured to provide detailed analysis of these reserach questions and subsequently provide conclusions and recommendations based on the

outcomes of the analysis. In order to effectively undertake this task this thesis has been structured in four key chapters: (1) Introduction, (2) Thesis Research Methodology, (3) Research Analysis, and (4) Recommendations and Conclusion.

Introduction

This chapter provides the background information necessary to understand the development of the Motorised Infantry concept within the Australian Army, and the development of the Infantry Mobility Vehicle (later re-designated the Protected Mobility Vehicle) which sought to enable the Motorised Infantry Capability through the provision of protected mobility. The chapter subsequently described the changing strategic and operational dynamic which saw the development of a discreet Protected Mobility Capability (PMC) within the Army's Combatant Arms. The introduction outlined the research questions which will guide the thesis, and the scope, limitations and assumptions which are critical to the conduct of the research itself.

Thesis Research Methodology

This chapter outlines the research methodology which has been applied to answer the primary research question and secondary questions. It lays out in sequence the manner in which each question will be analysed and findings deduced in subsequent chapters.

Research Analysis

This chapter undertakes a systematic analysis of the primary and secondary research questions in order to deduce the capacity of the PMC to survive the emerging condintions of the future battlespace. The research analysis undertakes a detailed

examination of key documentation which outlines both the expected shape of the future battlefield and expected future capability requirements. These documents provide a "yardstick" against which to analyse the emerging role of the PMC, and its capacity to operate within the complex framework of threats which are emerging on current and future battlefields. Futher details regarding the research methodology utilised in the examination of individual research questions are provided in body of this chapter (Chapter 2 - Thesis Research Methodology).

Recommendations and Conclusion

The final chapter of the thesis provides a summary of the principle deductions which have resulted from the research and establishes key recommendations regarding the future of the PMC within the Australian Army.

The thesis structure has been designed to support the flow of the document and provide the reader with a logical and seamless transition from the examination of research material through to the principle deductions of the research, and subsequent recommendations for the capability. Rather than the conduct of a separate review of literature, the analysis and review of key documentation supporting this research has been undertaken in Chapter 1, "Introduction," and Chapter 3, "Research Analysis." As this is an emerging capability field within the Australian Army and as such little standing documentation pertaining to the PMC is currently available. Literature on the subject falls generally into two discreet catagories: documents which pertain to the establishment of the Motorised Infantry and the procurement of the Infantry Mobility Vehicle (IMV); and documentation which outline the strategic and operational context of the current and future operating environments which the Australian Army will face, including the likely

capability requirements such environments will generate. Rather than merge these documents into a stand-alone literature review, the reader has been provided with key document summaries concerning the background to the establishment of the PMC in the Chapter 1, "Introduction," with a detailed analysis and summary of documents which effect the future operating environment undertaken during Chapter 3, "Research Analysis." This structure allows for both the conduct of an overview of principle literature sources, whilst maintaining cohesion for the reader throughout the analysis of the primary and secondary research questions.

Key Definitions

Prior to examining the research methodology applied within this thesis it is critical that the reader be aware that this research potentially represents the first identification and analysis of the development and employment of a discreet PMC within the Australian Army's combat arms. As outlined for the reader in chapter 1, the PMC is defined as the employment of the Bushmaster PMV by Combat Arms personnel in either the Motorized or Mounted role for the purpose of conducting combat oriented operations in an environment requiring protection, mobility, and combat endurance. Chapter 1 further specifies that rather than a temporary grouping of infantry with PMV support, the PMC implies that the combatant unit has trained intimately with the vehicles and has integrated tactics, techniques and procedures to a degree where the grouping provides a capability outcome. Central to understanding this definition of the PMC is a comprehension of what constitutes "capability." The Australian Army's capstone Land Operations Doctrine, Land Warfare Doctrine 1, states that "Army capability is generated

by the interaction of the eight FIC (Fundamental Inputs to Capability)."[30] These eight FIC are: (1) Organization, (2) Personnel, (3) Collective Training, (4) Major Systems, (5) Supplies, (6) Facilities, (7) Support, and (8) Command and Management.[31] The Australian Army's use of FIC closely aligns with the US Army's use of DOTMLPF (Doctrine Organization, Training and Education, Materiel, Leader Development, Personnel and Facilities) approach to capability generation.[32] Both of these systems aim to provide a "holistic" approach to capability, principally recognizing that platforms or systems alone do not constitute a capability, rather it is the sum of the FIC which deliver capability to Army. This thesis will provide an analysis of the PMC within the construct of FIC, and will not focus on a materiel or 'platform based' approach to capability constructing.

Thesis Methodology

The primary methodology of research applied in this thesis is the analysis of qualitative data gained from unclassified and 'open sourced' material. This methodology was assessed as the most effective means of addressing the research questions with sufficient academic rigor, whilst remaining within the bounds imposed by issues of operational security. A qualitative methodology was deemed the most appropriate research method following the consideration of a range of key factors listed below.

---

[30]Australian Department of Defence, *Land Warfare Doctrine 1* (Puckapunyal, VIC: Land Warfare Development Centre, 2006), Chapter 6, 6.

[31]Ibid.

[32]US Army Command and General Staff College, *F100: Managing Army Change-Selected Readings and References* (Ft Leavenworth, KS: US Army Command and General Staff College, July 2009), F102AA-3.

Available Literature/Research Material.

As outlined for the reader earlier in this chapter, this thesis represents the conduct of research and analysis in a relatively newly-evolving area of the Australian Army's capability. The PMV has barely seen five years of operational employment in the Middle East, with the deployment of what evolved into the PMC defined in this thesis being even more embryonic. This focus on operational employment of the PMC has curtailed introduction into service of the capability within Australia thereby delaying further capability analysis and development. The newly-evolved nature of the capability, coupled with a principally operational focus, has resulted in a limited amount of literature pertaining to the PMC having been released. Of the literature which does relate to the capability, much of this material is focused primarily on 'lessons learned' and is classified at a level which precludes its use within this research.

The unclassified literature which is available pertains principally to national strategic assessments of the current and future operating environments (both Australian and other), periodical and other media reporting regarding deployed Australian capabilities and their operational performance, and media releases and articles from the Australian Department of Defence. Further, these available sources can be augmented by the conduct of interviews (at unclassified level) with personnel who are involved with the design, development or employment of the PMC in order to formulate a broad basis of research materials from which the author can draw analysis. Such research material is best suited to a qualitative research methodology based on an analysis of available data, corroboration of available evidence, and deductive reasoning to produce both conclusions and recommendations.

Utility of Quantitative Analysis

Given the nature of the research questions posed by this thesis, the use of a quantitative-based analysis was deemed to be of limited utility. Whilst statistics and data can provide some key insight regarding the effectiveness of the PMC, a quantitative analysis will not provide a robust platform for examination of the utility of the PMC in the emerging future battlespace. Whilst some analysis and research within this thesis may be augmented by the use of targeted quantitative data, the very nature of the research questions themselves best suit examination through a qualitative lens.

Restrictions Imposed by Operational Security

Finally, when seeking to analyze a capability which is deployed in current theaters of operation, the author must abide by restrictions which are imposed by the requirements of operational security. Data which relates to the effectiveness of protective systems, outlines tactics, techniques or procedures, or which highlight certain strengths or weaknesses of the capability have the potential to present risk to Australian and coalition forces utilizing like capabilities should they be commonly available. Whilst some restricted empirical data would prove useful in the quantitative analysis of the effectiveness of the current capability, it is not pivotal to a thorough analysis of the research questions posed within this thesis. The use of ‘open source’ statistics and the conduct of quantitative analysis of unclassified material regarding the PMC provides sufficient information to enable a rigorous investigation of the research questions.

The factors outlined above strongly favor the application of a qualitative research methodology based on unclassified and ‘open source’ material. Whilst the lack of access to some classified doctrine, lessons learned, and empirical data does limit the scope of the

research, it does not preclude a thorough and meaningful analysis of the primary and secondary research questions from available sources. The following section of the research methodology will inform the reader of how these sources will be applied to answer the research questions.

Methodology Applied to the Primary Research Question

In examining the how well the current PMC meets the emerging requirements of the Australian Army's Combat arms it is necessary to establish the nature of the Australian Army's projected future operating environment, and then identify the emerging requirement for the PMC. The 2009 Australian Defence White Paper (Force 2030) provides a detailed estimation of the future operating environment that the Government and Department of Defence expect to face through until 2030. This outlook is further defined by the Australian Army's Modernisation and Strategic Planning Branch which released Adaptive Campaigning 09 - Army's Future Land Operating Concept (AC-FLOC).[33] The AC-FLOC provides further granularity regarding the expected future operating environments for the Australian Army. This document then proceeds to outline the Future Land Operating Concept under which the Australian Army intends to fight. These two documents therefore provide an ability to examine both the projected future operating environment and the Army's predicted operational response.

Whilst the 2009 Defence White Paper and the AC-FLOC represent keystone documents for the Australian expectation of tomorrow's battlespace, they should not be

[33]Department of Defence, Australian Army, *Adaptive Campaigning 09-Army's Future Land Operating Concept (AC-FLOC)* (Canberra, ACT: Head Modernisation and Strategic Planning-Army, 2009).

examined in isolation when considering the likely operating environment that tomorrow will bring. Further rigor can be added to an examination of the future battlespace by a comparison of Australian predictions against those of the US Department of Defense and the US Army. The 2010 Quadrennial Defense Review (QDR) Report summarizes the complexity of the current operating environment and outlines the US Department of Defense's expectations for the future of conflict and the current response of the US military to meet these challenges.[34] At Joint Service level, the 2010 Joint Operating Environment (JOE 2010) "provides a perspective on future trends, shocks, contexts, and implications for future joint force commanders and other leaders and professionals in the national security field."[35] At an Army level, doctrine such as Field Manual 3-0, *Operations* provides a land force perspective on the future operating environment and the land force response to this challenge.[36] An analysis of future operational projections from both Australia and the US will allow a deduction regarding the emerging requirements that the Australian Army is likely to face. From this juncture it is possible to extrapolate the emerging requirements which the PMC must meet.

Intrinsic to examining the PMC's capacity to meet the emerging requirements of the Australian Army's combat arms is an analysis of its performance in the current operating environment. A combination of media releases, journal publications,

---

[34]United States Department of Defense, *Quadrennial Defense Review Report* (Washington, DC: Department of Defense, 2010).

[35]United States Joint Forces Command, *The Joint Operating Environment (JOE) 2010* (Suffolk, VA: US Joint Forces Command, 2010), introductory.

[36]Headquarters, Department of the Army, Field Manual (FM) 3-0, *Operations* (Washington, DC: Department of the Army, 2008).

unclassified reports, and interviews with personnel involved with the PMC allow for an assessment of the capabilities performance within the current environment. Having examined the PMCs capacity to meet the requirement of current operations, and identified the emerging requirements which the future battlespace is likely to present, it is possible to analyze the PMC's ability to meet the emerging requirements of the Australian Army's combat arms.

Methodology Applied to the Secondary Research Questions

The foundation of analysis applied to investigation of the primary research question provides a strong basis from which to subsequently investigate the secondary questions. As the reader will recall, the secondary questions relate to an examination of the role which the PMC will play in the Australian Army's combat capability through to 2030, and a subsequent analysis of any unfulfilled capability requirements which may exist in the PMC field as the Army develops towards "Force 2030?" The analysis of the primary research question has established the capacity of the PMC to meet the emerging requirements of the Australian Army's combat arms. Having this analysis as a basis, it is possible to merge the Army's Future Land Operating Concept, the concept of how the Army plans to fight, with the estimate of the combat environment it will face. These factors will allow for a deduction of the role which the PMC will play through until 2030 when the Army's Future Land Combat System (Land 400) is due to enter service.

Having determined the role that the PMC will play within the Australian Army's combat capability through until 2030, this thesis will examine any potential capability gaps which may exist in the establishment of "Force 2030." The examination of potential capability gaps will require an analysis of the Army's Future Land Combat System (Land

400), and an assessment of the project's scope and aims. Establishment of Land 400's scope will allow an analysis of the projected capability post 2030 against the capability Army will have in service up until this date. Such analysis will allow a determination of any potential capability gaps which arise from a discrepancy between the projected future capability system and an examination of the requirements posed by the future operating environment.

Having established the research methodology for this thesis an analysis of the primary and secondary research questions is now possible.

CHAPTER 3

RESEARCH METHODOLOGY

> Every military force in history that has successfully adapted to the changing character of war and the evolving threats it faced did so by sharply defining the operational problems it had to solve.[37]
>
> General J. N. Mattis, United States Marine Corps

Chapter Introduction

General Mattis' insight strikes deep at the heart of the problem faced by strategic planners in the modern combat environment: what challenges will the future battlespace bring and how do we effectively adapt to meet that challenge? Central to successful capability planning and development is the ability to forecast the requirements of tomorrow and begin the process of incorporating integrated solutions to these issues today. The intrinsic difficulty in future speculation is the uncertainty of developments beyond the present. General Mattis eloquently surmises this conundrum in his forward to the US Joint Forces Command (USJFCOM) Joint Operating Environment (JOE) 2010 by hypothesizing that "we will not call the future exactly right, but we must think through the nature of continuity and change in strategic trends to discern their military implications to avoid being completely wrong."[38] Given that a completely accurate appreciation of tomorrow's challenges is improbable, the key to success will be an assessment of future combatant requirements which is accurate enough to enable the development of valid capabilities to meet the Army's emerging need. These capabilities

[37]General J. N. Mattis quoted in *Joint Operating Environment (JOE) 2010*, 2.

[38]Ibid.

must be broadly effective across the prevailing spectrum of conflict, yet remain sufficiently adaptable to allow for modification and rapid upgrade in order to meet the variance between our prediction of the future, and the actual operational environment which evolves.

The Australian Army shares this view of complexity regarding the prediction of future combatant requirements and the subsequent need for capability management. The Australian Army's capability management doctrine articulates that in attempting to generate and sustain combat forces the aim is to "balance current capability requirements (preparedness) with the development of future capability (modernization) to produce strategically relevant and combat ready forces."[39] This doctrinal publication, Land Warfare Doctrine 1 (LWD 1), echoes the difficulties outlined by General Mattis, articulating that "the maintenance and management of Army's capability is a long-term process, predicated on an understanding of trends and potential discontinuities within the strategic environment."[40] Given a modern operational environment where the only constants seem to be complexity and change, the issue of "discontinuities" becomes a serious concern for the provision of capability solutions which can stand the test of time. The acknowledgement of this concern is further underlined in LWD 1 which enunciates that "while the strategic situation can change quickly, the decisions taken on capability take time to implement and continue their influence for a long time afterwards."[41] The concern therefore, is that errors in capability development are costly, with effects that

[39]Australian Department of Defence, *Land Warfare Doctrine 1,* Chapter 6, 1.

[40]Ibid.

[41]Ibid.

have far-reaching implications which cannot be amended in short order. It is against this backdrop of uncertainty, complexity, and challenge that this thesis will undertake an examination of the Australian Army's PMC and its utility through until 2030.

Chapter Overview

Chapter Two outlined the central supposition of this thesis as an examination of the PMC's capacity to survive the emerging conditions of the future battlespace through until 2030. This chapter will undertake a detailed analysis of the primary and secondary research questions in order to provide an assessment of the PMC's ability to meet the emerging needs of the Australian Army's combat arms. This will include an assessment of the likely future role of the PMC, and an examination of any capability shortfalls which may exist through to the introduction of Army's CAFS. This analysis will be conducted via a systematic examination of each research question, with the analysis of the primary research question establishing a view of the future. This view will inform the secondary research questions and allow for extrapolation and hypothesis of the future role for the PMC and its potential capability shortfalls. While the introduction to this chapter has summarized the difficulties of accurate speculation regarding the future combat environment, such hypothesis is crucial if the Australian Army is to remain capable of successfully undertaking combat operations into the future. This critical factor was highlighted by the Chief of the Australian Army (CA), Lieutenant General Ken Gillespie, in his introduction to the Army's Future Land Operating Concept (Adaptive Campaigning 09). This document outlined the responsibility of the CA "to ensure that, in an era of persistent conflict, our Army as a part of the broader ADF (Australian Defence Force), is not only prepared to 'win the joint land battle' now, but is also prepared to 'win

the joint land battles of the future.'"[42] Given the requirement for Army to "win the joint land battles of the future," how will the PMC contribute to the emerging needs of Army's combat arms?

Analysis of the Primary Research Question

The reader will recall from both the introductory and methodology chapters the primary research question posed by this thesis:

> Given the Australian Army's projected future operating environments how well does the current Protected Mobility Capability meet the emerging requirements of the Australian Army's Combat Arms?

Any analysis of this question first requires an examination of what the nature of the Australian Army's future operating environment may be. Estblishing the nature of the future operational environment will then allow for the identification of the emerging requirements of the Army's combat arms, and subsequently the capacity of the PMC to meet such emerging needs. In seeking to analyze the future, the reader is reminded of the scope outlined in the introductory chapter of this thesis. The scope identified the time-line to be analyzed in this paper as current operations through to the year 2030. This twenty year time span mirrors the projections provided in both the current Australian Defence White Paper (Force 2030) and the Army's Future Land Operating Concept (Adaptive Campaigning 09). These documents are pivotal in any examination of the Australian estimation of future requirements, as they form the cornerstone of the Government's strategic guidance to the ADF and Army's capstone blueprint for its operating methodology for the next two decades. These documents will be examined in detail in

[42]Department of Defence, Australian Army, *Adaptive Campaigning 09*, i.

order to identify what the Australian Government, Department of Defence, and Army see as their future operating environment and methodology. The 2030 time-line relates to both a tangible point in the "middle-distance" for future speculation and the year in which Project LAND 400 seeks to introduce the CAFS. LAND 400 will seek to replace the capabilities currently encapsulated by the PMC, Mechanized Infantry and Armored Cavalry in the Australian Army. As such, the PMC's provisional "life of type" spans from current operations until the introduction of LAND 400 in 2030, making this date a logical cessation point for this thesis. Having re-established the methodology and scope as they apply to the primary research question, the analysis of the Australian Army's future operating environments can be explored.

The Australian Army's Future Operating Environments

Strategic Policy Guidance

The 2009 Australian Defence White Paper, Defending Australia in the Asia Pacific Century - Force 2030, outlines the ADF mission, operational priorities and tasks, and provides an analysis of the future operational environment which the Government perceives the ADF will face over the next two decades. The Government's stated aim for long term capability generation is to design Force 2030 as "a balanced force, capable of meeting any contingency the ADF may be required to meet in the coming two decades."[43] As has been examined during the introduction to this chapter, this is a difficult aim given that analyzing the future is a complex task with little prospect of divining every eventuality which may occur. Given that the Government cannot hope to

[43]Commonwealth of Australia, Defence White Paper 2009, 9.

succeed in presupposing every contingency which may arise, the need for a "balanced" force, which is capable of swift adaption to meet changing strategic needs, is clearly articulated. Force 2030 nests with extant doctrine in assessing the complexity of capability management:

> Defence planning is, by its nature, a complex and long term business. Defence planning is one area of public policy where decisions taken in one decade have the potential to affect, for good or ill, Australia's sovereignty and freedom of action for decades to come. The Government must make careful judgements about Australia's long term defence needs. Such judgements are even more important in times of fiscal or strategic uncertainty.[44]

The reader will note the synergy between this strategic analysis and the remarks in LWD 1 pertaining to the requirement to undertake modernization which provides strategically relevant and combat ready forces despite the discontinuities which may appear in the strategic environment. The clear themes presented by both the strategic outlook and the capability doctrine are the degree of difficulty in predicting the future, the requirement to ensure the provision of forces which can successfully operate in the future environment, and the potentially serious affect of failing to develop the appropriate capability mix.

Faced with the necessity of providing future guidance against a complex and shifting global security scenario, Force 2030 identifies that the key to success "is to have a solid foundation upon which to build, adapt and take advantage of opportunities."[45] This guidance is a critical enabling factor for the development of future combat capability, given the nature of the Australian capability management system which

---

[44]Ibid., 11.

[45]Ibid., 12.

operates on the theory of "concept-led" and "capability-based" modernization. This capability management methodology is outlined in LWD 1, which describes that "to ensure that future Army capabilities are considered on the basis of the operational effects required, rather than on the basis of the platforms currently due for replacement, the Army has adopted a concept-led and capability based approach to modernization."[46] This methodology of developing force capability has its basis in identification of the future operational need and determination of future combat concepts, which are then supported by appropriate capabilities which can meet the conceptual requirements. LWD 1 further augments the description of this methodology by providing that "the concept-led and capability-based approach is desined to optomise current capability by planning realistically for the future, in short, medium, and long term time frames."[47] *Force 2030* is therefore the cornerstone and key driver of future capability planning as the White Paper provides guidance on the role of the ADF, its key tasks and the operational environment. It is this guidance which allows for the delivery of the solid capability foundation from which adaptation is possible. Having established the methodology for capability development it is necessary to determine the Government's requirements of the ADF, and the predicted future operating environment.

ADF Roles and Tasks.

The Government advises in *Force 2030* that its policy is that "the main role of the ADF should continue to be an ability to engage in conventional combat against other

[46]Australian Department of Defence, *Land Warfare Doctrine 1,* Chapter 6, 12.

[47]Ibid., Chapter 6, 13.

armed forces."[48] This guidance firmly sets the ADF's primary task as the successful prosecution of conventional combat operations against another armed force. This is supported by the ADF's principal task which is "to deter and defeat armed attacks on Australia by conducting independent military operations without relying on the combat or combat support forces of other countries."[49] Whilst setting conventional conflict and the defence of Australia as the ADF's primary task, *Force 2030* specifies that "the ADF must also be prepared to play its part in dealing with intra-state conflict, an enduring feature, and assessed to be the most common form of conflict in the period to 2030."[50] The ADF is therefore given two discreet types of roles: preparation for full scale conventional combat against another armed force, and participation in operations which deal with intra-state conflicts, such as the insurgency currently underway in Afghanistan. As has been witnessed by current operations, these two roles require the development of differing capabilities and have large and varying impacts over FIC, particularly in the fields of "Organisation," "Collective Training," "Major Systems," and "Command and Management." Adding to the complexity of the ADF's role and principal task allocated by the Government is the specification that the ADF must be capable of conducting independent operations, leading military coalitions, and making tailored contributions to military coalitions where necessary.[51] The Government has also articulated priorities for the application of military power, which are:

---

[48]Commonwealth of Australia, Defence White Paper, 11.

[49]Ibid., 53.

[50]Ibid., 11.

[51]Ibid., 13.

Table 1. ADF Priority Tasks	
Priority of Tasks	**Task Description**
1	Deter and defeat armed attacks against Australia.
2	Contribute to stability and security in the South Pacific and East Timor.
3	Contribute to military contingencies in the Asia Pacific Region.
4	Contribute to military contingencies in the rest of the world.

Source: This table has been created utilizing the ADF priority tasks outlined in Defence White Paper 2009: 13.

Whilst the government has defined that "strategic interests and defence posture suggest a primary focus for the ADF on tasks in our geographic vicinity," they have also indicated that "where it is in Australia's clear strategic interests to do so, the Government will deploy the ADF beyond our region."[52] This potentially global operating focus, coupled with the primary requirement for the defense of Australia's "expansive geography requires an expeditionary orientation on the part of the ADF at operational level, underpinned by force projection capabilities."[53] In summary, the Army, as an element of the ADF, is expected to maintain an expeditionary capability at the operational level, with the capacity to deploy regionally, or throughout the globe, for the conduct of operations up to, and including, conventional combat operations through to armed conflict short of conventional war. *Force 2030* describes armed conflict short of conventional war as potentially incorporating "humanitarian, stabilisation, counter-

[52]Ibid., 44, 51.

[53]Ibid., 51.

insurgency, peacekeeping and reconstruction interventions."[54] In short, the strategic guidance provided to the Army is to prepare for operations across the spectrum of conflict anywhere on the globe.

An Australian Forcast of the Future

Having established the future roles and tasks allocated to the ADF by government, an analysis of the future operating environment is now appropriate. With the Army directed to focus across the spectrum of conflict, with a potentially global area of operations, an understanding of the projected operating environment is critical to any development or future employment of Army capability. What is clearly articulated within *Force 2030* is the very real concern that the current and emerging strategic environment is becoming increasingly complex and uncertain. This complexity and propensity for strategic change creates an environment in which forecasting for likely operational and capability needs is increasingly problematic. *Force 2030* argues that "we cannot have perfect knowledge of the future, and the range of uncertainties are disconcertingly wide...the more balanced our portfolio of capabilities, the more we will be able to hedge and re-balance as required."[55] The continual emphasis on balanced capabilities which allow for reaction to unexpected situations present throughout the White Paper serves to underscore the degree of uncertainty with which strategic analysits view the next two decades.

[54]Ibid., 22.

[55]Ibid., 28-29.

The Government's assessment of the future sees a global environment where significant change is likely to occur. Such change brings with it the prospect of increased tension and potential conflict. *Force 2030* assesses that the United States will remain the strategically pre-eminant power through until 2030.[56] However, the continued rise of China and other Asian economies will eventually usher in an era where the unilateral power of the United States is replaced with a "multipolar" global order.[57] This shift in the strategic landscape will be shaped by the continuing trend of globalization and interdependent economic activity, which will link regions and states more closely, but also carries with it the potential of rivalry and conflict.[58] *Force 2030* articulates the Australian Government's strong desire to preserve a functional international order throughout this period of potentially significant upheaval, with the Government stating that:

> we have a strategic interest in preserving an international order that restrains aggression by states against each other, and can effectively manage other risks and threats, such as proliferation of WMD, terrorism, state fragility and failure, intra-state conflict, and the security impact of climate change and resource scarcity.[59]

This passage serves to eloquently describe the major drivers of conflict which the Australian Government perceives pose a threat within the next two decades. The Government has assessed that "it would be premature to judge that wars among states, including the major powers, has been eliminated as a feature of the international

---

[56]Ibid., 32.

[57]Ibid.

[58]Ibid., 30.

[59]Ibid., 43.

system."[60] It is this assessment which has given rise to the ADF's primary role, which remains the capacity to undertake conventional combat against other armed forces. As previously discussed, however, *Force 2030* provides that intra-state conflict "will be an enduring feature, and the most common form, in the period to 2030."[61] While *Force 2030* requires the ADF to focus on the high end of the spectrum of conflict, it acknowledges that in the next two decades operations at the medium and low end of the spectrum, short of conventional war, are the most likely. This assessment is consistent with the picture of state fragility and failure, and the effects of continued urbanization and resource scarcity. Adding to this already complex dynamic is the continued threat of radical extremism, assessed as a serious "destabilising component of the global security environment for at least a generation," posing a direct threat to Australian interests as has been seen by terrorist attacks against Australian nationals in Bali, and the Australian Embassy in Jakarta.[62] Further instability is also predicted from the potential impacts of climate change, which threaten to deliver "resource security issues, involving future tensions over the supply of energy, food and water."[63]

This analysis of the future operating environment provides a vision of increasing complexity, growing tensions, and the growth of violent capability in both state and non-state organisations. Future Army operations are likely to encounter a myriad of complex situations which may well arise in failing or failed states, necessitating stabilization,

---

[60]Ibid., 22.

[61]Ibid.

[62]Ibid., 37-38, 44.

[63]Ibid., 43.

humanitarian, and counterinsurgency operations to be conducted simultaneously. These operations are difficult enough. This complexity is further increased by the continuing threat of conventional conflict, or proliferation of Weapons of Mass Destruction (WMD). The subtext within the increasingly uncertain and complex strategic outlook remains the ready proliferation of sophisticated arms to states and extremist groups which are increasing the lethality of the future battlespace. This factor is acknowledged in *Force 2030* which asserts that "the ADF must be able to protect itself against the range of existing and evolving threats, particularly as the proliferation of threats is unlikely to abate."[64] The trend for future operations as assessed by Australian strategic policy remains one of increasing uncertainty, complexity, and lethality.

A Supporting View of the Future

Whilst an analysis of *Force 2030* provides the reader with a projection of the future operating environment, it is a view which is analytically shallow if considered in isolation. The assertions in *Force 2030* are solely those of the Australian Government. The document is intended to provide strategic guidance to the ADF and thereby will inform subordinate doctrine, such as the Army's Adaptive Campaigning 09 - The Future Land Operating Concept (AC-FLOC). While Adaptive Campaigning provides further fidelity from a land force perspective, it does not diverge in its future predictions from the extant strategic guidance provided in *Force 2030*. This is evidenced in the Adaptive Campaigning 09 summation of complex conflict, which states:

> Conflict has always been complex, however the increased connectivity between a growing number of actors and influences involved in modern conflict, combined

[64]Ibid., 67.

> with the diffusion and transferrance of lethality and the proliferation of technology and ideas demands a comprehensive long term approach to conflict reolution and securing Australia's National interests.[65]

The reader will recall that the concepts of increased connectivity between actors (globalization) and diffusion of lethality are introduced in *Force 2030* and again articulated in the Army's supporting operational concept. This is hardly surprising given that Adaptive Campaigning 09 is intended to provide the methodology by which the Army will meet the requirements outlined in *Force 2030*. While Adaptive Campaigning 09 will provide valuable insight into the emerging requirements for the Army's combat arms, which will be examined later in this chapter, it cannot provide an independent "yardstick" against which to measure the future hypothesis offered by *Force 2030*. A brief analysis of prevailing US strategic thought regarding the future operational environment will enable a comparison to be drawn with current Australian guidance.

The United States Department of Defense National Defense Strategy 2008 (NDS) is the departments "capstone" policy document. Released by the Secretary of Defense, it results from an analysis of the President's National Security Strategy, and subsequently informs the National Military Strategy which is produced by the Chairman of the Joint Chiefs of Staff.[66] The NDS "provides a framework for other DoD strategic guidance, specifically on campaign and contingency planning, force development, and

---

[65]Department of Defence, Australian Army. Adaptive Campaigning 09, i.

[66]United States Department of Defense, *National Defense Strategy* (Washington, DC: Department of Defence, 2008), 1.

intelligence."[67] The NDS provides an assessment of the current and future operating environments, highlighting that:

> for the foreseeable future, this environment will be defined by a global struggle against a violent extremist ideology that seeks to overun the international state system. Beyond this transnational struggle, we face other threats, including a variety of irregular challenges, the quest by rogue states for nuclear weapons, and the rising military power of other states.[68]

The reader will recall these concepts of extremist ideology, irregular challenges, the rise of a multipolar system, and proliferation of WMDs as elements of *Force 2030's* assessment of future threats and complexities. Further, the NDS identifies the threat of failed or failing states, and the insurgent actions of non-state actors as threats to regional and international security.[69] Other than the emergence of "asymmetric threats," the NDS recognizes that "over the next twenty years physical pressures - population, resource, energy, climactic and environmental - could combine with rapid social, cultural, technological, and geospatial change to create greater uncertainty" and therefore pose the threat of sparking conflict.[70] This future hypothesis mirrors closely the projection provided within Australian strategic guidance.

The future envisaged by the NDS is further supported by the USJFCOM Joint Operating Environment (JOE) 2010. This document is released by US JFCOM and is intended to provide a "prospective on future trends, shocks, contexts, and implications for future joint force commanders and other leaders and professionals in the national security

---

[67]Ibid., 1-2.

[68]Ibid.

[69]Ibid., 3.

[70]Ibid., 4.

field."[71] The JOE provides a summary of future challenges as it seeks to provide a conceptual framework for future US Joint Force development. In analyzing the expected opertional environment, the JOE contends that "the next quarter century will challenge US Joint Forces with threats and opportunities ranging from regular and irregular wars in remote lands, to relief and reconstruction in crisis zones, to cooperative engagement in global commons."[72] The JOE reinforces Australian strategic assessments of the future to 2030 articulating that "the introduction and employment of new technologies, and the adaption and creativity of our adversaries will alter the character of joint operations a great deal."[73] Globalization and diffusion of technology and lethality are again key themes, as are resourse scarcity, economic difficulties and the concept of "cyber" based threats.[74] The JOE also identifies the key issue of increasing lethality in the future operating environment:"more advanced weaponry will be available to more groups, conventional and unconventional, for a cheaper price. This will allow reletively moderately funded states and militias to acquire long-range precision munitions, projecting power farther out and with accuracy than ever before."[75]

An examination of US DoD strategic level guidance and joint forces operational conceptualization demonstrates clear synergy between the Australian and US projections

---

[71]United States Joint Forces Command, The Joint Operating Environment (JOE) *2010*, Cover Page.

[72]Ibid., 4.

[73]Ibid.

[74]Ibid., 34.

[75]Ibid., 55.

of the future operating environment. The projected operating environment over the next two decades promises both uncertainty and complexity. It is likely to consist of persistent conflicts, which are assessed to be more frequently intra-state than inter-state. The rise of non-state actors is likely to continue, with their actions enabled by a globalized and linked economy which allows for the rapid transfer of images, ideas, and information. Complex intra-state conflicts, such as insurgencies, will demand the conduct of operations across the spectrum of conflict, often requiring simultaneous counterinsurgency, stabilization and humanitarian assistance operatons. The continuing trend is likely to be the emergence of unforeseen requirements and un-imagined second and third order effects. As surmised by the JOE, in the future, "the only matter that is certain is that joint forces will find themselves committed to conflict."[76]

The Emerging Requirements of the Australian Army's Combat Arms

Having established the likely nature of the projected operating environment, it is now necessary to identify the emerging requirements of the Australian Army's combat arms, in order that the PMC can be assessed against these parameters. Given the strategic direction of future requirements provided within *Force 2030*, the Army has developed Adaptive Campaigning 09 as the "conceptual and philosophical framework and force modernisation guidance to achieve those requirements."[77] The aim of Adaptive Campaigning 09 is to ensure that Army is prepared to undertake operations in the future complex security environment, by ensuring a common conceptual framework, and

[76]Ibid., 62.

[77]Department of Defence, Australian Army, *Adaptive Campaigning 09*, i.

designing and development of capability which is able to undertake a "diverse range of operations in complex environments."[78] This capstone document is pivotal in assisting to define the emerging requirements of the Army's combat arms.

During 2009, the Government undertook a force structure review which aimed to "determine the nature, size and structure of the armed forces we will need in the future."[79] In considering the land combat environment and the tasks allocated to the Army, the Government aimed to ensure that the "future force will have the necessary combat weight and reach to be able to operate with decisive effect against credible adversaries."[80] Pivotally, the Government determined that while capability upgrades and improvements were necessary for Army to remain capable into the future, there are to be no major changes to the size or structure of the force.[81] The structure of Army's combat arms will remain based around three Brigade-sized groups, which are capable of producing a total of 10 Battlegroups for operational employment.[82] A Battlegroup is a task organized force element based on either an Infantry, Cavalry or Tank Unit Headquarters, with specialist sub-units allocated as required, to deliver sufficient combat power to achieve the mission. Priority for capability development within the combatant elements of the land force is the enhancement of both survivability and mobility, with some 1,100 protected vehicles to be introduced into service by 2030 in order to replace

[78]Ibid.

[79]Commonwealth of Australia, Defence White Paper 2009, 58.

[80]Ibid., 63.

[81]Ibid., 74.

[82]Ibid.

existing fleets.[83] The future combatant force is seeking to establish and maintain a capability advantage against adversaries in a bid to reduce the risks presented by Army's relatively small force, and the uncertainty of the current strategic environment. A further key to meeting the challenge of uncertainty are flexible and adaptable forces which are capable of adjusting to meet the conditions which the environment may unexpectedly set.

Adaptive Campaigning 09 seeks to provide further granularity to the emerging requirements of the combat arms, outlining the need for Army to deploy combined arms teams which can "undertake combat in littoral and land environments."[84] This simple statement belies the requirement to command, control, and synchronize combined arms operations in densely populated areas, encompassing various operating environments, across multiple lines of effort. The conduct of these combatant operations will be made all the more difficult given the future operating environment defined earlier in this chapter. Adaptive Campaigning 09 summarizes the issues faced in the future operating environment by stating that "future conflict will display the trends of diffussion of lethality, the proliferation of technologies and ideas, disaggregation of the battlespace and a retreat by our adversaries into complex terrain."[85] In response to these challenges the Army has developed the Future Land Operational Concept (AC-FLOC). This concept sees the Army undertaking operations against five "mutually supporting and interdependent lines of effort" (LOE); these are:[86]

---

[83]Ibid., 74-75.

[84]Department of Defence, Australian Army, *Adaptive Campaigning 09*, i.

[85]Ibid., iii.

[86]Ibid., iv.

Table 2. Adaptive Campaiging LOE and US Equivalency		
Serial	**LOE**	**US LOE**
1	Joint Land Combat	Civil Security
2	Population Protection	Civil Control
3	Information Action	IO
4	Population Support	Essential Services/Governance
5	Indigenous Capacity Building	Economic/Infrastructure Dev

Source: This table has been constructed utilizing the AC-FLOC LOE provided in the Adaptive Campaigning 09, P IV and the US Army equivalent LOE contained in FM 3-0 P 6-14. It should be noted that not all LOE translate neatly into US doctrine, however the equivalency is sufficiently accurate to enable the reader to grasp the concept of the Adaptive Campaigning construct.

The emerging requirement of the Army's combat arms is the prosecution of operations across the spectrum of conflict, in accordanace with the mutually supporting and interdependent LOE outlined in Adaptive Campaigning. This will require units to be capable of combined arms operations in highly complex environments, often necessitating simultaneous execution of tasks against multiple LOE. Within the complex fabric of the projected operating environment, which is becoming more lethal in its nature, the "distinctions between low, medium and high intensity conflict are becoming blurred at the tactical and operational level."[87] Given these emerging requirements, the combat arms unit must be "persistent in its continuous application, pervasive in its presence and proportionate in its response."[88] By necessity, a key emerging requirement

[87]Ibid., 6.

[88]Ibid., 5.

for all units will be sufficient survivability, mobility, and adaptability to successfully undertake and sustain operations in a lethal and unpredictable environment.

The Protected Mobility Capability: Can It Meet The Emerging Needs of The Combat Arms?

As outlined in the introductory chapter, the emergence of the PMC was more a question of evolution from necessity, than the product of conscious capability planning. The initial concept of employment for the Bushmaster Infantry Mobility Vehicle (formally the IMV and now designated the PMV - Protected Mobility Vehicle) was the provision of a Motorised Infantry Capability. This capability was designed to provide a degree of battlefield mobility and limited protection to troops who were essentially light infantry, provided with an organic armoured mobility asset. Chapter 1 of this thesis provided a detailed examination of the introduction into service of the PMV, the raising of the Motorised Infantry, and the changes in the structure of the Army which saw a reduction in Motorised Battalions, and the allocation of the PMV to the 'lift' role. In hindsight, this pivotal change to the basis of provisioning, placing the PMV in the "wheeled APC lift" role, represented the evolutionary beginning of a discreet PMC within the Australian Army. The divergence from the sole employment of the PMV in the embedded motorized role subsequently enabled the mounting of light infantry units via the PMV Squadron construct. This capability provided the light infantry with a degree of protection, mobility, and combat endurance which was otherwise unavailable to them.

By 2005, as the threat from IEDs and direct attacks increased markedly in Iraq, the PMV was deployed to the Middle East.[89] From initial success in protecting logistic elements, the vehicle was re-roled to provide "combat focused" protected mobility, and with the success in Iraq resulting in the vehicle also being deployed into Afghanistan. The Australian Army had discovered that it now had the capacity to protect light infantry force elements and employ them into environments of high threat; the PMC had evolved. Chapter 1 introduced the definition for the PMC as the "employment of the Bushmaster PMV by Combat Arms personnel in either the Motorized or Mounted role, for the purpose of conducting combat oriented operations in an environment requiring protection, mobility and combat endurance." This definition encompasses the potentially "hybrid" nature of the PMC. The lack of sufficient combat units equipped with the PMV has necessitated the creation of mixed battlegroups, incorporating both Armoured Corps troops in the lift role and motorized infantry crewmen, to enable the staffing of some deployments. Such offsets become necessary when a capability is deployed directly into operations prior to being fielded within Australia. Prior to assessing the capacity of the PMC to meet the emerging requirements of the Australian Army's Combat Arms, it is necessary to examine its current performance on operations. Given the PMCs evolution by re-structure and necessity, how effective has it proven on current operations?

Performance on Current Operations

Establishing the PMCs effectiveness on current operations is an essential precursor to examining its capacity to meet the emerging needs of the combat arms. As

[89]Department of Defence, "Masters of the Desert. Aussie-Made IMV a Success on First Deployment."

this thesis remains at an unclassified level, it is not possible to draw from After Action Reviews (AARs), Post Operational Reports (PORs), nor the quantitative data collected by Army for the purpose of capability analysis. However, the examination of open source reporting, Defence media releases, and unclassified capability documentation does allow for an analysis of the PMC's current performance on operations. An overt indication of the performance of a capability is the nature of its employment. As has been discussed, the PMV was first deployed to Iraq during 2005 in a bid to stop Combat Service Support (CSS) elements from operating in light-skinned vehicles in a high threat environment.[90] By the middle of 2007, a Motorised Company Group was embedded as a part of the Cavalry Battle Group deployed in Talil, Iraq (Overwatch Battlegroup West), with the PMC also employed by the Australian Army Training Team Iraq (AATT-I) for protected mobility within the area of operations. During early 2010, the first Motorised Battlegroup was deployed to Afghanistan as Mentoring Task Force 1 (MTF 1), mounted primarily utilizing the PMC.[91] While numerous other force elements have served throughout Oruzgan province mounted by the PMC, the deployment of the 6 RAR Battlegroup represented the largest employment of embedded Motorised Infantry to date. While accurate figures of vehicles deployed are not available due to operational restrictions, the clear trend since 2005 has been an increase in the operational use of the PMV in the combatant PMC in role. From Light Infantry through to the Special Operations Task Group (SOTG), the PMC is in high demand and the PMV has become the most numerous

[90]Ibid.

[91]Australian Department of Defence, Website, www.defence.gov.au/defence news/stories/ 2010/mar/0317b.htm (accessed 15 November 2010).

platform deployed in Afghanistan by the Australian Army.[92] In a recent interview with the Staff Officer responsible for overseeing the Bushmaster PMVs capability integration into Army, the anecdotal indication of the success of the platform and the PMC is "the fact that everybody wants one...what is clear is that there are more people wanting Bushmaster than there is Bushmaster available."[93]

Figure 3. A Bushmaster PMV deployed in the PMC role within the MEAO. *Source*: Photograph by Cpl Rob Nyffenegger, Australian Army Newspaper, Edition 1170, www.defence.gov.au/news/armynews/ editions/1170/images/19%2520-%2520bushmaster.jpeg (accessed 16 October 2010).

[92]Australian Department of Defence, Website, www.defence.gov.au/op/ afghanistan/gallery/ 2010/20100312/index.htm (accessed 19 November 2010).

[93]Interview by author with Lieutenant Colonel Stuart McPhee, S8 Development Headquarters 7th Brigade, Gallipoli Barracks, Enoggera, Queensland, Australia, 25 June 2010.

An analysis of the Army's capability procurement will also provide an insight into the effectiveness of the PMC. Given that capability procurement will occur within an environment which is resource constrained, Army policy dictates that "modernisation will be guided by strategic guidance, force development and capability decisions. Army will maintain a concept-led and capabilities-based philosophy, while being resource conscious and threat aware."[94] In "layman" terms, this policy is designed to ensure that capability procurement is based on strategic guidance, with warfighting concepts supported by suitable and cost-efficient systems. As outlined in chapter 1, originally 370 PMVs were to be procured by the government. This number fell to 347 and then 299 platforms, as the project struck manufacturing difficulties and cost overruns.[95] Following the deployment of the PMV on operations and the fielding of the PMC, operational need, coupled with a capabilities-based approach to modernization, saw a follow-on purchase of 143 PMVs, followed by an additional 293 PMVs for protection of CSS elements.[96] As of 2010, this brings the ADF fleet total to 737 platforms, more than doubling the fleet inside five years of its first deployment.[97] This significant increase in the PMC fleet, and the re-raising of a second regular Army Motorised Battalion, represents a clear vote of

[94]Department of Defence, Australian Army, *Adaptive Campaigning 09*, i.

[95]Commonwealth of Australia, ANAO Audit Report 59 2003/04, 28-29.

[96]Interview, LTCOL McPhee, 2.

[97]Ibid., 2. 737 PMVs includes two vehicles provided 'gratis' to the Army due to assistance provided to THALES Australia in making PMVs available for re-sale to the Netherlands. 737 is the ADF total given the small number of vehicles which have been provided to the Royal Australian Air Force for employment by the Airfield Defence Guard Wing.

confidence in the performance of the PMC on operations by both the Government and the ADF.

Finally, operational effectiveness can be proven by analysis of a capabilities performance in undertaking full mission profile tasks in the area of operations. This is the realm of quantitative analysis in the form of mission data, and qualitative analysis of performance in the form of AARs. Due to the classification level of such data and reporting, these sources cannot be utilised; however, open source and unclassified incident reporting is available for collation and trend analysis. Between 12 May 2007 and 28 October 2010, 11 separate IED attacks against PMVs were disclosed via Defence media releases and open source reporting. In these 11 strikes, 20 soldiers were wounded: however, no soldiers killed as a result of the attacks.[98] The operational effectiveness of the PMC was clearly reinforced by Brigadier Gus Gilmore following an attack in southern Iraq in May 2007, who stated that "the integration of sound tactics and world class vehicles has limited the effectiveness of this attack."[99]

[98]Individual report details are provided at appendix 2 to this thesis.

[99]Defence Media Release, 12 May 2007, www.defence.gov.au/media/ departmentaltpl. cfm?currentid=664 (accessed 16 October 2010).

Figure 4. A Royal Netherlands Army Bushmaster Patrol Vehicle showing battle-damage after IED strike in Uruzgan

Source: Photo Author: Pierotreruote, http://commons.wikimedia.org/wiki/File:Bushmaster_Counter_IED_Lane_Tarin_Kowt.jpg (accessed 19 November 2010).

An analysis of deployment trends for the PMC, follow-on purchases of the capability platform, and the survivability of the entire system, provide a clear indication that the capability has been effective on current operations. The PMC has clear endorsement from Army, with a second Motorised Battalion raised, and significant expenditure and emphasis on the fielding of the capability. The Government has likewise recognized the utility of the PMC, advising in *Force 2030* that they place "a high priority on the survivability and mobility of land forces."[100]While the PMC's effectiveness in the current operational environment has been established, how well does the current PMC meet the emerging requirements of the Army's combat arms?

[100]Commonwealth of Australia, Defence White Paper, 75.

The Current PMC and the Emerging Needs of the Combat Arms

Deploying into the projected future operating environment, the PMC will face a myriad of challenges and a rising level of complexity. As the reader will recall from the analysis of both the future operating environment and the emerging needs of the combat arms, "the reality of the modern battlespace . . . is . . . that rather than the diverse range of activities occurring at separate times, on separate blocks, they are likely to occur all at once, on the same block. In other words the one block or complex war."[101] This concept is an evolution of 3-Block War hypothesis posed by former Commandant of the Marine Corps, General Charles C. Krulak. General Krulak proposed that operations were morphing into the development of a "3-Block War," with soldiers "confronted by the entire spectrum of tactical challenges in the span of a few hours and, potentially within the space of three contiguous city blocks."[102] Analysis in this chapter has shown that the trends projected for the future operating environment will lead to increasing complexity; the 3-Block War is now condensing into a multi-layered fight on a single block. The nature of this future projection is aptly summarized by Adaptive Campaigning 09:

> Intra-state conflict will demonstrate a mixture of conventional and unconventional forces using a combination of violence and non-violence. It will include conventional firepower and manouevre, abduction and assassination, subversion and insurgency. It will entail attacks on infrastructure to produce economic paralysis, but also against military targets to enduce exhaustion or provoke over-reaction leading to the killing or abuse of civilians.[103]

---

[101]Department of Defence, Australian Army, *Adaptive Campaigning 09*, 16.

[102]General Charles C. Krulak, "Cultivating Intuitive Decisionmaking," *Marine Corps Gazzette* (May 1999), http://www.au.af.mil/au/awc/awcgate/usmc/cultivating_intuitive_d-m.htm (accessed 15 October 2010).

[103]Department of Defence, Australian Army, *Adaptive Campaigning 09*, 16.

This environment will present numerous challenges for any force deployed in its midst. The myriad of actors and simultaneity of challenges across multiple LOE will stretch the capacity of the force. The increasing complexity of this environment is matched by the dynamic rise of lethality and the commensurate availability of lethal systems. This trend is adroitly articulated in Adaptive Campaigning 09, which warns that "unprecedented levels of lethality are available to individuals not just larger organisations...this means land forces can encounter individuals or groups with extremely high lethality, without warning, in any type of operation."[104] As described in chapter 1, the emergence of this trend is the very reason that the PMV was deployed to both Iraq and Afghanistan.

The reader will recall from the introduction to this thesis, and the analysis earlier in this chapter, that the PMC was deployed to Iraq in 2005 to meet the rising threat scenario presented by the insurgency, and in particular, the use of IEDs. Analysis of available sources has demonstrated that the PMC has been effective in the current operational environment; however, the current performance of the capability is not a clear indication of an ability to succeed into the future. Success in today's operational environment has come at a cost. The PMC evolution has seen the capability emerge out of the requirement to meet rising levels of threat in the Middle East Area of Operations (MEAO). As the reader was shown in chapter 1, this resulted in significant strain on both personnel and equipment as Army sought to find a rapid solution to the immediacy of the threat. Neither force structure, nor the PMC enabling platform, the PMV, were suited for the immediate deployment of the capability. The PMV had been designed and procured

[104]Ibid., 17.

against the ODA requirement and was not designed or equipped to operate in a high threat environment such as the MEAO. This was clearly evidenced by the rapid aquisitions undertaken to bolster platform capability, particularly through enhancing its ability to survive the array of destructive systems being encountered in the Area of Operations. The Land 116 Project Office advised that since deployment into the MEAO, the PMV fleet has been fitted with some 72 Protected Weapon Stations (PWS), 116 Fire Supression Systems, and 116 Spall Curtain Systems.[105] Whilst beyond the scope and classification of this thesis, other classified systems have also been incorporated into the platform in order to increase its capabilities.[106] A review of this data indicates that it is likely over 100 PMVs were deployed to the MEAO, and that all of these vehicles were provided with systems to increase ballistic protection and cope with the threat of internal fires.

The enhancements to the platform outlined above were not scheduled within the project, but rather conducted as a matter of operational necessity which "enabled the vehicle to be very effective in a high threat environment."[107] Clearly, from the analysis provided in this chapter, such enhancements have been successful in meeting many of the challenges posed by today's operating environment. The evolution of the PMC was further facilitated by the increase of platform capability coupled with a commensurate development of integrated Tactics, Techniques, and Procedures (TTPs), as a platform alone does not constitute a capability solution. Critically, "key in-stride changes to match

[105]Defence Materiel Organisation. Land 116 -Web-Page.

[106]Interview, LTCOL McPhee, 3.

[107]Ibid.

the threat have been made," and whilst this has suited the current requirement, it highlights a concern for the future.[108] Force 2030 clearly articulates that future situations may arise where it would be necessary to "consider some additional capacity or capability enhancements to forces that we deploy to more lethal or complex environments, especially to increase their survivability or their ability to operate with coalition partners."[109] The issue with such enhancements is that they take time to source, while operational needs are often immediate. Further, rapidity of change does not account for the FIC requirements which combine to generate a holistic capability. Changes to capability require integration, training, doctrine, education and supporting facilities to enable them. These critical supporting FIC elements often cannot be generated as swiftly as the enhancements themselves, thereby preventing the creation of a true capability upgrade in the near term.

The trend established in this research demonstrates that the threat will continue to learn, adapt, and equip itself with new technology, thereby becoming more lethal. The current PMC, however, has not been structured to maintain pace with an environment of increasing threat. Its current success has been predicated on rapid enhancement, and an evolution which has generated capability beyond that which Army sought to introduce with the Motorised Infantry on project inception in 1994. Whilst the platform itself has proven capable of adaptation, there are both physical and operational constraints to any future enhancements. Constraints, including axle-weight limitations, and operational considerations such as transportability and off-road-mobility, limit the future additions

[108]Ibid.

[109]Commonwealth of Australia, Defence White Paper, 50.

which can be made.[110] The limited capacity to upgrade a platform necessitates careful planning if the effect of the capability is to be maximized. A clear endstate must be established, with any enhancements to the platform synchronized with key FIC requirements in order to deliver a complete capability solution. This demands detailed modernization planning, as the input of multiple agencies is required to meld future capability requirements with platform procurement or upgrade, doctrinal amendments, and integration of such capability enhancements into the Army's training and education system. This crucial requirement for effective modernization planning has driven the Australian Army's adoption of the concept-led and capability based approach to modernisation.[111] The downfall of the PMC in meeting the challanges of the future battle-space is the lack of such detailed planning for its ongoing modernization.

As previously determined, the PMC was capable of meeting the challenges of today's combat environment due to the rapid aquisition of critical survivability upgrades. The upgraded platform was combined with adapted TTPs, thereby evolving the capability outcome defined in this thesis as the PMC. The Government has recognized the criticality of such protection and the necessity for future "combat weight" which can meet the threat environment. The reader will recall that Project LAND 400 is scheduled to deliver a fleet of some 1,100 protected vehicles, which will provide "greatly improved firepower, protection, and mobility, in response to the increasing complexity and lethality of land operations."[112] This crucial modernization is not scheduled to occur for a further two

[110]Interview, LTCOL McPhee.

[111]Australian Department of Defence, *Land Warfare Doctrine 1,* Chapter 6, 13.

[112]Commonwealth of Australia, Defence White Paper, 76.

decades. The PMC, an evolved capability which is therefore not programed and funded by Army, has no scheduled FIC support, nor is its capability platform, the PMV, scheduled for future upgrade. Project LAND 116, which is currently in its final phase of vehicle delivery, lacks funding and any planning for future upgrades or modernization for the PMV.[113] The Government has outlined that "mission specific enhancements to increase the survivability and interoperability of our forces over and above the ADF's level of capacity may be required."[114] The requirement for enhancement is tempered against the directive which outlines that such "mission specific adjustments should not be a means by which the base capability and prescribed performance of the ADF are materially changed over time."[115]

In summary, while the future battlespace promises a significant increase in both complexity and lethality, the PMC is not scheduled to maintain pace via modernization. With the next generation of capability some two decades from fruition, the PMC lacks an integrated schedule for modernization and any programmed upgrade of capability for the PMV fleet. This emerging capability gap between future requirements and the state of the PMC could conceivably be remediated to some degree via "mission specific enhancements;" however, this does not answer the requirement for FIC integration nor synchronized capability development. Further, mission specific enhancements cannot be integrated should operational requirements be immediate. At the most basic level, the PMC as a combatant element of the future land force "will need to survive first contact

[113]DMO Project Land 116 Website.

[114]Commonwealth of Australia, Defence White Paper, 65.

[115]Ibid.

with the enemy and react accordingly."[116] As surmised in Adaptive Campaigning 09 "the reality of contemporary and future conflict is that threat groups will continually attempt to adapt their Tactics, Techniques, and Procedures (TTPs) faster than their enemy to exploit perceived weaknesses."[117] The lack of a deliberate modernization strategy and an integrated system for capability management of the PMC provides just such a level of weakness for the enemy to exploit. Given the Australian Army's projected future operating environments, as lethality continues to rise the current PMC is unlikely to meet the emerging requirements of the Australian Army's combat arms.

Analysis of Secondary Research Question Number 1

Having undertaken a detailed analysis of the primary research question, we will now turn our attention to examining the two secondary research questions. As the reader will recall from both the *Introduction* and the *Research Methodology*, the first of two secondary research questions within this thesis was: "As the future operating environment evolves what role will the Protected Mobility Capability play in the Australian Army's combat capability through to 2030?" The reader will recall that the analysis of the primary research question provided a detailed overview of the likely evolution of the future operating environment. This environment threatens to continue developing in its uncertainty, complexity and lethality. Further analysis focused on the emerging needs of the combat arms. This analysis determined that "the emerging requirement of the Army's combat arms is the prosecution of operations across the

[116]Department of Defence, Australian Army, *Adaptive Campaigning 09*, 66.

[117]Ibid., 32.

spectrum of conflict, in accordanace with the mutually supporting and interdependent LOE outlined in Adaptive Campaigning 09." Sir Rupert Smith captures the emerging needs of the combat arms in stating that "the implication of these trends are such that for the forseeable future, the land force needs to be structured and prepared to fight 'wars amongst the people', at short notice, in close cooperation with the interagency and other services, from over the horizon and across the shore."[118] This eloquent summary of likely future land force operations mirrors the author's hypothesis earlier in this chapter that "this will require units to be capable of combined arms operations in highly complex environments, often necessitating simultaneous execution of tasks against multiple LOE." As previously outlined, forces deployed into such an operational environment will, by necessity, require sufficient survivability, mobility, and adaptability to successfully undertake and sustain operations in a lethal and unpredictable environment. This summation of the challenges facing units in the contemporary and future operating environment gives a key indication as to the role that the PMC will play in the Australian Army's combat capability through 2030.

The PMC's use on current operations has shown its capacity to be utilised in high intensity operations short of full scale conventional war in both Iraq and Afghanistan. Further, an analysis of recent Domestic Event Security Operations (DESO) and Defence Force Aid to the Civil Authority (DFAC-A) has demonstrated the capacity of the PMC to be employed across the breadth of the spectrum of conflict. As an example, recent history has seen troops from 6 RAR (Motorised) deploy the PMC to the 2006 Melbourne

[118]Sir Rupert Smith, quoted in Department of Defence, Australian Army, *Adaptive Campaigning 09*, 19.

Commonwealth Games in a DESO role, and DFAC-A supporting the 2009 Brisbane Storm Disaster Relief Efforts (Operation Storm Assist).[119] These examples demonstrate the ability of the capability to operate in environments that range from Civil Support and Humanitarian Assistance, to Offensive and Defensive Operations. From an Australian perspective, this is a demonstration of capacity to operate in environments which are complex and require the synchronization of actions across multiple lines of the Adaptive Campaigning LOE.[120] The reader should note that this PMC's operation in such a capacity has clear parallels with the US Army's current future operational concept - Full Spectrum Operations (FSO). The US Army defines FSO as the combination of "offensive, defensive, and stability or civil support operations simultaneously as part of an interdependent joint force to seize, retain, and exploit the initiative, accepting prudent risk to create opportunities to achieve decisive results."[121] The reader would no doubt note the parallels between the operating concepts in use by both the Australian and US Army, which mirror their closely aligned assessments of the future battlespace. The clear message echoed by US doctrine is that "the future will be one of persistent conflict . . . (with) . . . the complexity of today's operating environment guaranteeing that future operations will occur across the spectrum of conflict."[122]

---

[119]Department of Defence Website, http://www.defence.gov.au/media/download/ 2008/nov/ 20081119/index.htm; Operation Acolyte Website, http://www.defence.gov.au/ opacolyte /images/gallery/20060328a (accessed 15 November 2010).

[120]Department of Defence, Australian Army, Adaptive Campaigning 09, iv.

[121]Headquarters, Department of the Army, Field Manual (FM) 3-0, Operations (Washington, DC: Headquarters, Department of the Army, 2008). 3-1.

[122]Headquarters, Department of the Army, Field Manual (FM) 7-0, *Training For Full Spectrum Operations* (Washington, DC: Department of the Army, 2008), 1-1.

Given its inherent flexibility and demonstrated adaptablity, the PMC's likely role within the Australian Army's combat capability to 2030 is the conduct of operations across the breadth of the spectrum of conflict from high intensity conflict through stability and civil support. Whilst the PMC is not designed to be utilised in Major Conventional Operations (MCO), which is the traditional realm of Mechanized and Armored Capabilities, the PMC has far greater utility and adaptability across the remainder of the spectrum than these "heavy end" capabilities. The clear trend established for the following two decades of conflict is increasing complexity and lethality, with a predominance of operations occurring in rapidly urbanizing areas of the world. As identified in the USJFCOM JOE 2010 "urban operations place a premium on decentralized command and control, ISR, fire-support and aviation. Combat leaders will need to continue to decentralize decision making down to a level where tactical leaders can act independently in response to fleeting opportunities."[123] The parallels of this assessment in the JOE 2010 with the analysis provided in this thesis regarding the emerging requirement of the combat arms is immediately apparent. Adaptive Campaigning 09 provides insight into the role of the PMC to 2030, declaring that "to be effective in complex environments the land force will need to be highly mobile, protected and be part of the joint communications architecture which enables access to responsive joint fires."[124] With the Australian Army's 7th Brigade (Motorised) becoming fully digitized by 2013 the digitization, the PMC will have evolved through operational

[123]United States Joint Forces Command, *The Joint Operating Environment (JOE) 2010*, 58.

[124]Department of Defence, Australian Army, *Adaptive Campaigning 09*, 44.

necessity into the Australian Army's most broad spectrum capability.[125] The PMC's role in the Australian Army's combat capability to 2030 will be the provision of tactically flexible and integrated protected mobility across the breadth of the spectrum of conflict. By necessity, it will perform this role until the delivery of the LAND 400 capability in approximately 2030. Whether a shortfall exists in the Australian Army's capability given the PMC's capacity to meet the emerging requirements, and its likely combatant role, will be addressed in the final research question which follows.

Analysis of Secondary Research Question Number 2

The reader will recall that the final secondary question posed by the thesis is "given the emerging requirements of the Australian Army through to 2030, and the future role of the Protected Mobility Capability, what unfulfilled capability requirements exist which the Army may need to address as it develops towards Force 2030?" An analysis of both the primary and first secondary question has established the projected future operating environment, the emerging requirement of the Australian Army's combat arms, and the likely role the PMC will play in Australia's combat capability through 2030. In analyzing the future there are two potential junctures when an unfulfilled capability requirement may exist. The first is an unfulfilled requirement which may exist between the current capability and the role it is expected to play until 2030. The chasm between the expected capability the Army will have, and the capability it is assessed it actually needs, represents a critical "capability gap" for the Australian Army in the next two

[125]DMO Website, Battle Management System (BMS) Land 75 Phase 3.4 http://www.defence.gov.au/dmo/esd/land75/index.cfm (accessed 16 October 2010). Under this phase of the project 7th Brigade, Motorised will receive the first Digital Battle Management Systems from mid 2011 and be fully operationally capable by 2013.

decades. The second potential unfulfilled capability requirement may emerge as Project LAND 400 nears definition in scope, and subsequent identification and procurement of a Combined Arms Fighting System (CAFS). While the Project is yet to define its requirements in detail, the unclassified information currently available indicates that the system is predicated on the ability to conduct "high end" conventional combat operations. What is becoming increasingly clear in the modern combat environment is that where the introduction of capability is concerned, while there is pressure to find synergy in solutions, it must be noted that the "push for 'one-size-fits-all' solutions may result in a greater risk of reduced flexibility during operations."[126] There is a risk that if Army fails to recognize the discreet capability the PMC is presently generating, that its effect will not be incorporated into the LAND 400 solution, thereby reducing an ability to operate across the entire spectrum of conflict. With the projected increase in complexity and blurring of the levels of conflict predicted for the next two decades, this has the potential to create an unfulfilled capability requirement to undertake operations across the entire operational spectrum.

Potential Unfulfilled Capability Requirements to 2030

The reader will recall that an analysis of the primary question established that the PMC was unlikely to meet the emerging needs of the Australian Army's combat arms through until 2030. This failure to meet expected operational developments results from the evolutionary nature of the PMC's birth and its lack of a structured and planned modernization program. These factors will most likely result in the PMC failing to keep

[126]United States Joint Forces Command, The Joint Operating Environment (JOE) 2010, 22.

pace with the projected operating environment. Secondary question number 1 outlined that the likely future role of the PMC in the Australian Army's combat capability to 2030 will be "the provision of tactically flexible, integrated protected mobility across the bredth of the spectrum of conflict." The PMC will perform this critical role, by necessity, until the projected introduction of the LAND 400 capability in 2030. So how does this create an unfulfilled capability requirement? It would seem from the analysis that the projected environment demands a protected, flexible, and adaptable solution, which is capable of integrating effects and operating across the spectrum of conflict. This is likely to be the exact role of the PMC until 2030, so where does a capability gap exist? The answer is in understanding that the Army will utilize whatever is available to meet the emerging capability needs of the next two decades. The PMC remains Army's most flexible capability across the entire spectrum of conflict, and as such will likely be utilized to meet this requirement. The issue, as outlined in the primary research question, is that without integrated modernization and capability management, the PMC will lack the capacity to effectively meet the challenges of the next two decades. The disparity between the requirement which will emerge, and the functional state of the PMC, will therefore generate an unfulfilled capability requirement.

Throughout this thesis useful comparative analysis against US strategic policy, operational concepts, and doctrine have been drawn. The Australian and US projections regarding the shape of future conflict and the nature of capability requirements have a high degree of similarity. It therefore stands to reason that the US capability solution for meeting these requirements would also provide a useful guide for comparison to the PMC. While economies of scale between the two nations and the US global requirements

cause some capability disparities, the requirement for effective land combat power at the tactical and operational level varies little. In 1999, General Shinseki, then Chief of Staff of the US Army (CSA), identified an issue with US land combat power which he summarized as follows: "we must provide early entry forces that can operate jointly, without access to fixed forward bases, but we still need the power to slug it out and win decisively. Today, our heavy forces are too heavy and our light forces lack staying power. We will address those mismatches."[127] This requirement, much the same "combat weight" issue presently faced by the Australian Army, resulted in the introduction of the Stryker Brigade Combat Team (SBCT), which is supported by the Stryker Family of Vehicles (FoV) as its major capability platform. The SBCT has developed into the US Army's "medium weight" capability, designed to provide stragtegic dominance "across the full spectrum of operations...with sustained momentum."[128] The SBCT has been developed synergistically to meet the requirements of the US Army's operational concept - FSO. In support of the requirement FSO generates for Offense, Defense, Stability or Civil Support, the SBCT has been designed to provide Strategic Dominance by being "Responsive, Deployable, Agile, Versatile, Lethal, Survivable, Sustainable."[129] The reader will note immediately the parallel between the US Army's future operational concept and capability solution, and the Australian concept in Army's Adaptive

[127]US Army, Project Management Officer: Stryker Brigade Combat Team, website, www.sbct.army.mil/history.html (accessed 16 October 2010).

[128]Ibid.

[129]Ibid.

Campaigning 09 and the capability offered by the PMC. The difference in the two scenarios is in the integrated nature of SBCT capability management.

Figure 5. A Stryker Infantry Carrier Vehicle deployed in the SBCT role. *Source*: Project Management Office SBCT Website. The SBCT has been developed to provide the US Army with dominance across the full spectrum of operations.

Ostensibly, the PMC offers similar potential to the SBCT capability. With the impending digitization of the PMC and its rapid capability enhancements as outlined in the analysis of the primary research question, the capability is fundamentally the "Australian Stryker." The unfulfilled capability requirement is generated by the haphazard evolution of the PMC as a capability through operational necessity. This evolution has occurred in "piecemeal" format with rapid aquisitions for capability enhancements occurring for the platform through Project LAND 116, whilst TTPs and operating concepts have been refined at Unit level through operational experience. There has been no synchronized capability development aimed at an integrated capability solution with a defined capability endstate. As identified in the primary research question,

there is presently no planned modernization strategy for the PMC, nor for its supporting platform - the PMV. The same cannot be said of the SBCT. With an increased rate of deliberate fielding within the US Army, the SBCT capability is managed by both the Project Management Office - SBCT and TRADOC Capability Manager - SBCT (TCM-SBCT).[130] This strucure of integrated capability management, both concept and platform, ensures that modernization occurs in a deliberate manner. Critically, the TCM-SBCT "reports to the Commanding General of the Infantry Center (soon to be the Maneuver Center of Excellence), serves as the single point of contact for TRADOC activities that support Stryker Brigade Combat Teams (SBCT). TCM SBCT focusses on DOTMLPF integration that supports SBCT capabilities."[131] This highlights succinctly the unfilfilled capability requirement faced by the Australian Army with the PMC. As outlined in the thesis introduction, whilst Project LAND 116 was established to "increase Army mobility by equipping selected infantry battalions and their supporting elements with Infantry Mobility Vehicles," it is solely responsible for the platform and not the entirety of the PMC.[132] The lack of integrated and holistic capability management for the PMC results in disparate capability development, and critically a lack of FIC integration. Without coordinated capability management and FIC integration a resulting unfulfilled capability requirement is likely to exist by 2030, with the PMC failing to provide the requisite integrated effect demanded by the projected future operating environment.

---

[130]US Army, TRADOC Capbility Manager: Stryker Brigade Combat Team, Website, https://www.benning.army.mil/tcm-sb/index.htm (accessed 16 October 2010).

[131]Ibid.

[132]Commonwealth of Australia, ANAO Audit Report 59 2003/04, 28-29.

Potential Unfulfilled Capability Requirements Beyond 2030

Having identified the potential for a critical unfulfilled capability requirement for PMC modernization to 2030, attention is now focused on a critical aspect of Army's development to a Force 2030 solution: the Combined Arms Fighting System (CAFS) - LAND 400. On the 5th of November 2009, the Head of Modernisation and Strategic Planing - Army (HMSP-A), Major General (MAJGEN) John Calligari, addressed the Armoured Vehicles Australia Conference regarding LAND 400. MAJGEN Calligari defined LAND 400 as "the biggest project Army has ever had in the DCP (Defence Capability Plan) and Army is well placed to ensure it efficiently manages this capability into service and into operations to improve the combined arms fighting capability of the 'world's best small Army.'"[133] This project represents a critical juncture for the Army and the development of Force 2030, as it will provide the central combatant capability for tomorrow's Army. MAJGEN Calligari further identified that in achieving this aim "the combined arms fighting system will help us know everything relevant in order to strike and avoid detection; provide us with a shield which will help us avoid acquisition in the first instance and then if fired upon avoid being hit; and ensure we can survive a strike by having enough protection to avoid penetration and for all involved to survive a hit. This system will be much more than armoured vehicles."[134]

Conceptually, this capability is designed to provide decisive effects in future complex and lethal environments. The difficulty, as seen in the analysis of the primary

[133]Major General John Calligari, Presentation to the Armoured Vehicles Australia Conference 09, Hyatt Hotel Canberra, Australia, 5 November 2009.

[134]Ibid.

research question, is the identification of the nature of the combatant capability requirement, and the delivery of a system which can effectively replace extant capabilities, and account for future requirements as well. While the scoping for LAND 400 is not yet complete, it is clear that Army is seeking a system solution to its combat requirements. The capability mission statement for LAND 400 provides that "using a combination of close combat and stand-off attack, the L400 CAFS network enabled, combined arms team, will manouevre to deter, detect and defeat a diverse range of contemporary, emerging and future threats operating within complex terrain."[135] Further, early indications are that this system will seek to incorporate the requirements of both the future Cavalry Fighting System and the Future Infantry Fighting System. An analysis of the Army's Armoured Capability Development for Land 400 has sought to identify both the similarities and differences of the Infantry and Cavalry requirements.[136] The mission statement for LAND 400, coupled with the analysis of both Cavalry and Infantry requirements to establish if the potential for commonality exists, may be cause for some concern. The requirement for the system to undertake close combat and to "enable the execution of Joint Land Combat" in accordance with the Adaptive Campaigning 09 concept necessitates the capacity to function at the higher end of the spectrum of conflict.[137] This demand for "combat weight" to meet the needs of the Cavalry and Infantry in a future, lethal, close combat environment is likely to demand the

[135]Brigadier Paul McLachlan, "Australian Army Armoured Capability Development: Project Land 400" (Presentation to Armoured Vehicles Australia, Canberra, ACT, 5 November 2009), Slide 10.

[136]Ibid., Slide 15.

[137]Ibid., Slide 14.

procurement of a platform akin to an Infantry Fighting Vehicle. Interestingly, the vehicle systems presented as examples at AVA included Puma, CV90, and ASCOD, all designed for the prosecution of close combat.[138] Whilst extremely effective in conventional combat scenarios, such capability is rather less useful for Stability, Humanitarian Assistance, and Counterinsurgency.

Should LAND 400 seek to meet the requirements of the Cavalry and Infantry across the entire spectrum of operations, the provision of a modular or single supporting platform for the CAFS may not be feasible. In fact, separate platforms for the Infantry may well be required as the capacity required across the spectrum of conflict alters the nature of the best platform required for task. Adaptability and flexibility remain key; however one platform may well be insufficient to support the complexity, lethality, and task diversity of tomorrow's battlespace. A further potential unfulfilled capability requirement exists in the number of platforms identified for LAND 400. The reader will recall that Force 2030 indicated that 1,100 protected vehicles would be purchased for this requirement.[139] Given that strategic guidance indicates that the size and structure of the ADF will not alter, this figure of 1,100 vehicles would need to replace the capability delivered via current in-service systems.[140] At present, LAND 112 (ASLAV) maintains a fleet of 257 vehicles, LAND 106 (M113AS4 Armoured Personnel Carrier) maintains a fleet of 431 vehicles, and LAND 116, as has been discussed, is in the process of

[138]Ibid., Slide 21.

[139]Commonwealth of Australia, Defence White Paper, 75.

[140]Ibid., 74-75.

introducing 737 PMVs.[141] The Army's total in-service armoured vehicle fleet (less Main Battle Tanks), therefore stands at 1,425 platforms. Even if the 293 PMVs purchased for CSS support are removed from consideration, this leaves 1,132 platforms, 32 more than LAND 400 will provide. Given LAND 400 is a Combined Arms system and CSS will be critical, the reality is the disparity faced is closer to 325 platforms. Of concern, this shortfall exists against the maintenance of parity with current levels of Mechanization, Motorization, Protected Lift, and Cavalry Support. As outlined in the introduction to this thesis, this leaves three regular Light Infantry Battalions without any increased access to protected mobility, despite clear projections for an increasing requirement for exactly such capability in the battlespace of the future. The risk presented by the current information regarding LAND 400 is a potential capability shortfall in platform capacity to operate at the medium and lower end of the spectrum of conflict, coupled with a potential shortfall in the physical number of total platforms to be provided.

Analysis of this final question has identified for the reader the potential capability shortfalls which may exist as Army seeks to develop Force 2030. The Army faces a shortfall in the capability of the PMC to successfully undertake a holistic modernization program and keep pace with the future operational environment. This is crucial as the PMC must provide the capacity to meet rising threats and challenges in the battlespace until the introduction of the CAFS in 2030. As Force 2030 enters service, Army faces a potential shortfall in its capacity to prosecute operations across the spectrum of conflict. Should LAND 400 focus primarily on the provision of close combat systems for the execution of "joint land combat," Army risks losing the effective ability to undertake

[141]DMO Website, Land 106, Land 112 and Land 116 (accessed 16 October 2010).

operational tasks the lower end at the spectrum. The disparity is that the strategic outlook has clearly identified “intra-state conflict” as the most likely form of combat that Army will be engaged in over the next two decades. This is not, however, the direction of future capability development at present. Thus, the risk of unfulfilled capability to Army can be summarized as successfully operating the PMC until 2030, and then ensuring that Force 2030 incorporates the necessary elements of the PMC beyond this time.

CHAPTER 4

CONCLUSION AND RECOMMENDATIONS

> It should be the duty of any soldier to reflect on the experiences of the past, in the endeavor to discover improvements in his particular sphere of action, which are practicable in the immediate future
>
> — B.H. Liddell-Hart

Introduction to the Conclusion and Recommendations

Basil Liddell-Hart's words strike a chord which should resonate strongly with members of the "profession of arms." Implicit in the military ethos is the requirement for scholarship and reflection regarding the very nature of the military craft. Military History has demonstrated that one of the few constants armies face is change. Such change includes an evolution of the operating environment, an evolution of technology, and a subsequent evolution of tactics and operating procedures to meet the prevailing challenges. Whilst Liddell-Hart urges reflection on the experience of the past, this must be coupled with an analysis of the future, and a projection of the environment which the Army is likely to face beyond current operations. For the author, this desire to "discover improvements in his particular sphere of action" has driven the conduct of this research. This thesis represents the culmination of seven years of close involvement with both the PMV and the Motorised Infantry capability within the Australian Army. The author has sought to meet Liddell-Hart's demand for action via an analysis of the PMC, and its potential to meet the forthcoming challenges posed by the next two decades. The conclusion and recommendations will provide illumination of the opportunities which exist for the Army to develop this pivotal capability beyond its current state. In doing so

the Australian Army will realize the significant potential of the PMC to provide a flexible and adaptable edge in tomorrow's battlespace.

Research Analysis and Conclusions

The reader will recall that the overarching supposition of this thesis was encapsulated in its title: "will the current solution survive the future battlespace? An examination of the combatant role of the Australian Army's Protected Mobility Capability." The structure of the thesis research questions allowed for the deconstruction of this supposition, and an analysis of its components in detail. The Primary Research Question posed was "Given the Australian Army's projected future operating environments, how well does the current Protected Mobility Capability meet the emerging requirements of the Australian Army's Combat Arms?" The analysis examined the projected increase in complexity and lethality likely in the future operating environment. It established the emerging need for the combat arms to provide decisive effects across the breadth of the spectrum of conflict, with sufficient capacity for adaption in order to meet the challenges posed by future environments. The research and analysis undertaken in support of the Primary Research Question established that whilst the PMC had successfully adapted to meet the challenges of the current operational environment, it was not well positioned to meet emerging operational requirements. The PMCs lack of a structured and centralized capability management system, coupled with the absence of a planned modernization program, will result in an inability keep pace with the evolving threat environment. In its current state, the PMC is therefore unlikely to successfully meet the emerging needs of the Australian Army's combat arms.

Secondary Research Question Number 1 was “as the future operating environment evolves, what role will the Protected Mobility Capability play in the Australian Army’s Combat Capability through to 2030?” This analysis drew from the framing of the Primary Research Question, re-establishing the nature of the future operating environment and the emerging requirements of the combat arms. The establishment of the challenges likely to confront units in both the contemporary and future operating environments enabled an insight into the role which the PMC would play in the Australian Army’s combat capability to 2030. Analysis of this question established the capacity of the PMC to operate across breadth of the spectrum of conflict in the current environment. Further, it determined that the Australian Army would not have a capability with greater potential than the PMC to operate across the spectrum of conflict between now and 2030. Given the reality of the capabilities available to the Australian Army, the analysis determined that the PMC would, by necessity, fill the role of providing tactical flexibility, and integrated protected mobility across the breadth of the spectrum of conflict through to 2030.

The final research question drew on both the Primary Research Question, and Secondary Question Number 1, asking “given the emerging requirements of the Australian Army through to 2030, and the predicted future role of the Protected Mobility Capability, what unfulfilled capability requirements exist which the Army may need to address as it develops towards ‘Force 2030’?” The analysis identified the two potential junctures at which an unfulfilled capability requirement may exit as: (1) the nexus between the current level of the PMC and the capability requirements necessary to 2030; (2) a failure to effectively incorporate the effect of the PMC into the CAFS solution from

2030. With previous research questions having established the likely role of the PMC to 2030, and the emerging role of the Australian Army's combat arms, the likely nexus between available and required capability to 2030 was identified as an unfulfilled capability requirement. The lack of a synchronized and planned modernization program, and a failure to provide coordinated capability management for the PMC, were identified as the catalysts for the likely unfulfilled capability requirement between today and 2030. The second potentially unfulfilled capability requirement was identified as a failure to appropriately account for the effect of the PMC within the CAFS. The analysis identified a current trend within LAND 400 which focused on the "close combat" element of Joint Land Combat. Should a focus on the provision of a high end conventional capability continue, the risk of developing a capability which cannot effectively function across the entirety of the spectrum of conflict exists.

The central supposition and purpose of this research has been an examination of the PMCs capacity to survive the emerging conditions of the future battlespace through until 2030. The research and analysis presented within this document has demonstrated that the PMC is an extremely flexible, and adaptable capability, which has a proven record of successful performance across the spectrum of conflict in the current operational environment. It has, however, highlighted that the current lack of integrated capability management, and the subsequent lack of a modernization program, leaves the PMC under-prepared to meet the challenges of the next two decades. The Army does, however, have the capacity to remediate this projected capability shortfall through undertaking effective future planning and management of the PMC as a matter of

urgency. The following section details the recommendations derived from the research and analysis undertaken in this thesis.

Thesis Recommendations

The following recommendations have been derived as a result of the research and analysis undertaken on the Primary and Secondary Research Questions contained within this thesis. These recommendations represent the author's conceptualization of the decisions which Army can undertake in order to remediate the PMC, and deliver sufficient capability, to allow for success within the future battlespace through until the introduction of the CAFS in 2030. Given that this thesis has projected that the current PMC will not meet the emerging needs of the Australian Army's combat arms through until 2030, the following recommendations are made, that: (1) Modernisation and Strategic Planning Division–Army (MSPD-A) manage the PMC as a discreet capability; (2) A planned program of modernization and capability upgrade for the PMC be undertaken; (3) CAFS be scoped to incorporate replacement of the PMC; and (4) The conduct of further research and study of the PMC, at a classified level, be undertaken.

Modernization and Strategic Planning Division–Army Manage the PMC as a Discreet Capability

This thesis has summarized the background to the inception and development of the Motorized Infantry and the subsequent evolution of a "hybrid" PMC which has been utilized on current operations where protected mobility has been key. Through adaption, in-stride deployment, rapid enhancement, and operational TTP development, the Australian Army has been fortunate enough to take an extremely capable platform and evolve it into a functional capability. This thesis has demonstrated, however, that such

"unplanned" evolution cannot be relied upon to deliver capability solutions which will meet an increasingly complex and lethal operating environment. Army has not always been so fortunate in its capability management. A prime example of this was the cancellation of Project MULGARA, the proposed light surveillance and reconnaissance vehicle, which ran between 1994 and 1997.[142] Project MULGARA suffered the same strategic shift and changing operational threat scenario as the PMV, however "it was clear that the proposed vehicle would not meet future Land Force needs, as it lacked flexibility and capacity to do a range of tasks."[143] The failure of this project stemmed from both an inaccurate assessment of the future operating environment, and a failure by Army to centrally identify its capability needs and holistically manage the development of a vehicle fleets to meet such needs. At the same time as Land 116 was seeking to deliver the PMV as a protected mobility platform, Project MULGARA was working to deliver a near unarmored capability of no use in any level of threat. The lack of central and coordinated capability management saw resources wasted in the pursuit of a vehicle which would not meet Army's emerging needs. The subsequent failure to provide Army with a light reconnaissance capability has resulted in over a decade without such capacity which is only now being examined under Land 121. Further examples such as the Kaman Super-Sea-Sprite cancellation, highlight that evolutionary and uncoordinated capability development carries with it significant risk.

[142]Department of Defence, *DPR 133/97 Army Cancel Project Mulgara to Seek More Capable Vehicles* (Canberra, ACT: Land Combat Development Office, 1997).

[143]Ibid.

This thesis defined the PMC as "the employment of the Bushmaster PMV by Combat Arms personnel in either the Motorised or Mounted role, for the purpose of conducting combat oriented operations in an environment requiring protection, mobility and combat endurance." It is crucial that Army identify the nature of the capability which they have created, and subsequently establish a capability management system which allows the PMC to be centrally coordinated as a discreet capability, and not as a platform. As discussed during the analysis chapter, the PMV is presently managed as a platform; however, this is both inefficient and ineffective in delivering capability to the Army. Capability is not platform driven, it is rather, the effect achieved by the synchronization of all FIC elements. The most appropriate agency to undertake the task of managing the PMC is Modernisation and Strategic Planning Division – Army (MSPD-A). As identified by MAJGEN Caligari, Head MSPD-A, "in broad terms, I manage the Army for the Chief from the 18 month mark and out as far as anyone has contemplated in our official suite of documentation."[144] Given the nature of MSPD-A's responsibilities the division has both the scope and the authority to effectively manage the PMC. Critically, MSPD-A can establish the capability requirements for the PMC over its remaining two decades in service, and then develop a holistic FIC based plan to ensure that the capability effectively meets the Army need. As MSPD-A bare the responsibility for scoping the CAFS, they have the capacity to streamline the growth of the legacy capability (the PMC) in order to ensure a "seamless" transition of capability to the CAFS in 2030.

The Australian Army should seek to create a capability management office within MSPD-A, akin to the SBCT Project Management Office, within the US Army. This

[144]Caligari.

office will not merely manage the platform as per current Army practice, but should undertake holistic capability management by applying FIC to achieve a decisive battlefield capability. The formulation of this office at MSPD-A, as an element of Army Headquarters, also allows for the management of the PMC across corps (branch) lines, thereby achieving an integrated and effective "whole of capability" approach to managing PMC issues across the entire combatant user group. Given MAJGEN Caligari's comments regarding ensuring that CAFS "is integrated with legacy capability, which at the time of introduction will have significant in-service time remaining," the management of the PMC by MSPD-A is an efficient and effective means by which to synchronize the effective maintenance, and modernization, of combat capability within the Australian Army.[145]

Planned Program of Modernization and Capability Upgrade for the PMC be Undertaken

Former US Secretary of Defense Donald Rumsfeld once famously remarked that "you don't go to war with the Army you want, you go to war with the Army you have[146]." The reality of the projected increase in complexity faced in tomorrow's battlespace is a greater likelihood of rapid deployment to meet unforeseen and unexpected needs. As the analysis in Chapter 3 has shown, the Australian Government has acknowledged that they may need to make "mission specific capability enhancements

[145]Ibid.

[146]Former US Secretary of Defense Donald Rumsfeld quoted in CGSC F200: F102AA-1.

to increase the survivability and interoperability" of Australian forces.[147] Rumsfeld's words serve as a key warning; in short notice, complex contingency operations, the capability will deploy in its current form as rapid enhancements will not be possible. Further, analysis within this thesis has demonstrated that the current state of the PMC will not allow the capability to maintain pace with the increasing lethality expected to 2030. The capability will not have the adaptability and capacity to undertake another two decades of service without capability upgrade.

Coupled with the establishment of a central capability management office within MSPD-A, as outlined in the recommendation above, a planned program of modernization and capability upgrade for the PMC should be undertaken. This program should incorporate both "life of type" upgrade issues for the platform, with combat enhancements such as weapons, armor and system upgrades, coupled with the appropriate supporting FIC implications, principally doctrine, training (individual and collective) and education. As outlined within the first recommendation, MSPD-A is appropriately positioned to both identify modernization requirements, and then plan and integrate the process of capability upgrades to meet the Army's emerging needs, and then transition to the next generation of capability. This process of modernization is crucial to the capability maintaining pace with the changing operating environment. Adaption to changes and unexpected circumstances will still be required, however a program of synchronized modernization will allow for the PMC to maintain a base-rate capability relevant enough to allow for such adaption to occur. The Government has realized that in a rapidly changing world a quinquennial White Paper system is required, supported by

[147]Commonwealth of Australia, Defence White Paper, 65.

annual strategic guidance in order to cope with the pace of change.[148] This example should queue Army to seek a similar, iterative approach to capability modernization which will allow the PMC to remain relevant through until the introduction of the CAFS. As eloquently surmised by a US Army Project Officer dealing with soldier modernization "we need to quit going for the big bang and go for the next bang."[149] To successfully meet the challenges set across the spectrum of conflict until 2030, the PMC will need to deliver the "next bang," and Army must plan for this in the short term or risk falling well behind the reality of the operating environment.

That CAFS be Scoped to Incorporate Replacement of the PMC

At present, scoping for the CAFS (LAND 400) has yet to be completed and discussion regarding the details of the fighting system is ongoing. The analysis contained in this thesis has identified a focus on conventional warfighting for CAFS. This is understandable given the strategic guidance to the ADF which, as discussed, defines the primary role of the defence force as "to engage in conventional combat against other armed forces."[150] This will clearly require elements of the CAFS to have sufficient combat weight to engage in such direct conflict. Current operations, and the predicted future of intra-state conflict, will require capability below the threshold of conventional war which can prosecute operations across the low and medium intensity bands of the

[148]Ibid., 11-12.

[149]Mr Ricky Smith, TRADOC Representative quoted during US Army Soldier Modernization Program, brief to US CGSC, Fort Leavenworth, Lewis and Clark Center, 5 October 2010.

[150]Commonwealth of Australia, Defence White Paper, 22.

spectrum of conflict. Whilst a high threshold of violence may still exist, heavy mechanized and cavalry style forces are not the most flexible and useful troops in such environments. The PMC, much like the US SBCT, currently provides the capacity to undertake the broad range of tasks outlined in operational concepts such as Adaptive Campaigning 09 and the US Army's FSO construct. As the complex nature of the battlespace increases, the call for such an adaptable capability will increase. Army planners must ensure that LAND 400 incorporates the capacity to operate across the breadth of the spectrum of conflict within the CAFS. This may well mean that a single platform solution for the Infantry and Armoured Corps is not feasible. Whatever the CAFS solution is, it must remain capable of rapid escalation and de-escalation through the operational spectrum in order to meet with the emergence of hybrid and complex threat. Should Army embrace and manage the PMC as a discreet capability, the understanding of it effect, and the incorporation of its key capability outputs into the CAFS would become far more streamlined. This potential for streamlined and synchronized capability management adds further weight to the recommendation that MSPD-A act as the PMC management office. Should this occur, the capacity for MSPD-A to provide coordinated combat capability integration would allow for the PMC's effects to be incorporated into the CAFS, thereby delivering the "whole of spectrum" capability Army requires in 2030.

The Conduct of Further Research and Study of the PMC, at a Classified Level, be Undertaken

As outlined within the introductory chapter of this thesis, the research and analysis of the PMC was curtailed to an unclassified level due to the requirements of

operational security. Whilst this thesis has determined some key outcomes, and made relevant recommendations regarding the PMCs future enhancement and employment, it has done so without the use of classified data including AARs and PORs. The recommendations made within this thesis should be undertaken by Army post being informed by key operational data of a classified level. Further research and analysis of the PMC, which incorporates such information, would provide the capacity for identifying quantifiable trends in performance against such critical areas as ballistic and blast performance of armor, or effectiveness of TTPs against current threats. Given that this is an evolving capability within Army it is strongly recommended that further research, study and operational analysis in this field be undertaken. This would be a crucial role which should be undertaken by the PMC Capability Management Office in its capacity of holistic FIC management of the capability, as per the first recommendation within this section.

Conclusion

When the Australian Army undertook its first Motorised Infantry trials in 1988 few, if any, capability planners could have envisaged what the next two decades would bring. Simultaneous deployments in Iraq, Afghanistan, and East Timor would have seemed an improbable prognosis. Perhaps even more improbable would be the very capability they were trialing becoming the foundation of much of the Army's broad spectrum capability. The PMC has evolved, through capacity, circumstance, and some good fortune to become a crucial capability within the Army's current force structure, and on current operations. While its current success has been noteworthy, the continued evolution of the operational environment threatens to outpace the capability if Army

maintains the status quo. This thesis has demonstrated that the PMC will not meet the future need over the next two decades should this occur. The PMC, however, has significant potential, and with coordinated capability management has the capacity to deliver to the Australian Army what the SBCT has done for the US military. For this to occur the Australian Army must work swiftly to effectively manage the capability holistically, and ensure that it is effectively prepared to meet the challenges which the next two decades will bring. Australian strategic guidance clearly articulates that "the Government recognizes the need to maintain, and on occasion, use military power as a means to back up and give effect to Australia's policy aims."[151] Where the decision to employ military force is undertaken, both the Government and Army have a responsibility to ensure that Australia's soldiers have sufficient capability and combat weight to undertake such a dangerous and demanding task. The PMC has the potential to assist in stewarding the Australian Army through to the introduction of the CAFS. To effectively do so the Army must fully appreciate the discreet nature of this capability and manage it accordingly. With synchronized and effective capability management, the PMC can deliver the protection, mobility, and combat endurance requisite if Australia is to develop and maintain "the best small Army in the world."

[151]Ibid., 21.

Figure 6. The PMC deployed in the Mirabad Valley region of Uruzgan Province, Afghanistan

Source: Australian Defence Website, www.defence.gov.au/op/afhanistan/gallery/2010/20102002/index.htm (accessed 15 November 2010). This grouping of combat troops and light armored platforms has delivered a full spectrum capability to the Australian Army.

GLOSSARY

Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel and Facilities. Is the US system of integrated capability development, which seeks to ensure that capability solutions are holistically developed across the key DOTMLPF functions.

Fundamental Inputs to Capability. The methodology by which capability is generated in the Australian Army. This holistic approach to capability generation relies on the interaction of the eight FIC which are Organization, Personnel, Collective Training, Major Systems, Supplies, Facilities, Support, and Command and Management. FIC directly parallels the US Army's DOTMLPF system.

Motorized Unit. A unit equipped with complete motor transportation that enables all of its personnel, weapons, and equipment to be moved at the same time without assistance from other sources.

Protected Mobility Capability. The use of the Bushmaster PMV by Combat Arms personnel in either the Motorized or Mounted role for the purpose of conducting combat orientated operations in an environment requiring protection, mobility, and combat endurance

Protected Mobility Vehicle. A purpose built armored 4x4 designed to provide protected battlefield mobility for a two man crew and 2 four man fire teams.

APPENDIX A

BUSHMASTER PROTECTED MOBILITY VEHICLE (PMV)–KEY

CHARACTERISTICS

Description	The Bushmaster Protected Mobility Vehicle (PMV) is a purpose built armored 4x4 designed to provide protected battlefield mobility for a two-man crew and two four man fire-teams.
Manufacturer	Thales Australia Limited, Bendigo, Victoria, Australia.
Engine	Catepillar 7.2 Liter six-cylinder in-line turbo charged diesel engine producing 225 kW or 300 BHP
Transmission	ZF automatic transmission - 6 x forward speeds, 1 x reverse.
Mobility	Equipped with three separate differential locks and Central Tyre Inflation System (CTIS) allowing the driver to select appropriate tyre pressures to match the terrain
Weight	12.5 Ton unladen 15 Ton maximum combat load
Height	2.65 meters (wire cutters secured) 3.25 meters (wire cutters extended)
Width	2.48 meters (excluding mirrors)
Length	7.183 meters
Speed	100 km/h (governed)
Range	600 - 800 kilometers (terrain dependent)
Armor	Monocoque hull manufactured from high tensile steel capable of withstanding small arms and mortar fragments. Lower hull sections constructed in a V-shape to defeat mine blast and IEDs

Armament	Selected PWS are fitted with a CROWS Protected Weapon Station (PWS) employing a remote controlled, stabilized 7.62mm MAG 58. Non PWS fitted PMVs are capable of mounting a 7.62mm MAG 58, or 5.56mm F89 from the forward weapon station or rear swing mount.
Variants	6 Variant Types - Troop, Command, Direct Fire Weapon, Mortar, Assault Pioneer and Ambulance.

APPENDIX B

SUMMARY OF OPEN SOURCE REPORTING OF PMV EXPLOSIVE INCIDENTS

Date of Incident Report	Incident Result	Reference
12 May 2007	Nil Injury. Minor Vehicle Damage	www.defence.gov.au/media.departmentaltpl.cfm?currentid=6641
31 August 2007	Nil Injury. Minor Vehicle Damage.	www.defence.gov.au/media.departmentaltpl.cfm?currentid=9436
12 October 2007	2 Soldiers Injured. Vehicle Recovered.	www.defence.gov.au/media.departmentaltpl.cfm?currentid=7182
30 November 2008	2 Soldiers Injured. Vehicle Recovered.	www.defence.gov.au/media.departmentaltpl.cfm?currentid=8534
16 September 2009	Nil Injury. Minor Vehicle Damage.	www.defence.gov.au/defenceblog/2009/0914_0921.htm
17 March 2010	6 Soldiers Wounded. Vehicle Damaged.	www.defence.gov.au/defencenews/stories/2010/mar/03176.htm www.defence.gov.au/defencenews/stories/2010/mar/0332a.htm
18 May 2010	3 Soldiers Wounded. Vehicle status unknown.	www.defence.gov.au/defencenews/stories/2010/may/0578.htm
20 May 2010	3 Soldiers Wounded. Vehicle Seriously Damaged.	www.defence.gov.au/defencenews/stories/2010/may/0520.htm

Date of Incident Report	Incident Result	Reference
5 July 2010	4 Soldiers Wounded. Vehicle Damaged.	www.defence.gov.au/defencenews/stories/2010/jul/0705.htm
22 August 2010	2 Soldiers Seriously Wounded. Vehicle Damaged	www.defence.gov.au/defencenews/stories/2010/aug/0822.htm
28 October 2010	2 SAS Soldiers Injured. Vehicle Recovered	www.defence.gov.au/defencenews/stories/2010/nov/1104.htm

BIBLIOGRAPHY

Primary Sources

Commonwealth of Australia. Australian National Audit Office (ANAO). Audit Report NO.59 2003-04, Performance Audit Defence's Project Bushranger: Acquisition of Infantry Mobility Vehicles. Canberra, ACT: Commonwealth of Australia Printing Service, 2004.

———. Department of Defence. Australian Defence White Paper: Defending Australia 1994. Canberra, ACT: Commonwealth of Australia Printing Service, 1994.

———. Department of Defence. Defence 2000: Our Future Defence Force. Canberra, ACT: Commonwealth of Australia Printing Service, 2000.

———. Department of Defence. Defending Australia in the Asia Pacific Century-Force 2030. Defence White Paper 2009. Canberra, ACT: Commonwealth of Australia Printing Service, 2009.

Department of Defence, Australian Army. Adaptive Campaigning 09-Army's Future Land Operating Concept (AC-FLOC). Canberra, ACT: Head Modernisation and Strategic Planning-Army, 2009.

Parliamentary Research Service. Research Paper No. 19 1994/95, *Defending Australia: Issues in Australia's Post Cold War Defence Policy.* Canberra, ACT: Department of the Parliamentary Library, 1995.

United States Department of Defense. National Defense Strategy. Washington, DC: Department of Defense, 2008.

———. Quadrennial Defense Review Report. Washington, DC: Department of Defense, 2010.

United States Joint Forces Command. The Joint Operating Environment (JOE) 2010. Suffolk, VA: US Joint Forces Command, 2010.

Secondary Sources

Australian Department of Defense. Land Warfare Doctrine 1. Puckapunyal, VIC: Land Warfare Development Centre, 2006.

———. *DPR 133/97 Army Cancel Project Mulgara to Seek More Capable Vehicles.* Canberra, ACT: Land Combat Development Office, 1997.

Department of Defence, "Masters of the Desert. Aussie-Made IMV a Success on First Deployment." *Army News: the Soldiers' Newspaper*, 2005.

Gray, Jeffrey. A Military History of Australia. Melbourne, Australia: Cambridge University Press, 1999.

Headquarters, Department of the Army. Field Manual (FM) 3-0, Operations. Washington, DC: Headquarters, Department of the Army, 2008.

———. Field Manual (FM) 7-0, Training For Full Spectrum Operations. Washington, DC: Headquarters, Department of the Army, 2008.

Horner, David, and Jean Bou, ed. Duty First: A History of the Royal Australian Regiment. 2nd ed. Crows Nest, NSW: Allen and Unwin, 2008.

Hunter-Farrell, John. Peacemakers: INTERFETs Liberation of East Timor. Rocklea, Queensland: Fullbore Magazines, 2000.

Krulak, General Charles C. "Cultivating Intuitive Decisionmaking." *Marine Corps Gazzette* (May 1999). http://www.au.af.mil/au/awcgate/usmc/cultivating_intuitive_d-m.htm (accessed 15 October 2010).

US Army Command and General Staff College. F100: Managing Army Change - Selected Readings and References. Ft Leavenworth, KS: US Army Command and General Staff College, 2009.

———. F200: Managing Army Change - Selected Readings and References. Ft Leavenworth, KS: US Army Command and General Staff College, 2009.

Electronic References

Commonwealth of Australia, Department of Defence. Australian Defence Glossary Online. http://www.adg.eas.defence.mil.au (accessed 20 September 2010).

———. Department of Defence Website. http://www.defence.gov.au/opEx/global/opcatalyst/index.htm (accessed 16 July 2010).

Department of Defence, Defence Materiel Organisation. Website. http://www.defence.gov.au/dmo/function.cfm?function_id=72 (accessed 25 April 2010).

———. "Land 75 Battle Management System." http://www.defence.gov.au/dmo/esd/land75/index.cfm (accessed 16 October 2010).

———. "Land 116-Project Bushranger." http://www.defence.gov.au/dmo/lsd/land116/index.cfm (accessed 16 July 2010).

United States Army. Project Management Office: Stryker Brigade Combat Team. Website. https://www.sbct.army.mil/history/mil (accessed 16 October 2010).

United States Army. TRADOC Capability Manager: Stryker Brigade Combat Team. Website. https://www. benning.army.mil/tcm-sb/index.htm (accessed 16 October 2010).

Unpublished Materials

Calligari, Major General John. Presentation to the Armoured Vehicles Australia Conference 09. Hyatt Hotel, Canberra, ACT, 5 November 2009.

Department of the Army. US Army Soldier Modernization Program Brief to US Army Command and General Staff College, Fort Leavenworth, Lewis and Clark Center, 5 October 2010.

McLachlan, Brigadier Paul. "Australian Army Armoured Capability Development: Project Land 400." Presentation to the Armoured Vehicles Australia Conference 09. Hyatt Hotel, Canberra, ACT, 5 November 2009.

McPhee, Lieutenant Colonel Stuart. Interview by author. S8 (Development) Headquarters 7th Brigade, Gallipoli Barracks, Enoggera, Queensland, Australia, 25 June 2010.

INITIAL DISTRIBUTION LIST

Combined Arms Research Library
U.S. Army Command and General Staff College
250 Gibbon Ave.
Fort Leavenworth, KS 66027-2314

Lieutenant Colonel Michael Hanna
Department of Joint Interagency Multinational Operations
USACGSC
100 Stimson Ave.
Fort Leavenworth, KS 66027-2301

Dr. John M. Curatola
Department of Military History
USACGSC
100 Stimson Ave.
Fort Leavenworth, KS 66027-2301

Mr. Charles D. Vance
Faculty and Staff Development Division
USACGSC
100 Stimson Ave.
Fort Leavenworth, KS 66027-2301