COMMANDANT'S RESEARCH PAPER

TITLE

AN EVALUATION OF THREATS TO THE SAFEGUARDING OF SOUTH AFRICA'S MARITIME DOMAIN

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ABSTRACT

South Africa, though not geographically an island, has an island economy where approximately 90% of its trade moves by sea and constitutes 50% of the GDP and is therefore a fundamental matter of national security (South African Defence Review , 2015). Maritime security also extends to the safeguarding of the commercial fishing industry, the protection of the growing offshore hydrocarbon (oil and gas) sector and the protection of marine tourism (South African Defence Review , 2015).

Unfortunately, the protection and safeguarding component of this economic potential has to date been largely ignored. Add to this the lack of a SAMSS and one faces challenges in effective and coordinated maritime safeguarding policies in the future.

The research rationale centres on the safeguarding of this maritime domain. The question is asked whether South Africa has, considering the size of its maritime domain, the capacity and capabilities to effectively monitor, patrol and intercept transgressors that seek to plunder these marine resources.

Research is further motivated by the current lack of a cohesive governmental approach to a singular C² structure where all relevant GD's are represented and inter-department cooperation is mandated at ministerial level for quick responses to intelligence based safeguarding requirements.

The 2014 government commitment in the form of 'OP is a sound initiative, yet further study into forming an effective and cohesive maritime domain safeguarding organisation as well as the development of a SAMSS is essential in getting government role players to cooperate together in a coordinated and well-structured way, where working more effectively becomes the order of the day.

Key Words: Safeguarding, Maritime Domain, Maritime Security, Maritime Threats, Maritime Intelligence, Maritime Domain Awareness, Maritime Situation Awareness, Command & Control, Government Department cooperation, Interoperability, Standardisation.

DECLARATION OF AUTHENTICITY

I, Capt (SAN) C.G. Manig, hereby declare that this assignment is as a result of my own research and that I have written the assignment myself.

I certify that this research does not incorporate without acknowledgement any material previously submitted for a degree or diploma in any university and that to the best of my knowledge and belief it does not contain any material previously published or written by another person where due reference is not made in the text.

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WORD COUNT

I confirm that my word count is **16 954** (from Chapter 1: Introduction until Chapter 5: Conclusion) which is according to the research assignment specifications.

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GLOSSARY

Table 1: List of Abbreviations

Abbreviation	Word
AIMS	Africa's Integrated Maritime Strategy
AIS	Automatic Identification System
AU	African Union
BMA	Border Management Agency
C²	Command and Control
DAFF	Department of Agriculture, Forestry and Fisheries
DOD	Department of Defence
DEA	Department of Environmental Affairs
EEZ	Exclusive Economic Zone
GD	Government Departments
GDP	Gross Domestic Product
IUU	Illegal Unregulated and Uncontrolled (fishing)
IPV	Inshore Patrol Vessel
LRIT	Long-Range Identification and Tracking
MDA	Maritime Domain Awareness
MDAC	Maritime Domain Awareness Centre(s)
MOU	Memorandum of Understanding
MPS	Maritime Protection Services
MPSGL	Marine Protection Service and Governance Laboratory
MRCC	Maritime Rescue Coordination Centre
MS	Maritime Security
MSA	Maritime Situational Awareness
MSA*	Maritime Surveillance Aircraft
NATJOC	National Joint Operations Centre
NM	Nautical Mile
NSS	National Security Strategy
OPV	Offshore Patrol Vessel
OP	Operation Phakisa
PEMI	Marion and Prince Edward Islands
SAAF	South African Air Force
SADC	Southern African Development Community

SAMSA	South African Maritime Safety Authority
SAMSS	South African Maritime Security Strategy
SAN	South African Navy
SANDC	South African National Defence College
SAPS	South African Police Services
TOMC	Transnational Organised Maritime Crime
TW	Territorial Waters
VMS	Vessel Monitoring System

Table 2: Definitions of terms and concepts

Concept	Definition
IUU fishing	Activities conducted by national or foreign vessels in waters under the jurisdiction of a state without that state's permission or in contravention of that state's laws and regulations. IUU fishing does not only entail the illegal catching of fish, but also relates to the storing, shipping and selling of fish caught illegally.
Maritime Security	Maritime defence and the associated security tasks ranging from those involving conflict – fighting at sea in times of hostilities – to those of a more benign nature, such as fishery patrols, search and rescue and military diplomacy.
NM	Equivalent distance of 1.853km
Sea Power	The sum of all physical, demographic, geographic, economic and military resources of a country that are derived from or related to the sea and that are used by that nation to advance its political, economic and security interests.
TOMC	The movement of illegal information, money, people, physical objects and other tangible or intangible assets across national borders.

CHAPTER 1

INTRODUCTION

The sea is the lifeblood of any country and indeed of any continent. Nations that trade get rich and the more they trade, the richer they get. Apart from being the provider of trade routes, the sea provides food, commodities, income from tourism and is even one of the drivers of the climate. However, these very attributes result in exploitation and illegal activities in the absence of control. In very few cases where illegal acts are perpetrated by neighbours it is usually by foreigners who will continue to do so in a security vacuum. This will additionally impact on the cost of doing business, negatively impacting on trade and thereby on development and standard of living (Brenthurst Foundation , 2010).

The world has globalised within the last century to the point where any country can have trade agreements with any other, despite the geographical distances between them. Maritime transport is essential to the world's economy as over 90% of the world's trade is carried by sea and it is, by far, the most cost-effective way to move en masse goods and raw materials around the world (IMO Profile, 2015).

Maritime activity has a key role to play in the alleviation of extreme poverty and hunger as it provides an important source of income and employment for many developing countries, such as the supply of seagoing personnel, ship owning and operating, shipbuilding and repair, port services and fishing and aquaculture amongst others.

Maritime security is a key component of national security and thus forms part of the foundation for any economic development through the improvement of global competitiveness for its goods and services (Brenthurst Foundation , 2010).

Maritime security traditionally deals with the 'law of the sea', that is, the enforcement of maritime laws. There are a number of issues which affect maritime security. These include illegal acts at sea that could easily develop into disputes, thus affecting maritime security in the region. These illegal acts include piracy, maritime terrorism, drug and human trafficking, maritime theft and criminality, contraband and weapon smuggling, IUU fishing and environmental related offences (Siko M, 1996).

If Africa is to successfully benefit from the potential of its maritime economy, the African Maritime Domain must be the site of safe, secure and sustainable development. Many

African countries, having realised the potential of their respective maritime domains, are initiating projects and implementing policies with linkages between security, economic development and governance in these domains (Walker T, 2017).

In 2014, at the 22nd Summit of the AU, African States and Governments adopted the 2050 AIMS with an associated action plan that provided a strategy to address Africa's maritime challenges for sustainable development. The 2050 AIMS is an effort to take responsibility for the continent's maritime security and to include issues that extend beyond the well documented counter-piracy agenda (Stockbrueger J, 2014).

In a paper written by Dr. Assis Malaquias, an expert on maritime safety and security for the Africa Centre for Strategic Studies, he said that "There is no national security without maritime security" (Malaquias A, 2016). Many African governments lack the will to adequately invest in measures and structures for maritime security. This stems from the poorly developed maritime culture of many African nations and lack of awareness of the maritime domain. For instance, investment in several African navies or coast guards is so insignificant that their efficacy is seriously undermined (Ibrahim OS, 2009). At a "Sea Power for Africa" symposium, Professor Christie delivered a paper where he said '… *African navies presently cannot protect African trade for lack of sea power*' (Christie R, 2005). These quotations by leading members of the African maritime security community all seem united in the belief that African countries are unable to exercise any credible degree of territorial sea power as a measure of deterrent against would-be transgressors.

During a speech delivered by then President Mandela at the 75th anniversary of the SAN International Fleet Review in April 1997, he stated "*Just as we believe that all people should be free, so too as a nation we believe in the freedom of the seas. That is a matter of national strategic interest. We are a maritime nation trading all over the world. We accept our obligation to combine with other maritime nations to uphold the freedom of the seas and to protect our national interests through naval power. We also undertake to manage the resources of our huge EEZ wisely for the benefit of the people of the region*" (Mandela N, 1997).

Unfortunately, no evidence exists that would indicate that the South African government took these words to heart and formulated strategies to make more productive yet sustainable use of the country's maritime economic potential. For a further 17 years, South Africa's marine resources have been plundered and exploited, mostly by foreign countries such as Spain, Taiwan and China (Le Billon P, 2004). South Africa's maritime domain has largely been left

unprotected due to ineffective and uncoordinated government efforts.

However, on 19 July 2014, after the promulgation of the AIMS 2050 strategy, the President of the Republic of South Africa, in his official launch of OP in Durban, highlighted the importance of SA's maritime zones in growing the economy to reduce poverty, inequality, and unemployment. The President identified four main areas of focus and effort, those being Maritime Transport and Manufacturing, Offshore Oil and Gas Exploration, Aquaculture and Marine Protection Services and Governance (Zuma J, 2014).

The maritime environment has been identified as a strategic risk to the country's economic security and focused efforts are required to address both economic productivity and maritime and marine exploitation and criminality in this environment. Moreover, and in terms of our national economy, we need to guarantee the integrity of our new 200NM maritime EEZ, including that around PEMI – which is the same size as the land surface of our country, and which is rich in fish and untapped mineral resources beneath the seabed (Zuma J, 2014).

Although the SAN is primarily designated as the protector of the country's maritime sovereignty, it should also be capable of assisting in the maritime policing task, and should do so to help earn its keep. However, it would be less than prudent to believe that South African maritime security lies solely in the hands of the navy. The answer lays in mutual support between existing agencies, e.g. the SAN supporting DAFF, just as the Army and SAAF support the SAPS on land, with all state departments working together to avoid duplication of capabilities (Modise J, 1997).

Marine governance is extremely complex as it involves state sovereignty, resource development, international commerce, environmental protection and military activities (Dept of Environmental Affairs, 2014). Previous uncoordinated activities by a number of government role players utilising less than sufficient resources has meant that illegal and unregulated harvesting of marine resources have had significant negative impacts on conservation, employment and food security. This results in South Africa facing further threats to its internal security and stability. Without a comprehensive SAMSS, the statement can be made that maritime protection and security programmes currently in place within the maritime/marine environments overlap and are implemented by a number of GDs in an uncoordinated manner. This view stems from the researcher's experience being involved in the MPS for many years.

With these concerns regarding Africa's and more importantly, South Africa's inability to effectively govern and protect its maritime domain, those involved in effecting and managing the country's MPS must find realistic and appropriate solutions to the problems faced.

1.1 RATIONALE/MOTIVATION OF STUDY

South Africa, though not geographically an island, has an island economy where approximately 90% of its trade moves by sea and constitutes 50% of the GDP and is therefore a fundamental matter of national security (South African Defence Review , 2015). Maritime security also extends to the safeguarding of the commercial fishing industry, the protection of the growing offshore hydrocarbon (oil and gas) sector and the protection of marine tourism (South African Defence Review , 2015). Unfortunately, the protection and safeguarding component of this economic potential has to date been largely ignored. Add to this the lack of a SAMSS and one faces challenges in sound and coordinated safeguarding policies in the future.

The research rationale centres on the safeguarding of this maritime domain. The question is asked whether South Africa has, considering the size of its maritime domain, the capacity and capabilities to effectively monitor, patrol and intercept transgressors that seek to plunder these marine resources. Research is further motivated by the current lack of a cohesive governmental approach to a single C^2 structure where all relevant GDs are represented and inter-department cooperation is mandated at ministerial level for quick responses to intelligence based safeguarding requirements.

The 2014 government commitment in the form of OP is a sound initiative, yet further study is required into forming an effective and cohesive maritime domain safeguarding organisation. In addition, the development of a SAMSS is essential in getting government role players to cooperate together in a coordinated and well-structured way, where working more effectively becomes the order of the day.

This paper will identify various threats to effective policing of the maritime domain and explore the gaps in cohesion between GDs as well as the lack of capacity within the many GDs involved in the protection and governance domain of OP. It will also motivate that the number of role players needs to be reduced and will propose the need to simplify the existing C^2 structures. The paper will evaluate current capacities/shortcomings and identify gaps to be to be addressed in providing an effective and balanced marine/maritime security force.

CHAPTER 2

THEORETICAL FRAMEWORK (INCLUDING LITERATURE REVIEW)

2.1 THEORETICAL/CONCEPTUAL FRAMEWORK

The main focus of the paper is the evaluation of identified threats to safeguarding the South African maritime domain. The primary threats are identified as physical threats (smuggling, pollution and illegal fishing), environmental threats (remoteness of territories, size of maritime domain area as well as weather and sea conditions), limited surveillance hardware (patrol vessels, patrol aircraft and land-based sensor network), interoperability between government departments in terms of training, equipment and doctrine, existing command and control structures (processes, infrastructure, command lines, interdepartmental memoranda of understanding and rapid response capabilities) and current maritime domain awareness (maritime intelligence networks, satellite surveillance and the use of the automated identification system). These threats identified above are presented in Fig. 1 below.

Figure 1: Identified threats with associated components
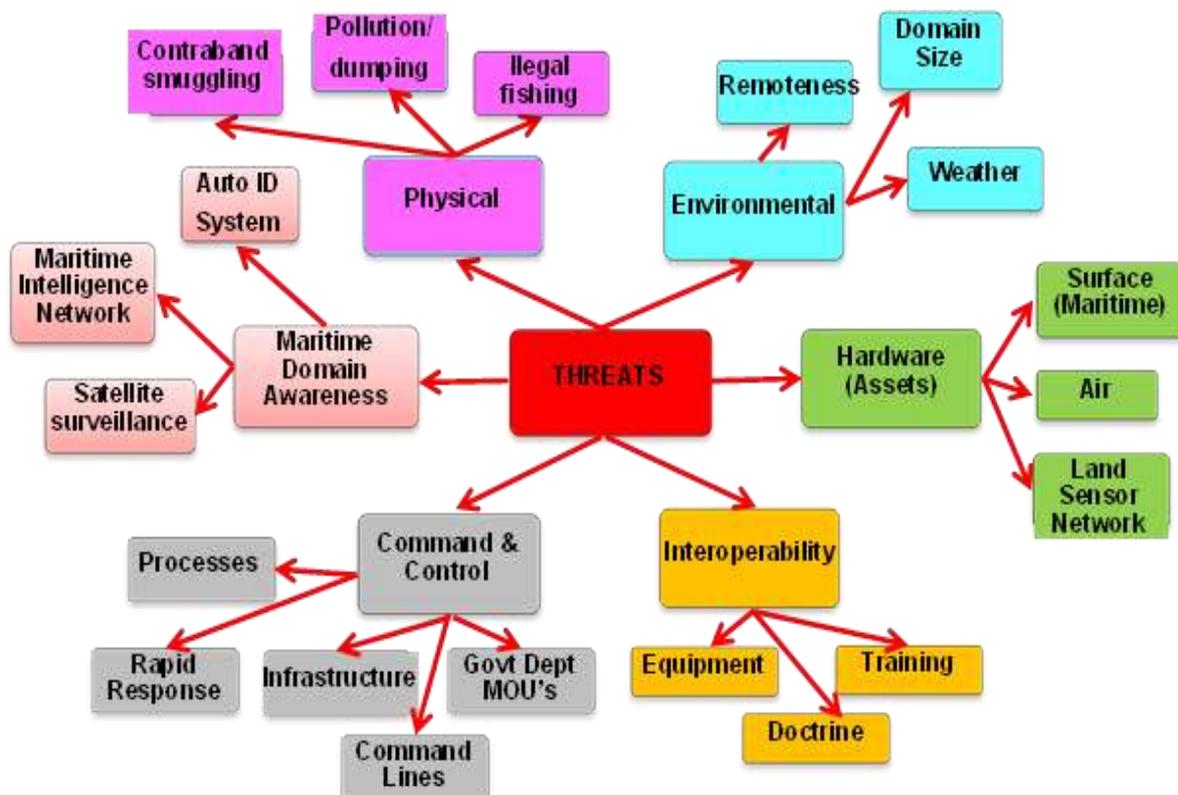
The researcher has located his study within the sea power context of maritime security found within the National Security Quintet concept and theoretical construct of National Power.

In terms of the framework provided (see Fig. 2 below), the scope of the study will be confined to the social determinant of national power, concentrating on the political, military, environmental and technological factors influencing the exercising of national power. The study will also touch on how effectively South Africa uses both hard and soft power in the display of sea power.

Figure 2: Theoretical/Conceptual Framework
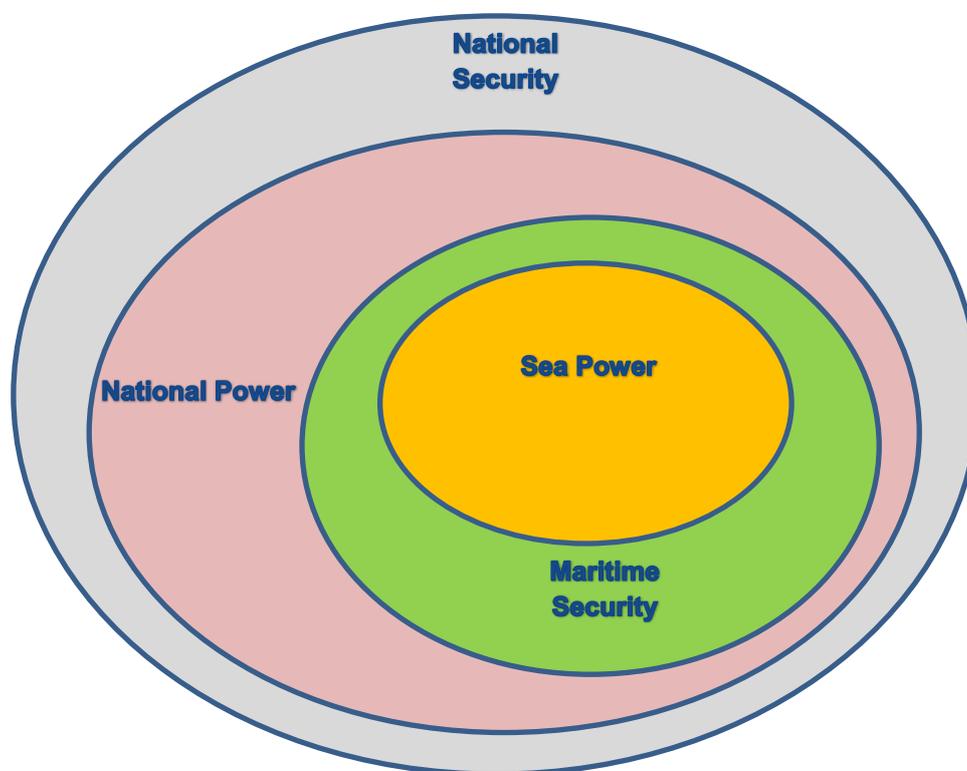
2.2 LITERATURE REVIEW

The author has taken a deductive approach in the reading material reviewed, in that the reviews begin with a continental perspective on maritime security strategy (AU), thereafter a regional view is given (SADC) and finally a national perspective is considered. At this time, the author has concentrated on literature pertaining to maritime security strategies as well as MDA in order to gain both strategic insight at these various levels and then to gain an understanding regarding the complexities of maintaining constant surveillance over an area of some 4,5 million km².

RECLAIMING *THE MARITIME? THE AU'S NEW MARITIME STRATEGY* by Jan Stockbruegger (Cardiff University) 2014.

In January 2014, at the 22nd Summit of the AU, African States and Governments adopted the 2050 AIMS with an associated action plan that provided a strategy to address Africa's maritime challenges for sustainable development (Stockbrueger J, 2014). The 2050 AIMS is a genuine African effort to take responsibility for the continent's maritime security and to include issues that extend beyond the well flogged counter-piracy agenda (Stockbrueger J, 2014). The strategy attempts to strengthen and develop a synergetic African MS community. The author goes on to unpack this AIMS and explain its relevance and importance in providing a cohesive 'African solution to African problems'. The author admits that the 2050 AIMS agenda is ambitious, and given the lack of resources for such activities on the continent, its implementation will largely depend on international funding and support (Stockbrueger J, 2014). This suggested dependence on international funding and support leads into the next piece of literature reviewed where the suggestion of African countries having to enter into multilateral operations with other more 'sea powerful' countries was the only way out of this challenging situation (Stockbrueger J, 2014). The researcher finds the timing of the launch of this AIMS in January 2014 and the launch of SA's OP in July 2014 rather interesting and relevant. Considering that the OP concept and objectives were born out of the maritime security model adopted by Malaysia, it will be interesting to compare the strategies of 2050 AIMS with that of OP and determine how synchronised these two strategies are.

TO PATROL IS TO CONTROL: ENSURING SITUATIONAL AWARENESS IN AFRICA'S MARITIME EXCLUSIVE ECONOMIC ZONES by O S Ibrahim (Flag Officer Commanding Western Naval Command Nigerian Navy).

This paper states that Africa as a continent lacks sea power and its maritime domains are thus vulnerable to exploitation and criminality. In addition to the usual suspects of maritime exploitation and criminality (IUU fishing, piracy, human and weapon smuggling), the author highlights a further area of exploitation within the African maritime domain, that of nuclear and toxic dumping (Ibrahim OS, 2009). This aspect represents a realistic clear and present danger in the South African maritime domain, especially in the more remote areas of South African sovereignty, namely the PEMI group to the Southeast of the country. The author believes that because of this lack of credible sea power, the only real option to effectively secure Africa's maritime domains is to engage in multilateral agreements / operations with countries that can support the continents interests (Ibrahim OS, 2009). The researcher's

opinion is that relying on other countries to provide this sea power to protect maritime resources lays those African countries prostrate to political and economic manipulation. No foreign country enters into multilateral agreements purely out of a sense of good will. It is always in support of own national interests which may in all likelihood, be in conflict with that African country's own national interests. The paper, though relevant and practical, does not offer detailed explanations regarding the actual mechanics of how to effectively secure Africa's maritime zones.

MARITIME SAFETY AND SECURITY: CRUCIAL FOR AFRICA'S STRATEGIC FUTURE
By the Africa Centre for Strategic Studies (March 4, 2016).

The journal paper comments that over two thirds of African countries have maritime access which gives Africa a strategic advantage for international trade, diplomacy, and national development (Maritime Safety and Security: Crucial for Africa's Strategic Future, 2016). The paper further emphasises that this African maritime domain is also a source of insecurity that affects the continent's stability. Piracy, narcotics trafficking, arms smuggling, and other transnational threats all thrive in this space, undercutting government authority and investor confidence. Dr Assis Malaquias, an expert on maritime security for the Africa Centre for Strategic Studies said that "there is no national security without maritime security" (Maritime Safety and Security: Crucial for Africa's Strategic Future, 2016). The paper speaks to the strategic importance of the maritime domain to Africa's security and development and alludes to the 2050 AIMS as a promising strategy to aid in focussing African effort.

WHAT DOES ENSURING SADC'S MARITIME SECURITY MEAN FOR SOUTH AFRICA?
by Liesel Louw, Institute for Security Studies (April 16, 2014).

The author discusses the SANDF's lack of capacity to effectively secure SA's maritime domain, corroborating a previous review commenting about Africa's lack of sea power capacity. The author introduces the fact that SA is a signatory of the SADC maritime security strategy signed in Luanda in 2011. Naval capability in SADC is limited as a result of colonial legacies that forced member countries to look inward and very often to neglect their coastlines (Louw L, 2014). The idea was therefore that South Africa takes the lead in such operations until such time as the other navies can build capacity. The paper discusses initial successes of the SADC's maritime security strategy, including the establishment of MDACs in Mozambique and Tanzania which will be linked with those in Durban and Cape Town. South Africa, Angola and Namibia are also finalising a memorandum of understanding on maritime cooperation, which will address maritime security on the west coast (Louw L, 2014).

While these multilateral co-operations are in line with previous review positions taken, the researcher remains sceptical and cautious that South Africa does not overextend itself in the regional maritime domain while neglecting its own 'back yard'. With the very limited South Africa naval capacity, a prioritisation between South Africa's national security (own maritime domain) and the country's national interests (regional maritime domains) will have to be made. The researcher believes that policy should favour the former until such time as sufficient capacity of South African sea power allows for both.

MARITIME POLICY FOR DEVELOPING NATIONS edited by Greg Mills:

This book provides a very good overview on what challenges a developmental state faces in the maritime domain. It also indicates what policies need to be in place for an effective maritime domain environment.

THE SOUTH AFRICAN NAVY AND AFRICAN MARITIME SECURITY by Dr. Deane-Peter Baker Naval War College Review 2012.

This article begins with a brief outline of the history of the SAN, a history that accounts for some of the contemporary navy's shortcomings. The article then outlines the SAN's current capabilities and addresses the current constraints it faces. The author further discusses the 'capability vs challenge' mismatch, arguing whether South Africa needs such sophisticated technologies (new frigates and submarines) to counter what is essentially an unsophisticated threat (IUU fishing and small scale maritime criminality) (Baker DP, 2012). The article closes by looking to the future and advocating steps and measures that will need to be taken if the SAN is to make a significant contribution to African, or indeed even South African, maritime security. The researcher will use this perspective in his paper when also posing the question whether the SAN, as part of the South African maritime security cluster, is in fact a well-balanced navy based on real and credible threats.

TRANSNATIONAL DIMENSIONS OF MARITIME CRIME a paper by Doug MacKinnon Australian Federal Police, NSW:

This paper deals with ships and particular criminal activities at sea as well as developments in cooperative and collaborative law enforcement practices and how these may impact on the Region. The first part of the paper provides an overview of the heads of jurisdiction under international law and the rights and responsibilities of states in respect of maritime zones of jurisdiction. The second part addresses specific types of crime along with the potential for the

enhancement of existing frameworks established for crime prevention and enforcement. Of importance is the recognition that the development of international information exchange and intelligence is essential to enhancing the abilities of states to successfully deter and combat maritime crime.

NATIONAL PLAN TO ACHIEVE MARITIME DOMAIN AWARENESS for the National Strategy for Maritime Security - October 2005:

MDA is the effective understanding of anything associated with the global maritime domain that could impact the security, safety, economy, or environment. MDA is a key component of an active, layered maritime defence in depth and is achieved by improving the ability to collect, fuse, analyse, display, and disseminate actionable information and intelligence to operational commanders.

NATIONAL CONCEPT OF OPERATIONS FOR MARITIME DOMAIN AWARENESS December 2007*:*

This MDA concept of operations provides a foundation for developing interagency and agency-specific policies, processes, procedures, and organizational relationships to align activities that contribute to achieving MDA. This initial spiral is primarily interagency focused, providing a centralised approach to developing domestic maritime domain awareness in support of maritime security, safety, economy and the environment. Many of the concepts and ideas expressed in this document are also applicable in working with military, government and private sector partners. Achieving MDA depends on the ability to monitor activities in such a way that trends can be identified and anomalies detected.

CHAPTER 3

RESEARCH DESIGN

3.1 RESEARCH DESIGN / METHODOLOGY

The researcher has undertaken a mixed method study with the emphasis on qualitative research in an attempt to unpack, understand and evaluate national threats facing South Africa in the maritime security domain. The research approach has been a combination of secondary source reviews including books, policies, government reports, journals and conference papers. Open questionnaires were compiled and were intended to be conducted with appropriately senior GD role players to determine departmental views on capacity (force levels), policies, operating procedures as well as opinions on inter-operability and standardisation of equipment and procedures with other role players. This data collection option however proved more difficult than anticipated. For more details see research limitations as discussed later in this chapter.

The approach of the study lays in the 'interpretivist' paradigm and investigates the maritime security challenges faced in South Africa and how these challenges impact on South Africa's national power base within the overall national security gambit. The study intended gathering data from GDs involved in the protection and governance laboratory of the OP effort.

3.2 RESEARCH PROBLEM

South Africa has a vast maritime and marine area of responsibility that covers more than 4 340 000km², 474 000km² of which are situated 1920km Southeast of the South African landmass (Vermeulen & Tibane, 2014). Maintaining a visible and credible policing presence and control over such a vast and remote area, in some of the worst seas in the world, with a very small maritime force and a limited land-based MDA sensor network, is a challenge.

Individual GDs involved in this collective effort of maritime/marine security and governance have their own policies, operating procedures and equipment, making working together in a joint venture or operation challenging. Add to this the lack of a singular C² structure to co-ordinate efforts of these various role players, makes a coordinated effort especially difficult.

There are currently too many role players (see list indicated under Unit of Analysis below) all performing similar functions in maritime policing and security. South Africa probably needs a single and capable Coastguard organisation that would be charged with the responsibility of South Africa's maritime/marine protection.

The lack of an authoritative SAMSS that governs all relevant aspects of marine protection services and governance including the composition of maritime forces, a strategy for effective monitoring of the maritime zones and a simplified command and control structure, means that maritime/marine protection as a co-ordinated effort is currently without official authority, direction and planning.

The phenomenon to be studied is South Africa's maritime protection, security and governance capability including shortcomings and challenges.

The units of analysis in this study are the South African maritime protection and security stakeholders such as the SAMSA, DEA, DAFF, DOD, SA Revenue Services (Customs and Excise), Department of Transport, SAPS and National Parks.

3.3 RESEARCH LIMITATIONS

In researching this paper, the author has come to the realisation that a number of limitations in terms of proper and detailed research are related to GD interaction and security related matters. These research design limitations have been

- Availability of appropriately senior GD members identified to conduct personal interviews with.
- The very slow and often one way communication with relevant GDs.
- The sensitive nature of some of the intelligence related information and research material that may expose weaknesses and shortcomings in existing capabilities and structures. This data is either not available, or if available, have security classifications attached that will not allow for publication in an open source document.
- The author has included the unanswered questionnaires in the Addenda (Appendices C – G) as proof of research effort to get data needed.

3.4 RESEARCH QUESTIONS

After identifying the research problem, the following primary research questions arise in attempting to investigate and find solutions to this core problem:

- What are the national threats to securing South Africa's maritime domain?
- How can South Africa work productively with limited resources at its disposal?
- How do GDs work together within a documented maritime strategy?

3.5 RESEARCH OBJECTIVES

After identifying the research questions above, the following research objectives lead from these questions:

- Identifying the national threats to securing South Africa's maritime domain.
- Determining how South Africa can work productively with limited resources.
- Examining how government can work together and how efforts can be streamlined and optimised within a documented maritime strategy.

3.6 DATA COLLECTION

For purposes of study credibility, the intention was to gather a balance of primary data using interviews and open ended questionnaires, and secondary sources from relevant books, journals, proceedings, government reports etc.

In reality however, the researcher has had to lean more heavily on the research using secondary data in the form of literature reviews as practical challenges have been experienced in conducting interviews and having questionnaires answered by relevant GD role players (see research limitations).

In conducting secondary source data collection, the researcher further found that few books have been written on the subject of this paper as the concept of protecting the South African maritime domain as a collective responsibility and not just that of the military is a relatively new field of thought and research. Most of the secondary source literature is restricted to journal articles and conference paper proceedings. There are aspects of data reported in this study that are not directly referenced. Such comments and statements made by the researcher will be based on the more than 30 years of experience in the protection of the South African maritime domain.

CHAPTER 4

PRESENTATION OF DATA & DISCUSSION OF FINDINGS

4.1 THREATS TO SECURING MARITIME DOMAIN

The first research question to be addressed is that of identifying what sorts of threats exist that threaten the security of South Africa's maritime domain. Threats facing the South African maritime space are many and varied, and certainly present a serious challenge to overcome all of them. Perhaps overcoming all is not realistic, but prioritising and focussing on those that can be overcome within South Africa's limited capabilities is what is required.

4.1.1 MARITIME SECURITY STRATEGY

Maritime strategy is a subset of a nation's NSS because it touches on the whole range of activities and interests at sea. In its broadest sense, grand strategy is the comprehensive direction of power to achieve particular national goals. Within those terms, maritime strategy is the direction of all aspects of national power that relate to a nation's interests at sea. The navy serves this purpose, but maritime strategy is not purely a naval preserve. Maritime strategy involves the other functions of state power that include diplomacy; the safety and defence of merchant trade at sea; fishing; the exploitation, conservation, regulation and defence of the exclusive economic zone at sea; coastal defence; security of national borders; the protection of offshore islands; as well as participation in regional and world-wide concerns relating to the use of oceans, the skies over the oceans and the land under the seas (Hattendorf JB, 2013).

Although South Africa does have a documented NSS, it was drafted within the intelligence domains without external security cluster input and is kept as a highly classified document at the State Security Agency. This strategy is thus not available as a reference source to the general public to understand the direction government takes and why. While understandable that some aspects of national security would require classification, particularly in the security sector, it is believed that much of such a document should be transparent such that government actions and directions can be understood by the general public and that government actions can be held accountable against the set direction laid down in the strategy.

It is against this apparent lack of national strategy, South Africa seems not to have a formal documented maritime security strategy in place which makes any effective coordination of maritime activities in support of maritime interests all but impossible. It took the launch of OP in 2014, some 20 years after democracy, for GDs involved in the maritime domain to be "forced" into a working relationship which to date, remains difficult without strategic direction from government (parliament) in terms of what maritime protection involves, how it is defined, how this domain protection should be layered and what the various GD responsibilities are in order to avoid duplication of effort. The strategy should also speak to commonality of training and equipment used to assist with interoperability requirements. Despite the strong focus on economic issues, OP is for the most part silent on security matters, which, given the maritime security concerns of South Africa, cannot be ignored (Van Wyk J, 2015).

This lack of a coherent and integrated maritime strategy manifests in the inability to rapidly and effectively respond to incidents of maritime crime. This situation has only recently been highlighted with the initiation of OP (Khan S & Singh SB, 2014).

The researcher considers the lack of a SAMSS to be the most fundamental of all threats discussed as all subsequent threats can be viewed as a consequence of the lack of clear direction that should be captured in such a maritime security strategy.

4.1.2 MARITIME LAW IN SUPPORT OF OPERATIONS

Without the robust enforcement of maritime law effective maritime security is not possible and without effective implementation of associated maritime legal frameworks, a cohesive maritime security strategy is impossible (Brits P & Nel M, 2016). Law and order in the maritime domain is a prerequisite for South Africa to sustainably benefit from the potential creation of wealth and prosperity from her oceans (Fouche H, 2014).

The potential economic advantage to be gained from the maritime environment requires protection and where necessary, defence of this domain. This would include law enforcement against TOMC that would threaten the safe and secure maritime domain (Brits P & Nel M, 2016).

When asked to rate on a scale of 1 – 10, what rating (confidence level) could be attached to South African maritime law in general in terms of robustness and the minimising of "loopholes" in legislation, Cunningham, a senior maritime law expert provided an average rating of 6, but gave a rating of 2 out of 10 for confidence in successful prosecutions of IUU

fishing transgressors (see Appendix B). He also stated that no current legislation is in place or even tabled for the prosecution of piracy, being maritime crime (hijacking) outside of territorial waters i.e. further than 12 NM off the coast (Cunningham, 2017).

The SANDF would not usually be involved in SAPS support operations within territorial waters without SAPS presence on board and can therefore rely on SAPS members to conduct crime scene handling. SANDF units (SAN vessels) will be acting independently and without such SAPS presence when involved in assisting with the policing of maritime crime further offshore on the high seas such as piracy and other international maritime crimes of human and drug trafficking. Considering that the purpose or end goal of effective law enforcement would be the successful prosecution and punishment of transgressors, South Africa neglects to take ownership of this final phase of operations. This is borne out by the lack of appropriate legal training of its personnel involved in maritime law enforcement (Brits P & Nel M, 2016).

The Defence Review 2015 speaks to the importance of robust maritime crime legislation in support of maritime security. The review further stated that recent maritime security incidents, coupled with requests from foreign governments and multilateral organisations, have compelled South Africa to respond to these security threats (South African Defence Review , 2015). In order to effect this multilateral cooperation, South African maritime law must be aligned with international conventions and treaties such as the AU's AIMS 2050 and the SADC's maritime security strategy in order to prosecute transnational transgressors. This alignment of various levels of maritime law remains in need of urgent attention.

4.1.3 HARDWARE (ASSETS)

South Africa finds itself in an unfortunate situation where the ratio of available sea and air patrol assets, as well as land-based sensors versus the size of the maritime domain area, is significantly unbalanced and skewed.

Surface

There are only three GDs that have any surface patrol and/or interception capability within the maritime domain and these respective capabilities are discussed below.

SA Navy

Although the SAN enjoyed an equipment upgrade program in the early 2000's in the form of new frigates and submarines, these vessels provide front line combatant platforms and are not designed for patrol functions. The capability of existing OPVs and IPVs to be deployed specifically for lengthy patrols is compromised because of their archaic designs including the use of missile craft and minehunter hulls, neither of which is designed for deep water patrolling. For an indication of SAN platform availability as of 2017, see Appendix A (SA Navy Equipment).

In reading Appendix A, the number of platforms indicated does not translate into the same number available for operational duties. It must be noted that a typical military ratio of operationally available vessels versus maintenance requirements (non-operational) is between 1.5 and 2:1 . This means that if the SAN has 4 x Frigates in its inventory, at best it will have 2 available for operational use at any given time while the remaining 2 would be in a maintenance cycle and thus not operationally available for deployment. The same for example regarding the Warrior Class OPV; of the 3 in inventory, one to two would only be available for deployment at any given time. The table below represents the actual number of SAN platforms available for patrol deployment.

Table 3: SAN patrol vessels available

Platform Type	No available	Patrol Advantages	Patrol Disadvantages
Frigate	2	- Long range and endurance 2 x boarding boats - Can carry helicopter - Good seakeeping abilities	Expensive to operate (operating costs)
Submarine	1	- Covert surveillance - Good endurance	- No boarding boats - Poor seakeeping ability on surface
Warrior Class OPV	1 - 2	Fast in good sea conditions	- Platforms are old and unreliable - No dedicated boarding boat - Cannot carry or operate

			helicopter • Poor seakeeping ability in rough seas
River Class OPV	1		• Platforms are old and unreliable • No dedicated boarding boat • Cannot carry or operate helicopter • Poor seakeeping ability in rough seas
IPV	1		• Poor endurance • No dedicated boarding boat • Poor seakeeping ability in rough seas
Combat Support Ship	0 - 1	• Long range and endurance • 2 x boarding boats • Can carry helicopter • Good seakeeping abilities	• Not often available for patrol taskings

According to the SA Defence Review 2015, the SAN must be able to provide a consistent and enduring presence in South Africa's areas of maritime interest. This will be pursued through a maritime defence concept involving deterrence and powerful intervention through surface, subsurface and air capabilities. This presence will be achieved using concentric layers of protection that are focused on South Africa's ports, territorial waters, trade routes and marine resources (South African Defence Review , 2015).

The Defence Review further states that the SAN will perform the following tasks to protect South Africa's maritime territory (South African Defence Review , 2015):
- Exercise sovereignty within its TW maintain sovereign rights within its EEZ and continental shelf areas.
- Perform blue-water naval tasks and off-shore territorial control on the open ocean, beyond the reach of littoral forces, shore-based aviation and land-based defence systems.

- Secure the right of passage for merchant shipping, and maintain the principle of the freedom of the seas.
- Perform international maritime obligations, such as: maritime search and rescue, hydrography; maritime charting; and the naval control of merchant shipping when necessary.

In light of the above responsibilities and the very limited number of available vessels, the SANDF strategic planners face the dilemma of not being able to satisfy external (international) multi or bilateral maritime obligations as well as internal (national) maritime constabulary patrol commitments. The demanding operational programme also impacts negatively on the SAN's vessel maintenance programmes as long term coordinated maintenance programs for different vessel classes is not possible, thus making vessel availability predictions for operational planning very difficult. It is surprising that, in light of this emphasis on maritime security as reflected in the Defence Review and government's emphasis on the blue economy, the 2016/17 SAN budget allocation was in fact cut by 8.5 percent (Sendall N, 2016). Although indications are that the Navy is in the process of procuring six inshore and offshore vessels under Project Biro, it is argued that it is not enough to meet all their commitments.

Considering the SAN forces actually available (Table 1) for the sort of operations as required above, the question has to be asked; Is the SAN capable of performing its mandated task as per the Defence Review with the current forces available?

Department of Agriculture, Forestry and Fisheries

In 2004 and 2005, South Africa took delivery of a fleet of Fisheries Protection Vessels. Three of the four vessels were intended to patrol the inshore waters, while the fourth was to patrol the South African EEZ, including the PEMI EEZ in the Southern Ocean (Dept Agriculture, Forestry and Fisheries, 2017). The vessel characteristics, capabilities and limitations are shown below.

Table 4: DAFF vessel inventory status – 2017 (Dept Agriculture, Forestry and Fisheries, 2017)

	Platform Type	Quantity	Endurance	Platform Age	Remarks
	OPV	1	25 days (food and fuel)	12 years	Has 2 x 7.5m boarding boats. Can land and refuel helicopter
	IPV	3	14 days (fuel and food)	13 years	Has 1 x 7.5m boarding boat. Not really suitable for EEZ patrol (out to 200NM off the coast)

As previously discussed under the SAN platform availability, the above DAFF vessels cannot always be at 100% availability as maintenance periods have to be scheduled. Using the same SAN ratio of operational availability versus maintenance downtime, the table below reflects actual vessel availability.

Table 5: DAFF patrol vessels deployable

Platform Type	No available	Patrol Advantages	Patrol Disadvantages
OPV	0 - 1	• Long range and endurance • 2 x boarding boats • Can operate helicopter • Good seakeeping abilities	• Cannot carry (hanger) helicopter

IPV	1 - 2	• Adequate endurance • Has good boarding boat	• Poor seakeeping ability in rough seas

SA Police Services

Four IPV's were commissioned by the SAPS in January 2007 to bolster their ailing water wing. Unfortunately, these vessels never made it into the water under SAPS ownership. Since then, the SAPS water wing has not invested in any new vessels, and its aged and very small fleet has fallen into disrepair (Jordaan B, 2012).

In addition to the previous comment, the researcher could find no literature within the official SAPS environment that provides information on the current status of its maritime wing and therefore the assumption can be made that the capability is all but lost and that it adds no value to the country's maritime protection capability.

There are currently no other GDs that operate any vessels capable of maritime domain protection. The newly constituted BMA may in time to come operate seagoing vessels as part of a coast guard type force, but this is currently simply speculation and does not contribute toward this paper's scope.

<u>Air</u>

The SAAF within the DOD is the only state department operating Maritime Surveillance Aircraft (MSA*).

The SAAF's only MSA* configured aircraft are the near 70 year old Dakota airframe, although a number of engine, avionic and surveillance equipment upgrades have been made to the aircraft over many years. The current aircraft is known as the C-147TP and is pictured below

Figure 3: SAAF C-147TP MSA*

All eight of the SAAF's 35 Squadron's C-47TP transport and MSA* were grounded for much of 2016, leaving a severe gap in the country's coverage of its oceans. Only five of its eight C-47TPs are configured for the maritime patrol role. Their extended grounding was related to two separate technical issues being a reportedly minor issue with the aircraft undercarriages and a need to replace the primary flight control cables. It is to date unknown when the MSA* fleet will again be operational but optimistic estimates say by the end of 2018 (Oliver D, 2017).

The C-47TP is unpressurised, has a range of only 2 800 km and is not equipped with any advanced sensors such as 360° maritime search radars (it only has a forward looking weather radar) or infra-red or thermal cameras for night surveillance capability (Oliver D, 2017).

It is clear however that this situation cannot last and that 35 Squadron needs both new and more capable aircraft and significantly more funding if it is to be able to truly patrol not only the country's EEZ and coastal areas, but also the PEMI EEZ where much IUU fishing activity takes place.

A replacement MSA* has been on the cards for over a decade and has gone through at least two procurement attempts that failed to yield results. Both these projects have remained unfunded for years, with no immediate sign of movement in the near future as a result of the overall SANDF budget crunch. Resources allocated to airborne maritime surveillance of South Africa's waters are wholly inadequate while the current MSA* fleet is old and will only experience more component issues as time goes on (Oliver D, 2017).

Cost has become a critical issue, however, and the SAAF appears to be leaning toward more affordable options. In October 2010, the then SAAF Chief of Staff Lt. Gen. Carlo Gagiano said that buying the desperately needed 14 larger MSA* could be cost-prohibitive, and suggested that the SAAF consider a two-tier approach consisting of a low-cost coastal surveillance aircraft and a long-range MSA* capable of conducting deep sea surveillance patrols as well as surface warfare and anti-submarine operations (Auger N, 2015).

The researcher considers that South Africa's current aerial maritime surveillance capability is severely limited at best for mainland coastal patrolling out to EEZ limits and non-existent for patrolling of the PEMI EEZ area due to range/endurance limitations of the C-147TP aircraft.

<u>Land-based Sensor Network</u>

South Africa's land-based maritime domain sensor network is not well developed in terms of coverage area. Sensors used are a combination of port, airport and SAAF based radar systems, AIS and satellite systems.

The radar systems used are located at all ports, coastal airports and some coastal military bases. These port based radar systems (Saldanha Bay, Cape Town, Port Elizabeth, East London, Durban and Richard's Bay) provide very limited coverage out to sea, typically out to a maximum of 25NM. The airport based air traffic control radars (Langebaan, Cape Town, Arniston, Port Elizabeth, East London and Durban) provide a coverage area of approximately 60NM out to sea from the respective airport areas (Downs, 2017). Considering the coastline is some 1 500NM long and the EEZ extends some 200NM seawards from the coastline (Vermeulen & Tibane, 2014), there are vast gaps in radar coverage of maritime domain space and thus potentially undetectable activity. The disadvantage of radar coverage systems are that they have very limited detection ranges, that any vessel at sea simply shows as a "blip" on a radar screen and proves only position, course and speed of the vessel. It also cannot indicate vessel information such as name, type (fishing/cargo/container/tanker etc.), flag state or previous port of call. The advantage of radar systems is that it cannot be switched off by potential transgressing vessels as they may go about their illegal activities and can thus be monitored by national authorities at all times if within coverage ranges.

AIS is a legal requirement by the International Convention on the Safety of Life at Sea (SOLAS) and the International Maritime Organization (IMO) that all vessels of 300 gross tonnage and upwards engaged on international voyages and all vessels of 500 gross

tonnage and upwards engaged on national voyages are required to be fitted with AIS. This system transmits vessels details (position, name, flag, course and speed) to national authorities for the primary purpose of maritime traffic management (Tetreault BJ, 2005). The use of AIS has however been expanded in most coastal countries around the world to include the monitoring of all shipping and associated activities within their respective maritime domain areas. The disadvantages of AIS is that the transmitting modem for the AIS is on board each vessel and can thus be deactivated by the vessel should it want to move undetected. The advantage of the system is that coverage areas are far greater than that of radar as it is a "one-way" transmission from ship to shore, where radar is a two-way transmission from shore to ship and back to shore. South Africa's mainland EEZ area is approximately 70% covered by AIS detection from sea (Downs, 2017).

Unfortunately, due to the remoteness of the PEMI EEZ as discussed later in the paper, there is no radar or AIS coverage of this area at all. This is a major threat to MDA in this area.

4.1.4 ENVIRONMENTAL

<u>Domain Size</u>

South Africa has a vast maritime and marine domain that covers more than 4 340 000km², 474 000km² of which are situated 1920km southeast of the South African landmass that surrounds South Africa's sovereign territory of the PEMI (see Fig. 4) (Vermeulen & Tibane, 2014).

<u>Figure 4</u>: South Africa's maritime domain areas of responsibility
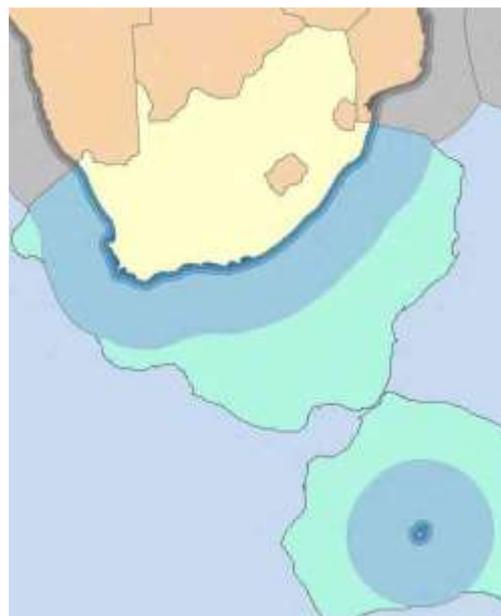
The figure represents this area of maritime and marine resource ownership and is made up of the TW out to 12 NM from both landmass coastlines (dark strip surrounding coastline), the EEZ extending some 200NM off the coastlines (blue shaded area) and the extended continental shelf area extending beyond the EEZ (turquoise shaded area). This total area represents a domain size of almost three times the size of the South African land mass itself. If one just recognises the territorial waters and EEZ areas then the domain size is approximately 1 500 000 km² (Vermeulen & Tibane, 2014).

To provide an idea of the size of the required patrol area, a mathematical sketch will be provided as to how long it would take for one OPV to patrol just the TW and EEZ areas off the South African mainland, some 1 000 000 km² as well as the PEMI of some 500 000 km².

Table 6: Patrol area sizes and durations

	SA TW & EEZ	PEMI TW & EEZ
Patrol area	1 000 000 km²	500 000 km²
Average OPV patrol speed Vessel	20 km/hr	20 km/hr
Radar coverage	15 km either side of vessel thus 30 km total side coverage	15 km either side of vessel thus 30 km total side coverage
Time to cover area	Area ÷ radar coverage area ÷ vessel speed = 1 000 000 ÷ 30 ÷ 20 = 1 667 hrs **= 70 days**	Area ÷ radar coverage area ÷ vessel speed = 500 000 ÷ 30 ÷ 20 = 833 hrs **= 35 days**
Total time for 1 OPV to patrol combined EEZ area	**105 days (3.5 months)**	

Sea Conditions

The oceans surrounding South Africa are governed by a combination of strong ocean currents and prevailing winds which, particularly at certain times of the year, meet each other from opposite directions, creating adverse sea conditions that impact greatly on the ability to effectively patrol the South African maritime domain.

Leading on from previous comment, when these specific conditions prevail, freak waves and swells in excess of 10m from trough to peak, occur which can result in damage to, and even the sinking of ships.

To the south of the country lie the notorious "Roaring Forties". These are the areas of the Southern Ocean that fall between latitudes 40 degrees and 50 degrees south. These latitudes are exposed to thousands of miles of uninterrupted weather fronts which sweep in ferociously from west to east, particularly during winter. The PEMI lies in this weather belt (SANGP 100: Maritime Doctrine for South African Navy, 2006).

Considering these adverse weather and sea conditions in which South African MPS have to operate, careful regard must be taken when determining the type, size and design and endurance of vessels that would be required to patrol these areas.

<u>Remoteness</u>

This section will focus on the remoteness of the PEMI group from the South African mainland. The mainland EEZ, despite its physical size, is not considered as remote from South Africa.

As previously discussed, the PEMI group is situated some 2000km to the southeast of the South African mainland and is situated in the southern ocean region, which is notorious for rough and unforgiving sea conditions. The islands are uninhabited save for a handful of weather scientists that man a small weather station on Marion Island. There is no sea port or airport on the islands and thus any logistic support must be done by ship loitering off the island and sending a small boat ashore.

In physical distance terms, this means that a patrol vessel must have an endurance of 4000km just to get to the PEMI group before a single day of EEZ patrol can take place. This 4000km range equates to 8 days of its endurance (see Appendix A and Table 4) for available vessel endurance capabilities).

Any vessel deployed to the PEMI EEZ area, would have to be of sufficient size and seakeeping ability to withstand the difficult sea conditions. Weather and sea conditions during winter months (March – Oct) would prevent even a large vessel from actively patrolling these areas and boarding operations using small boats or helicopters would be all but impossible.

Considering the fact that there is no sea port to refuel the patrol vessels while in the PEMI area, and using previous data from Appendix A and Tables 3 - 5, it can be deduced that there is not a single South African GD vessel that can get there and back in 8 days and

patrol the entire EEZ area in 35 days based on quoted endurance figures.

The aerial patrol option is also currently impossible since the SAAF C-147TP has a range of only 2800km which means that the aircraft could not even fly directly there and immediately return without running out of fuel on the return leg, bearing in mind that there is no airfield on the island to refuel the aircraft.

4.1.5 MARITIME DOMAIN AWARENESS

Before one is able to react to a maritime threat, one has to know about it. Considering the size and remoteness of South Africa's maritime domain, combined with very limited surface, air and land-based sensor networks that can provide an adequate monitoring and/or patrolling capability of this area as previously discussed, there are grounds for including MDA as a significant threat to South Africa's maritime policing and protection capability.

Close cooperation and communication between government and the private sector is a critical means of enhancing MSA. The primary players in the private sector are energy, insurance, and commercial shipping companies. As maritime security efforts evolve, these entities should be part of the discussion. Their interests and equities need to be considered if they are expected to contribute to governmental maritime security activities and initiatives.

Part of the challenge is determining what information is needed, particularly when governments request information from private sector entities. For example, government wants information from merchant shipping (a community which has helpful, important information to give). However, government must make industry understand why it needs the information, as gathering and transferring information makes additional work for merchant shipping companies and thus absorbs time and resources. Additionally, governments must ensure that information provided is actually used effectively for collective benefit and does not just become information sharing for its own sake.

With limited radar and AIS coverage of the mainland maritime domain and no radar or AIS coverage at all of the PEMI domains, together with previously discussed limitations of both sea and air patrolling of this area, the only other means of ensuring an effective monitoring capability, particularly in the PEMI area, is by using satellite coverage. Not having its own satellites in operation, South Africa is dependent on the use of other country's satellites, The risk involved with this practice is that it is very expensive when requiring satellite information. The data may also be unreliable because our own authorities are unable to control the

satellite to gather information which is of importance to South Africa. This lack of own capacity to have "eyes in the sky" poses a significant area coverage threat to South Africa's MSA.

Maritime Intelligence Networks

Quality intelligence is the starting point and vital for the creation of an effective maritime policing and protection force. The researcher is aware from personal experience that efforts made by the various South African intelligence gathering agencies in providing real time and actionable intelligence within the maritime domain has not been a priority for some time. Agencies and organisations, including the military, suffer from staff shortages (field officers), a lack of latest intelligence gathering techniques as well as old fashioned "feet on ground" and "knocking on doors" principles. Add this to the age old challenge of intelligence information sharing between agencies and one is faced with a threat to effective MSA.

4.1.6 MARITIME CRIMINALITY

Transnational Organised Maritime Crime

In its assessment of threats and vulnerabilities emanating from the African maritime domain, the AIMS 2050 describes TOMC as *inter alia* money laundering, illegal arms and drug trafficking, piracy and armed robbery at sea, crude oil theft along African coasts, maritime terrorism, human trafficking, human smuggling and asylum seekers travelling by sea, and environmental crimes such as IUU fishing and overfishing, deliberate shipwrecking, oil spillages and toxic waste dumping (Fouche H, 2014).

South Africa faces the risk of being swamped by maritime related crimes perpetuated by TOMCs (Khan S & Singh SB, 2014). Trends in South Africa, as well as internationally, suggest an increase in drug related crimes over the past number of years, placing a strain on the economy's available resources. In the period 2004 to 2011 drug related crimes in South Africa rose by more than 100%. One of the major reasons for this may be attributed to the fact that illicit drug trafficking benefits from the lack of international cooperation, regulatory inconsistencies, political obstacles and a lack of governance in the maritime sector (Khan S & Singh SB, 2014).

The land, air and maritime borders of South Africa are exposed to illegal crossing due to the lack of capacity to effectively implement safe guarding measures (South African Defence Review 2015). The smuggling of people, illicit drugs and weapons as well as the illegal exploitation of maritime resources has increased rapidly in recent times due to *inter alia* the degradation of the road systems in Africa which is a contributing factor towards the sea becoming a popular choice for international trade (South African Defence Review 2015).

Terrorist groups have demonstrated a capacity to use the seas as a means of conveying and positioning their agents and logistics in order to wreak havoc including the use of explosive-laden suicide boats as weapons to ram other vessels, port facilities, or offshore platforms. The vastness of Africa's maritime domain provides great opportunities for exploitation by terrorists. Terrorist activities therefore constitute a latent threat to Africa's maritime domain (Ibrahim OS, 2009). As TOMC operations on the African west coast, particularly in the Gulf of Guinea, become more brazen and successful and the oil and gas development of Angola and Namibia increase, it is likely that the threat of maritime criminality will move closer to South Africa (Brits P & Nel M, 2016).

From previous discussion regarding the vastness of the South African maritime domain, the question pertaining to a judicial dilemma arises: If state laws apply to sovereignty, does South Africa have the necessary human and financial resources to deal with maritime crimes in an efficient and effective manner?

<u>Pollution and Dumping</u>

Marine pollution is caused by two factors. The main one being land based pollution that eventually finds its way into the sea through coastal outlets, in particular water effluent (sewerage and industrial). The other, is by either intentional dumping (ship's bilge effluent or toxic material) or unintentional spillage of toxic material, mainly oil (Dept of Environmental Affairs, 2014).

Maritime policing and protection services would not be able to detect, influence or arrest these land-based sources of marine pollution and will therefore not be further addressed in this paper.

The dumping of nuclear and toxic waste in the sea has become a multi-billion dollar enterprise involving various unscrupulous agencies. Besides that, oil spillage has also become a serious threat to the maritime environment. The resultant effect is the destruction

of the natural habitat for several species of fish, thereby in turn threatening food security (Ibrahim OS, 2009).

Illegal Fishing and Poaching

IUU fishing is a global phenomenon and is rapidly depleting the natural resources of countries that depend on fishing to both sustain economies and feed their people. In some countries where local fish or marine resource stocks are insufficient to sustain local food demand or there is a need to boost own economic income by other means, they turn to illegal fishing in waters other than their own TW and EEZ which then impacts on the economies of those effected countries (Schraader L, 2013).

IUU fishing has become big business for foreign governments and criminal syndicates. It may take the simplistic form of poaching or fishing without authorisation, and may be carried out by own citizens or foreign nationals. The vessels used may be completely unlicensed or may only be licensed to fish in other areas. In this situation, the illegality results from breaches of the rules governing fishing practices. IUU fishing could include the use of forbidden gear, overfishing, fishing in protected areas, exceeding by-catch limits, or failing to report accurate data (Schraader L, 2013).

Likewise, the scourge of IUU fishing by foreign fishing fleets constitutes a serious threat to the realisation of the benefits derivable by many African nations from these resources. In addition to the depletion of fish stocks due to IUU fishing, there are also economic and social costs which include loss of foreign exchange earnings and the loss of livelihoods of several fishing communities in Africa. To address these threats, MSA within the maritime domain is of utmost importance as it would provide the knowledge base required to advise African leaders in taking the right decisions that would enhance maritime security in the continent (Ibrahim OS, 2009).

South Africa has a commercial fishing industry worth approximately R5 billion annually. This industry further provides toward the livelihood of many South African families by creating over 140 000 primary and secondary jobs. It is estimated that IUU fishing in South Africa costs the country around R6 billion a year. The country is especially vulnerable to IUU fishing due to its expansive EEZ areas (Schraader L, 2013).

In South Africa, IUU fishing has been responsible for the collapse of the traditional line fishing industry and the legal collection of abalone within the mainland EEZ and the decline of Patagonian tooth-fish stocks in the PEMI EEZ area. It has also impacted on the viability of the hake and pilchard stocks, the largest of the country's fisheries. IUU fishing activities in the South African lobster and shark industries are also on the increase (Schraader L, 2013). The more recent fish quota related protest actions where the smaller informal fisherman have had their fishing licence quota's significantly reduced to allow the commercial fishing industry to continue as a real life example of the effects and consequences of IUU fishing in South Africa.

4.1.7 INTEROPERABILITY

For any organisation to be effective, the various role-players involved need to have a common vision and must be both able and willing to work together to achieve a common purpose. In terms of effectively policing and securing the South African maritime domain, there are a few factors to consider that pose a threat or perceived threat to achieve such coordinated and purposeful interoperability.

<u>Numerous Role-players</u>

In South Africa there are over 20 key departments and institutions in the marine environment with distinct roles and maritime policies (Dept of Environmental Affairs, 2014). As previously mentioned, South African politics has historically made collective and integrated government departmental cooperation very difficult as departments (and Ministers) seek power, dominance and status. A culture of silo mentality has prevailed and to get government departments to work together for a common cause has thus far proven challenging.

Although these GDs are involved to a greater or lesser extent in the governance of the maritime domain, not all play a significant role in the actual policing, protection and security of the domain and will thus not be included in further discussion. The main GD role players responsible for the policing, protection and security of the maritime domain are briefly discussed below.

The South African Maritime Safety Authority

SAMSA was established in 1998 under the SAMSA Act 5 of 1998. SAMSA's mandate is to ensure safety of life and property at sea, prevent pollution from ships in the marine

environment by conducting vessel safety inspections and to promote the country's maritime interests. SAMSA has also been charged with the responsibility of implementing and executing the LRIT of vessels along the South African coastline. The LRIT vessel monitoring system assists in securing South Africa's coastal waters in the midst of the rising lawlessness at sea, with particular reference to the worrying scourge of pirate attacks along the east coast of Africa (SAMSA Mandate, 2017).

The MRCC in Cape Town operates a 24/7 operations centre under the authority of SAMSA. It manages the South African ship reporting system using LRIT information and receives and disseminates maritime security information as required (SAMSA MRCC, 2017).

Department of Environmental Affairs

This department is responsible, in terms of the Living Marine Resources Act (Act 12 of 1988) and the Environmental Conservation Act (Act 73 of 1989), for the conservation and protection of the marine environment, including marine and coastal management and the control of marine conservation within the EEZ. In Act 6 of 1981 (the Prevention and Combating of Oil Pollution at Sea Act), the DEA is made responsible for combating pollution once it has occurred. Its mandate also includes responsibilities to ensure *inter alia* that an environment (including maritime) is protected through reasonable legislative and other measures (Strategic Plan 2013 - 2018, 2013).

The DEA has been appointed as the lead GD in the Marine Protection Services and Governance Laboratory of the Operation Phakisa scope as of 2014 within which Initiative 5 – the Enhanced and Coordinated Enforcement Programme can be found (Dept of Environmental Affairs, 2014).

Department of Agriculture, Forestry and Fisheries

The DAFF is mandated to enforce the Marine Living Resources Act 18 of 1998, by ensuring that there is sustainable utilization of Marine Living Resources. That is made possible by intensifying compliance and enforcement efforts by the number of sea patrols conducted both inshore and offshore regarding the monitoring of squid, rock lobster and various fish species. DAFF also ensures regular inspections are carried out on vessels when at sea and that constant monitoring is maintained by means of their VMS. The department is further mandated to maintain monitoring of the enforcement strategy both nationally and regionally

by signing MOUs with relevant government departments and agencies (Dept Agriculture, Forestry and Fisheries, 2017).

DAFF has a 24/7 manned operations centre in Cape Town which is used to monitor fishing vessel activity and reacts if necessary to any suspicious fishing and/or vessel activity using their own vessels as discussed previously or they respond in cooperation with other GDs, particularly the DoD. This operations centre utilises the South African VMS which has been in operation since 2000 and currently has in excess of 1527 fishing vessels on the database. The VMS is of enormous value to fisheries scientists and resource managers as it can be used to verify where fishing vessels are concentrating their effort and to determine which vessels has filled their quotas. VMS data has also been used as evidence in court (Dept Agriculture, Forestry and Fisheries, 2017).

The South African Police Service

The SAPS (water wing) is responsible for the securing of international borders of the sea to prevent and investigate all illegal or clandestine cross-border movement of persons and goods. The Sea Border Unit is responsible for marine policing, with the primary function of border control along the coastline up to 12NM from the coast (SANGP 100: Maritime Doctrine for South African Navy, 2006).

Department of Defence

The SANDF's, more particularly the SAN's and SAAF's, mandate in the securing and protection of the South African maritime domain is derived from the Constitution and the White Paper on Defence as updated in 2006 and elaborated upon in the updated Defence Review of 2015 (South African Defence Review 2015).

The SAN is understandably the lead arm of SANDF service when dealing with maritime matters and is tasked with the responsibility of ensuring that our trade routes remain open at all times. It is to prepare for and, when so ordered, conduct appropriate naval operations in defence of the Republic, its citizens and interests and operations other than war in support of other relevant and approved national goals ie. combatting maritime crime including IUU fishing. The SAN's reach, area and efficiency are much increased should it operate jointly with other maritime assets such as a MSA* which can be provided by the SAAF (SANGP 100: Maritime Doctrine for South African Navy, 2006).

The SAN currently operate two MDACs in Cape Town and Durban. Maritime domain monitoring software systems are however not compatible with those of MRCC and DAFF operations centres.

Border Management Agency

A Bill calling for the establishment of a BMA under the Department of Home Affairs was put before parliament in August 2015. It was to provide for the establishment, organisation, regulation and control of the BMA and to provide for the transfer, assignment and designation of law enforcement border related functions to the BMA (Dept of Home Affairs, 2015).

The functions of the agency are to perform law enforcement within the border and at ports of entry into the territory governed over by South Africa and to coordinate the implementation of its law enforcement with other GDs as required. The maritime border as defined by this bill includes the maritime border (12NM off the coastline) as well as the EEZ (Dept of Home Affairs, 2015).

It remains unclear at this stage whether the BMA will acquire movable assets such as vessels and perhaps patrol aircraft in order to fulfil its mandate of "border" protection. It is also unclear when the organisational structure will be declared functional and when actual premises will be occupied. Some literature makes claims that it should have been initiated in 2016 but this has not materialised to date.

Equipment

The equipment used by these respective GDs refers to vessels type, communications and to some degree, weapons.

Vessels

Military (SAN) and civilian (DAFF) vessels have fundamental differences in design and on board architecture. Military vessels place an emphasis on dual systems for redundancy, impact protection and secure communication systems. Civilian vessels are built simple with no redundancy systems and with short range unsecure off the shelf satellite communication systems. Crew quarters are designed for short voyage/patrol duration while warships are designed for more crew and longer patrol duration.

Communications

As mentioned, there are different grades of ship borne communication systems. While warships have secure long range high frequency radios, civilian vessels use unsecured satellite telephone communications. Military vessels also carry such satellite telephone systems but are not used as primary means of communication as it remains an unsecure system. Hand held short range radios will most certainly not be the same as the military uses more robust military specified radios where civilian personnel would use off the shelf handheld radios. Channel frequency compatibility will in most cases not be possible.

Weapons

SANDF and SAPS weapons, particularly small arms and stun grenades are not of same type as no consideration was previously given to the need for inter-GD joint operations.

Training and Doctrine

Training within the discussed GDs has been non-existent to date. No maritime exercises have been planned or executed involving the DOD, DAFF and/or SAPS in order to assess levels of hardware incompatibility and differences in doctrine and operating procedures such as vessel boarding, boat launch/recovery operations, search and seizure and preservation of evidence procedures.

Command and Control

As previously discussed, respective GDs involved in maritime domain activities and protection, have independent monitoring, operating and coordination systems that ensure own department efficiency. This silo approach over the past two decades means that there is no single C² system that involves all role players in a structured and coordinated way.

The NATJOC at Snake Valley in Pretoria, is the recognised national planning, response and coordination centre, having representatives from the country's security sector organisations/services in place. This structure however is predominantly land focussed and its staffing structures and monitoring systems does not allow for 24/7 operational C² with real time MSA inputs for effective decision making. DAFF is not represented at the NATJOC as the department is not part of the recognised security sector.

At each of the other discussed maritime operations centres, being DAFF, MRCC or SAN, none of these centres have representatives from the entire maritime domain GDs and is thus unable to affect coordinated and recognised C² over any given operation.

Memoranda of Understandings

Prior to the initiation of OP in 2014, no MOUs existed between GDs involved in the maritime domain. Sadly, post 2014, no MOUs between GDs involved in the effecting of the Marine Protection Services and Governance Laboratory or Initiative 5 – the Enhanced and Coordinated Enforcement Programme, have been signed.

Command Lines

Without a singular inter-GD maritime operation C² structure, command lines of authority between GDs remain blurred. When operations are conducted on a reactive basis (when a requirement is presented), an ad hoc structure is attempted but confusion still remains throughout the operation as to who is actually in charge and who should be speaking to who.

Infrastructure

There is no dedicated and singular maritime domain operations centre that is capable of 27/4 staffing of all GD role players, staffed either on a permanent basis or called up as required for operations.

4.2 WORKING PRODUCTIVELY

In an already strained economic environment where the chances of receiving an increased operating budget are minimal, the only way of improving the maritime policing and protection functions within the South African maritime domain is to worker smarter, putting the limited resources available to better use and tackle all situations with an integrated mind-set. Working in silos within individual GDs results in duplication of effort and costs due to unclear delineation of responsibilities.

What factors would then contribute to working more productively within limited capacities? Some of these factors discussed below have already been dealt with in identifying threats to effective policing and protection of the country's maritime domain, yet still need highlighting as factors to be considered in formulating plans to increase efficiency.

4.2.1 COMMON MARITIME STRATEGY

For any organisation to work efficiently, a common strategy giving vison, goals, frameworks and end states must be provided to align departments toward a common purpose where all individual efforts can be measured against the achievement of this common end state.

In formulating such a strategy, the process of consultation must be inclusive of all GD role players. A vision, mission, goals and objectives must be clearly determined and must be realistic in terms of resources available and which can be allocated to objectives and tasks. Available assets between all GDs must be indicated with capabilities and limitations such that proper planning can be done when allocating these assets for operational tasks. Mandates and responsibilities of all role players must be clearly defined and dovetailed to ensure that all goals and objectives can be covered adequately by at least one GD.

The maritime strategy must support national strategy and should have a long term end state. The common maritime strategy referred to here should not be confused with the military maritime strategy as directed by the DOD. The common strategy is not just about military responsibilities addressing threats to national sovereignty directed toward the country from the sea, but should include all aspects of maritime/marine security, from poaching of resources in rock pools on the shore line, to deep sea transfers of IUU fishing hauls to mother ships. In this wider spectrum of maritime protection, the military should provide assistance and supportive roles rather than a lead role.

4.2.2 EDUCATION

As previously mentioned, South Africa operates as an "island economy" where a vast majority of its economic trade moves in and out of the country via the sea and where the ocean's resources sustain vital employment sectors and contributes significantly to the national economy. The South African population and particularly the youth must be made aware through both formal (school) and informal (media) education of the importance of the sea both as a resource provider and as an economic trade route.

Abalone and rock lobster poaching by local coastal communities in the Western Cape has fuelled an international demand and is now considered a TOMC industry, costing the country dearly in loss of marine stocks and which will ultimately lead to species extinction in these areas. To a lesser extent, the poaching of lobster and other shoreline crustacean species for more domestic markets on the country's east coast needs to also be addressed through

education of the local rural communities as to the long term effects of what unregulated poaching would result in.

4.2.3 IMPROVED INTELLIGENCE NETWORK

Improved MSA is the only way to ensure an overall understanding and monitoring capability of the maritime domain. Military, other state intelligence agencies and the civilian sector must be utilised in an effective way to ensure detailed information gathering that can then be converted into actionable maritime intelligence. The coastal civilian network comprised mainly of residents living close to the shoreline is underutilised, particularly in the less urbanised coastal areas. The Joint Intelligence Coordinating Committee operating within the NATJOC should also have a coordinated maritime domain intelligence gathering strategy with actionable plans to meet intelligence gathering goals and objectives.

4.2.4 COMMONALITY OF EQUIPMENT

Single sourcing of the same equipment types on a large scale for all GDs involved will invariably result in discounts and cost cutting options. It also lends to the possibility of common training which in itself could also be a cost saver across all departments.

4.2.5 TECHNOLOGY

When faced with diminishing capital acquisition and operating budgets as well as very limited patrol vessel and MSA capabilities, technology will have to play a greater role in providing greater MSA for less cost. Better secure communication and real time information provision systems will have to be considered. Investing in technology now, although at a seemingly high cost will prove itself more cost effective in the long run, as fewer patrol vessels and/or aircraft will be needed to do physical presence patrolling when electronic surveillance can be used to achieve far better coverage areas. This technology must extend to the land-based C^2 centres where real time MSA information would be available to the decision makers.

4.2.6 FEWER "COOKS"

It has been discussed earlier that there are a number of GDs that have similar if not same areas of maritime responsibilities. The SAPS for instance are mandated to police crime within South African territory which includes TW out to 12NM off the coastline, the BMA is also now mandated to protect the borderline primarily against the infiltration of illegal

immigrants. It is easy to see a grey area of responsibility here. DAFF is mandated to exercise policing duties outside of TW out to the EEZ limits regarding IUU fishing, while the BMA now also seemingly has jurisdiction out to EEZ limits as well. Over and above all of this, the SANDF is currently tasked with the responsibility for border control, including maritime borders as well as for any international maritime criminality on the high seas such as human trafficking and piracy, tasks that it seems the BMA are also mandated to do.

All this duplication of responsibilities, effort and associated costs are counter-productive. There should be a minimum number of GDs and/or agencies involved in the policing and protection of the maritime domain where assets and other resources can be managed under a single authority for the most effective use thereof for any given requirement.

4.3 A SYNERGETIC GOVERNMENT APPROACH

The paper has already focussed on the types of threats most prominently encountered in effective maritime policing and protection. With limited resources available to GD's operating in the maritime domain, the need for working productively was discussed and those aspects that should be concentrated on were further expanded. The third element in ensuring an effective, cooperative and synergetic government approach, is determining how and what steps government could take to achieve buy-in from all role players.

4.3.1 POLITICAL LEADERSHIP

Although OP was launched by President Zuma himself in 2014, government efforts in realising the vision, goals and objectives appear to be isolated and disjointed. While some GD's make efforts in moving forward, others wait to be guided. It would have been expected, that after the initiative was launched, that all Ministers from the involved GD's across the four main focus areas, would have got together and determined how resources could be shared or combined to achieve the common aim. The expectation that Ministerial MOU's would have been signed, authorising individual GD officials to cooperate at various levels of planning and execution and to commit assets and other available resources to the collective effort follows from that. The unfortunate reality is however, that there is currently no ocean governance institutional framework to determine who does what and how different stakeholders can work together effectively (Dept of Environmental Affairs, 2014).

Implementation of national policies more often than not, takes on a top-down approach, meaning that senior political leadership announces a policy and thereafter ensures its

implementation in accordance with its vision, goals and objectives. Associated with such policies, are implementation evaluations and progress monitoring, incorporating feedback mechanisms to ensure that leadership is kept informed in order to measure progress toward achieving goals and objectives (Brynard P, 2000).

It is essential that leadership, by their action, involvement and decisions display the will necessary to implement and monitor progress and direct new initiatives should a change of plan be necessary (Brynard P, 2000). It is intolerable that lower level GD officials have to drive the numerous integrated processes involved in ensuring the protection and governance of the maritime domain in the absence of sound leadership in a type of bottom-up approach.

4.3.2 MACRO vs MICRO-MANAGEMENT

Those in leadership positions have to see the big picture and keep their focus on end goals and determining progress toward those goals in order to reach national policies. A micro-management approach, seeing only the day to day costs and not the end game benefits, cause resistance to change and cooperation, as cost and asset sharing are seen as detrimental to individual departments come time for audits and expenditure accounting.

For historical reasons, individual GDs have always operated in silos and little or no effort has been made to cooperate and coordinate efforts. It is essential to efficient and effective governance, that the South African government build quality institutions i.e. GDs within the public service that is educated in the importance of cohesion and cooperative attitudes. In such an environment, only the big picture and the attainment of national policy goals and objectives are important while the day to day bean counting and fixations on who owns what micro strategies are far less important.

4.3.3 SIMPLIFICATION

Keeping a complex process as simple as possible is indeed an art, yet essential if all role-players, both on the macro and micro-management levels are to understand the process and be able to measure progress along the way.

OP is such a complex national plan in coordinating the four main focus areas (Zuma J, 2014), yet lower levels of involvement are seldom informed of intentions in a clear and simple way such that the end goals and how it is going to be realised can be understood by all.

It remains the Executive's responsibility to provide sound leadership and governance at Presidential and Ministerial levels to ensure that inter-GD cooperative agreements at these levels are made and that these intentions are transformed into achievable policy plans that provide for effective implementation, assessment, monitoring and evaluation in order to meet the overall goals of OP.

4.4 FINDINGS

The findings of this study regarding current situations and circumstances surrounding these aspects will now be discussed following the overview of the priority threats to effective marine policing and protection and overview of increasing the efficiency of marine policing and protection.

4.4.1 MARITIME SECURITY STRATEGY

South Africa lacks a maritime strategy that is available to all role players in the maritime domain. Without a common vision, direction and end state, individual GDs will continue to pursue their own interests and fight for bigger slices of the budget cake to create larger individual GD empires that in the long term are unsustainable. This lack of common thinking is wasting significant funding and time due to duplicated efforts. A buy-in at strategic level by all GDs involved will begin cascading down within all departments to the operational and tactical levels of activities. Eventually, coordinated participation that works towards a common goal will contribute greatly toward the country being more productive and efficient.

4.4.2 SA MARITIME LAW

Although South Africa has made some progress toward a robust legislative framework to address a number of TOMC, there remain two areas where progress is sorely lacking.

Firstly, the SAN is not trained in law enforcement. Its operational training focusses on military operations and law of armed conflict (Brits P & Nel M, 2016). This is understandable considering the primary mandate of the SANDF, being to defend and protect the Republic, its people and its territorial integrity. The reality is however that South Africa is becoming more and more involved in inter-regional and inter-state agreements, shifting focus to law enforcement. Unfortunately, the SANDF has not shifted the focus of its training to include this new reality. There is an urgent need for the SANDF to work with the SAPS, Interpol and other organisations in the development of training material and exercises in order to prepare

itself and especially the SAN for their changing role. Without proper training in evidence collection and other law enforcement functions, successful execution of these tasks will not be possible (Brits P & Nel M, 2016).

Secondly, there is no MOU or service level agreement between the SANDF and the SAPS or the Department of Justice and Constitutional Development for the handing over of suspected criminals for prosecution (Brits P & Nel M, 2016). The Defence Act allows the SANDF to do law enforcement at sea, allowing them the same powers as a peace officer exercising similar powers in the Republic (Defence Act 2002: Section 22). In 2012, the SAN requested the SAPS to assist in the training of SAN members in crime scene management. Although the training covered a number of topics such as containment of a maritime crime scene and recording of the evidence, it showed that the SAN's mandate for law enforcement functions is limited and that it was not well equipped for the task (Brits P & Nel M, 2016). There is no evidence to show that since 2012, this shortcoming in training/capability has been properly addressed. Informal discussions with naval officers show that there is still no training being done to prepare them for their law enforcement function.

4.4.3 HARDWARE

In order to make a quantitative finding regarding the adequacy of available patrol hardware to effectively patrol the South African maritime domain, the researcher has analysed the available surface patrol hardware (as provided in Appendix A and Tables 3 - 5) versus the maritime domain size and equated patrol duration (provided in Table 6) and tabled these comparisons in the table below

Table 7: Patrol vessels available vs needed

Platform Type	Quantity (operation available)	Endurance in patrol area (days) (specified endurance minus transit time to patrol area)	Patrol duration (days) SA TW & EEZ	Patrol duration (days) PEMI TW & EEZ	No of platforms required to cover area	
					SA	PEMI
	A	B	C	D	E(1)	E(2)
Frigate (SAN)	2	18	70	43 (35 patrol + 8 transit)	3.9 (70÷18)	2.4 (43÷18)
OPV (SAN)	2	10	70	43	7	17.5 (35÷2)
Combat Support Ship	1	20	70	45	3.5	2.15
Offshore Patrol Vessel (DAFF)	1	22	70	45	3.2	1.95
Inshore Patrol Vessel (DAFF)	2	12	70	45	5.8	10.75

The SAN submarines and IPVs were excluded from this study as suitable patrol platforms for reasons already provided.

Columns E(1) and E(2) represent the numbers of vessels required to cover the entire area at the same time i.e. full area coverage at any time. Column E(2) represents the vessels duration in patrol area i.e. (column B) less the transit time to and from the PEMI area (8 days). Endurance - transit time = patrol time in area, then ÷ time to cover patrol area by calculated patrol time in area. To calculate how many vessels of each type would be needed to patrol the entire two areas on a permanent basis, one would need to divide a year (365 days) by the vessel endurance (column B) then multiply that figure by either columns E(1) or E(2) depending on the intended coverage area. Keeping in mind previous comments

regarding numbers of vessels operationally available versus numbers in maintenance (average ration of 2:1), the previous calculations of total number of patrol vessels needed to patrol area(s) on a permanent basis must be doubled. These figures are assessed by the researcher to be entirely beyond both the budgetary and operational capability (infrastructure) of the South African government.

The types of surface patrol vessels available are in most cases either not architecturally ideally suited for long range patrols in the rough sea conditions found in both TW and EEZ patrol areas as discussed previously in Tables 3 & 5, or the daily operational running costs are just too high to use them frequently to patrol the area. A further fact to consider is that if the limited SAN vessels available were utilised exclusively for EEZ patrols, what platforms would be available for the SAN to meet its national, regional and international military related obligations? The prioritisation of tasks with very limited options is thus made even more difficult. A further finding is that there are too many different types of state owned patrol vessels that drive up maintenance costs and makes interoperability more difficult. Project Biro, a military project tasked with the purchase of three new OPV and three new IPV vessels would introduce yet another two types of different platforms, without significantly improving the number of vessels needed.

The current air patrol capability is all but lost. When or even if the C-147TP fleet of 5 aircraft become operational again (date unknown), the discussed limitations of the aircraft both in endurance (range) and surveillance equipment, makes effective air surveillance and monitoring of the maritime domain almost impossible. Perhaps limited visual coastal surveillance out to 2NM off the coast could be done, but even that is limited to daylight operations only. With the current MSA* fleet, no air patrol capability is possible in the PEMI EEZ area due to endurance limitations.

The SAPS are currently incapable of fulfilling their mandate for policing and arresting transgressors of maritime crime out to the South African maritime territorial limit of 12NM off the coastline. The SAPS would need a number of IPV size craft of similar characteristics to the DAFF IPV's operating out of each of the main coastal ports to be effective in their responsibilities.

4.4.4 ENVIRONMENT

Although the size of the domain and the prevailing sea and weather conditions are not conducive to effective maritime patrolling, there is nothing that can be done to change any of these factors.

The only logical conclusion is that these environmental factors, including the remoteness of our PEMI area of responsibility, must be taken into account when determining what sort of patrol and/or monitoring hardware South Africa needs.

4.4.5 MARITIME DOMAIN AWARENESS

There are indeed individual centres of MDA within GDs that can provide MSA for their own requirements. What is lacking is an integrated MSA picture, where all different maritime activities, whether it be search and rescue, suspicious fishing activities, maritime pollution or dumping activities or maritime criminality activities can be integrated in a single real time environment, where all role players are represented and informed decisions can be taken based on best information available.

The MDACs in Cape Town and Durban have the potential to be such centres, but political leaders must make a decision, based on a (to date) non-existent SAMSS on how and where such centres will function.

In order to enhance MSA, there must be a culture of information and intelligence sharing. Timely intelligence and close coordination are vital to effective maritime security. Unfortunately within the South African security sector there is a long tradition of not sharing information with outside agencies due to the tendency of government entities to protect their own interests and resources. While understandable, it remains unfortunate that details regarding shortcomings and limitations regarding the South African maritime intelligence gathering networks remain sketchy and thus open to conjecture and speculation.

Much of the intelligence information gathered is overclassified when compared to other country and regional organisation maritime intelligence sharing on open source networks and this makes information inputs vital to the desired MSA picture less accurate, thus making decisions made less informed.

4.4.6 MARITIME CRIMINALITY

With indications that TOMC is heading further down the African coastline on both the east and west coasts, particularly in the forms of illegal migration and drug, weapon and other contraband smuggling, South African security sector organisations have to properly prepare for an inevitable increase in such activities. With its current force levels to deal with maritime criminality combined with law enforcement training levels, the security sector is found to be wanting in many different ways.

Deterrence is a key factor in minimising the activities of would be transgressors. Deterrence levels must be such that the associated opportunity costs to engaging in illegal maritime activities must be so high that the risk is considered too great to take the chance. These deterrence measures lay both in the chance of getting caught i.e. effective coverage of the maritime domain as well as patrol hardware either in the area or deployable to the area at immediate notice, as well as a robust and intolerant legal system that can and would impose harsh sentences on such transgressors.

From the aforementioned it is clear that we are unable to affect a credible level of deterrence in either of these domains.

4.4.7 INTEROPERABLITY

In this regard and based on previous threat evidence presented, the current levels of GD interoperability are inadequate. No evidence exists that shows any degree of emphasis being placed on developing government's ability to work together within the maritime environment. Lip service may be paid to the OP initiative but actual on the ground efforts have not been visible. No inter-departmental (SAN, DAFF, SAPS, Customs and Excise, National Parks) maritime exercises have either been planned or executed since the initiative was launched in 2014. This is both the result of a lack of leadership and political will as well as a lack of common strategic direction and focus.

4.4.8 COMMAND & CONTROL

As with MDA, C² structures do exist, particularly in the military and SAPS organisations, however these individual structures operate independently at various levels, and at no time or place, do these command structures integrate at all levels with the necessary level of MSA

to allow for quick decision making and immediate decisive action to be taken to counter the situation.

Command lines between GDs are also problematic and results in role players not being certain of the overall hierarchical structure i.e. who reports to who? This confused situation results in information bypassing essential levels of command. There remains a pressing need for a singular overarching MDA, MSA and response C² structure involving all role players. Such a structure should be envisioned and guided in a SAMSS.

4.4.9 WORKING SMART

In addressing findings regarding threat areas to effective policing and protection of the maritime domain, it has eluded to that both the government's approach to and actions taken, suggest a very disjointed, uncoordinated and individualistic approach to maritime security.

Making a genuine effort to secure the country's vast maritime domain with the few resources available with which to do it leaves little option but to "work smart" with what is available. Yet with this seemingly obvious situation at hand, government allows this diverging thought philosophy to continue.

CHAPTER 5

CONCLUSION & RECOMMENDATIONS

5.1 RECOMMENDATIONS

After making findings regarding attention paid toward maritime threats faced and the strategic approach taken by government toward this process, a few recommendations are made that are hoped will provide some food for thought for maritime domain strategists and planners.

Firstly and most importantly, urgent attention and effort must be given to the compilation and promulgation of an appropriately classified SAMSS document that is accessible to planners at all required levels of operations. However, before beginning the lengthy process of discussions at senior GD level, national leadership at presidential and cabinet level need to show their respective support of this process through both word and action such that the example is set to those below. Lip service to the cause is no longer enough.

In terms of restructuring force levels and associated equipment to deal with maritime policing and protection, it is strongly recommended that such restructuring reflect the direction, goals and objectives set out in the eventual SAMSS.

Equipment capability requirements must be based on a realistic and pragmatic maritime threat analysis coupled with given budget restrictions. The SAN should not be looking for 1st world warships capable of engaging the most modern ships of the major naval powers, but something more universal in capability, a work horse rather than a race horse. Although pursuit speed is needed, high speed capabilities should not be overemphasised as militaries tend to do. A sustained patrol speed of up to 24 knots would be sufficient. The hull construction could well be to commercial rather than naval standards and overall length should be approximately 85 metres to effectively deal with the prevailing sea conditions. Good sea-keeping qualities are of critical importance. Main propulsion should be diesel thus allowing a range at economic speed of at least 5 000 nautical miles, with the ability to extend endurance by replenishment at sea for both fuel and food. Vessel crews should be as small as possible, preferably in the order of 50 – 60 personnel. Additional accommodation to carry a limited number of passengers (scientists, officials from other state departments), men

under training, or troops should be provided. These work horse hulls would greatly reduce acquisition as well as service life maintenance, repair and operating costs.

A concerted effort must be made when acquiring new hardware to have a common baseline, where for example, the SAN and DAFF and perhaps even the BMA would purchase the same hulls to keep acquisition and operating costs down and to improve interoperability amongst the users.

Although the SAAF has a registered project for the upgrade of MSA*, this project has not been receiving the priority it deserves. Simply put, without such an urgent upgrade, South Africa will not have an airborne MDA/MSA capability. These new aircraft must have long range capabilities, at least double that of the current C-147TP aircraft. They should also have a day/night and all weather surveillance capability as well as a broadband data link capability that can transfer pictures, video and radar picture information back to the maritime command centre.

However, as far as force structures are concerned, it is strongly recommended that government consider reducing the number of role players in the maritime policing and protection domain in order to work more productively, avoiding duplication of efforts and expenditures and simplifying C² structures. A single coast guard force concept should be considered that would effectively replace a number of GDs that individually deal with search and rescue, pollution and dumping, maritime crime and IUU fishing. It can still be argued that if South Africa has a strong enough coast guard, would there even be a need for a military navy (SAN)? Brewster argues that there has been an increasing 'de-militarisation' of the concept of maritime security in peacetime and increased use of non-military agencies such as coast guards. For many maritime security tasks, coast guards can be cost effective and they do not carry the political sensitivities associated with navies (Brewster D, 2106).

Considering the realistic situation that South Africa will never have enough surface or air surveillance assets to permanently cover the entire maritime domain, serious attention must be given to the option of placing a geo-stationary satellite(s) over these domains to provide top-down surveillance with a surface and/or air force ready to react as determined by the command centre. This would minimise the requirement and cost of constant surface/air patrolling.

Considering the remoteness and hostile prevailing sea and weather conditions, the Executive should consider no intended effort to patrol the PEMI TW and EEZ areas for illegal fishing

activities. Even with an immediate surface vessel response from Cape Town, it would take at best 3 days to reach the PEMI patrol area. In that time, any illegal fishing transgressor would know of the surface vessel transiting toward the islands and simply head for EEZ and wait out the patrol vessel to eventually leave the area, thereafter recommence with its illegal activities. It is a situation where efforts to curb illegal fishing can never be effective, so why spend valuable resources and time on planning and executing patrol operations in those areas?

It is critical that law enforcement training, including search and seizure legalities, crime scene preservation and evidence gathering processes and procedures be taught to all GDs involved within the maritime domain. It is essential that time, cost and effort in apprehending transgressors is not wasted simply because due legal process was not followed and perpetrators were allowed to walk free. Such situations would hardly serve as deterrence against other potential criminals.

5.2 CONCLUSION

It has been submitted that the oceans provide for direct global trade routes and connect countries in a way that no land trade route can. The resources found in these oceans, both living and organic, provide a country with a significant economic earning potential should it be managed effectively.

It has been determined that South Africa undoubtedly has an island economy where approximately 90% of its trade moves by sea and constitutes 50% of the GDP and is therefore a fundamental matter of national security.

In realising this maritime and marine economic potential President Zuma announced in 2014 that South Africa would embark on a national program to enhance the maritime and marine economic potential in order to help alleviate poverty, unemployment and inequality found rife within South African society. In order to realise the economic potential of this domain, a structured and integrated ocean governance and protection policy was required to provide an adequate deterrent factor against any would-be transgressors.

In reality, this protection and enforcement program has not visibly materialised to all role player GDs involved in this process and this paper has attempted to find out why and what factors contribute to the challenges involved in the successful achievement of a structured and coordinated whole of government approach. The paper has focussed on three main

aspects; the threats and/or challenges involved in effective MDA and MSA, the factors required to function productively, especially in South Africa's situation of very limited budget allocations to achieve the end state of effective maritime and marine protection, and finally, what is needed from government to work with synergy and in a cooperative manner.

Having analysed these contributing factors, findings were made that suggest that an absence of a SAMSS, very limited patrol assets available, a lack of maritime legal training, a hostile (sea and weather conditions) and remote maritime domain, a lack of GD interoperability on equipment, training and procedural levels and shortcomings in clear and structured C^2 lines have resulted in the disconnected and fragmented efforts of government to date in attempting to protect legitimate users of the ocean areas and resources held within it.

Having made these somewhat disheartening findings, recommendations have been made in a positive light to suggest ways of simplifying processes, making the most productive use of what protection resources are available, to be realistic in determining what threats actually exist and to tailor make a response force to adequately meet that threat without over extending our ability to operate and maintain such capabilities. The use of latest technologies must be incorporated as cost saving mechanisms to ensure comprehensive MSA and providing decision makers with real time and accurate information in order to make the most cost effective response plan to any given maritime protection requirement.

The paper concludes by revisiting what former president Mandela said in 1997… "*Just as we believe that all people should be free, so too as a nation we believe in the freedom of the seas. That is a matter of national strategic interest. We are a maritime nation trading all over the world… We also undertake to manage the resources of our huge EEZ wisely for the benefit of the people of the region*".

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ADDENDA

APPENDIX A: SAN PLATFORM INVENTORY STATUS – 2017

Reference: (SA Navy Equipment)

	Platform Type	Quantity	Primary Mission	Endurance	Platform Age	Remarks
	Frigate SAN A200	4	Surface Strike	21 days (food and fuel)	12 years	High maintenance and operating costs. Very costly to use as a patrol vessel.
	209 Diesel Electric submarine	3	Surface Strike	33 days (fuel) 45 days (food)	10 years	Good for covert intelligence gathering Not usable for surface patrol/intercept
	Warrior Class Offshore Patrol Vessel	3	Surface Strike. Now in OPV role	12 days (fuel)	40 years	Old vessels. Not good seakeeping abilities in rough seas. Frequent maintenance requirements
	River Class Offshore Patrol Vessel	2	Mine hunting. Now in OPV role	7 days (fuel)	33 years	Old vessels. Not suited for extended patrol. Frequent maintenance requirements

		Combat Support Vessel	1	Logistic support	22 days (fuel)	30 years	Can be used to patrol if required and operationally available
		Inshore Patrol Craft Combat Support Vessel	3	Close inshore patrol	2 days (fuel)	20 years	1 IPV operational. Based in Dbn

APPENDIX B: SA MARITIME LAW AND ASSOCIATED LEGISLATION(S)

Question No	Question	Response
1	On a scale of 1 – 10, what rating would you give SA maritime law in general in terms of robustness and the minimising of "loopholes" in legislation?	8 in respect of civil claims and litigation between private parties. 4 in respect of regulation of pollution and the marine environment. Many international conventions (designed specifically to protect coastal states) have not been acceded to or incorporated into domestic legislation.

2	On a scale of 1 – 10, what rating would your confidence level be regarding successful convictions of
	  a. Illegal fishing
	  b. Pollution
	  c. Maritime criminality (contraband smuggling and human trafficking by sea)
		a – 2
		
		b – 8 (SAMSA is proactive in prosecuting polluters identified and which call at SA ports – the real difficulty is the lack of resources to identify polluters (in the form of maritime patrol aircraft and the like).
		
		c – unknown threat and thus difficult to rate

3	Is there any progress regarding SA maritime law legislation regarding acts of piracy and is the SA legal system (incl courts) gearing itself up to accepting piracy arrests and subsequent prosecutions, either by SA forces or foreign militaries that want to offload pirates in SA (being closest country to arrest location)?	No – I am not aware of any piracy related legislation currently in force to accommodate acts of piracy committed outside of the territorial waters and not on a South African flagged vessel. Notwithstanding the fact that the act of piracy would constitute a criminal offence in terms of the South African common law, I doubt whether there is jurisdiction for SA criminal courts to prosecute pirates committing these acts abroad. Again, as with pollution conventions, SA would have to enact specific legislation to cater for this, which it has been slow to do.
4	Would you consider the current state of SA maritime law to be a threat to or strength in terms of deterrence factor to committing maritime offenses within the SA maritime domain?	Current legislation is adequate to enforce prosecution of offenders in the maritime domain, on the poaching/illegal fishing and pollution fronts. Civil legislation caters adequately for wreck removal and pollution clean-up. Lack of resources to enforce however constitutes a major threat.

| 5 | Would/could you offer any further comment regarding SA maritime law in general that you think would be appropriate to the paper's title? | Up until 1994, sanctions and trade boycotts prevented SA from participating fully in international conventions designed to protect coastal states (example is the convention creating a pollution clean-up fund for oil spills requiring a participating coastal state to declare its oil imports and collect a levy from tanker operators in its territory). Since 1994, legislative focus has been elsewhere and the incorporation of this type of legislation has been neglected. A political will to focus on the maritime domain in all aspects is required to bring SA into line with the current international position to safeguard the maritime domain fully, in respect of not only ocean resources, but also the threat of piracy, pollution and the consequences of offshore oil exploration and exploitation. |

Questionnaire completed by: Craig Cunningham - Head of Shipping and Logistics

Firm: Bowman Gilfillan Inc

City: Cape Town

If you would prefer to remain anonymous, could you please just indicate as such?

Your participation in completing this questionnaire is very much appreciated and will contribute in no small part to the research detail and accuracy of the paper.

APPENDIX C: INVOLVEMENT OF DEA IN OP LAB – MARINE PROTECTION & GOVERNANCE

Question No	Question	Yes	No	Response
1	Has the DEA been formally (in writing) tasked at Presidential level as the lead GD in coordinating efforts within the MPSGL?			
2	If answer to previous question was no, then in the absence of formal authority, is the DEA recognised by other GDs as the lead GD in coordinating efforts within the MPSGL?			
3	Does the DEA believe that adequate progress has been made in terms of the MPSGL and within that Lab, the Initiate 5 mandate of providing for enhanced and coordinated enforcement programmes? If no, please expand (in the "response" column) giving reasons			
4	What are considered to be the main areas of hindrance/obstruction in moving forward toward a coordinated GD effort within this MPSGL?			
5	Does the DEA consider that a clear Command and Control framework has been established that deals with reacting to any marine/maritime protection service requirement? If no, please expand (in the "response" column) giving reasons			

Question No	Question	Yes	No	Response
6	How often do role players in the MPSGL get together to discuss relevant issues and what are typical agenda topics of discussion? Does the DEA chair these forums?			
7	Since the inception of the MPSGL in 2014, have there been any scheduled inter GD maritime exercise(s) either planned and/or executed where objectives were to assess the levels of interoperability/inoperability between role players?			
8	If answer to previous question is no, have at least any meetings/forums been scheduled to discuss this topic of interoperability? Have differences in equipment, training and operating procedures been tabled in order to determine what areas (if any) of commonality do exist?			
9	What plans (if any) have been/are being made to close the interoperability gap between GD role players?			
10	Has a MPSGL operating budget been provided by government, and if so, is it considered adequate to cover what activities have been planned for in each financial year?			
11	Does the DEA support a singular maritime domain protection agency rather than a host of separate GD contributors? If yes, please indicate a structural concept of such an agency ito mandate and responsibilities.			

Questionnaire completed by: ……………………………………………………….

State Department: …………………………………………..

City: ……………………………………………

If you would prefer to remain anonymous, could you please just indicate as such.

Your participation in completing this questionnaire is very much appreciated and will contribute in no small part to the research detail and accuracy of the paper.

APPENDIX D: INVOLVEMENT OF DAFF IN OP LAB – MARINE PROTECTION & GOVERNANCE

Question No	Question	Yes	No	Response
1	Has the DAFF been formally (in writing) tasked at Ministerial level to participate as a role player in the MPSGL?			
2	If answer to previous question was no, how has DAFF been authorised to participate in coordinating efforts within the MPSGL?			
3	Does the DAFF believe that adequate progress has been made in terms of the MPSGL and within that Lab, the Initiate 5 mandate of providing for enhanced and coordinated enforcement programmes? If no, please expand (in the "response" column) giving reasons			
4	What are considered to be the main areas of hindrance/obstruction in moving forward toward a coordinated GD effort within this MPSGL?			
5	Does the DAFF consider that a clear Command and Control framework has been established that deals with reacting to any marine/maritime protection service requirement? If no, please expand (in the "response" column) giving reasons			

Question No	Question	Yes	No	Response
6	Does the DAFF participate in the MPSGL forums to discuss relevant issues and what are typical agenda topics of discussion?			
7	Since the inception of the MPSGL in 2014, has the DAFF participated in any scheduled inter GD maritime exercise(s) either planned and/or executed where objectives were to assess the levels of interoperability/inoperability between role players?			
8	If answer to previous question is no, have at least any meetings/forums been scheduled to discuss this topic of interoperability? Have differences in equipment, training and operating procedures been tabled in order to determine what areas (if any) of commonality do exist?			
9	What plans (if any) have been/are being made to close the interoperability gap between GD role players?			
10	Has the DAFF received any of the government allocated MPSGL operating budget, and if so, is it considered adequate to cover what DAFF activities have been planned for in each financial year?			
11	Does the DAFF believe that the vessels currently operated are sufficient and are they of adequate design for patrol duties in areas of responsibility? If not, comment on vessel numbers required and types of vessels needed.			

Question No	Question	Yes	No	Response
12	Have any efforts been made to simplify existing C² structures with other GDs that also use command centres eg. The DOD? If no, explain why there is a perceived resistance to form a single maritime domain control centre			
13	Does the DAFF support a singular maritime domain protection agency rather than a host of separate GD contributors? If yes, please indicate a structural concept of such an agency ito mandate and responsibilities.			

Questionnaire completed by: …………………………………………………………….

State Department: …………………………………………..

City: …………………………………………

If you would prefer to remain anonymous, could you please just indicate as such.

Your participation in completing this questionnaire is very much appreciated and will contribute in no small part to the research detail and accuracy of the paper.

APPENDIX E: INVOLVEMENT OF DOD IN OP LAB – MARINE PROTECTION & GOVERNANCE

Question No	Question	Yes	No	Response
1	Has the DOD been formally (in writing) tasked at Ministerial level to participate as a role player in the MPSGL?			
2	If answer to previous question was no, how, if at all, has the DOD been authorised to participate in coordinating efforts within the MPSGL?			
3	Does the DOD participate in the MPSGL forums to discuss relevant issues and what are typical agenda topics of discussion?			
4	Does the DODF believe that adequate progress has been made in terms of the MPSGL and within that Lab, the Initiate 5 mandate of providing for enhanced and coordinated enforcement programmes? If no, please expand (in the "response" column) giving reasons			
5	What are considered to be the main areas of hindrance/obstruction in moving forward toward a coordinated GD effort within this MPSGL?			
6	Does the DOD consider that a clear Command and Control framework has been established that deals with reacting to any marine/maritime protection service requirement? If no, please expand (in the "response" column) giving reasons.			

Question No	Question	Yes	No	Response
7	Since the inception of the MPSGL in 2014, has the DOD participated in any scheduled inter GD maritime exercise(s) either planned and/or executed where objectives were to assess the levels of interoperability/inoperability between role players?			
8	If answer to previous question is no, have at least any meetings/forums been scheduled to discuss this topic of interoperability? Have differences in equipment, training and operating procedures been tabled in order to determine what areas (if any) of commonality do exist?			
9	What plans (if any) have been/are being made to close the interoperability gap between GD role players?			
10	Has the DOD received any of the government allocated MPSGL operating budget, and if so, is it considered adequate to cover what DOD activities have been planned for in each financial year?			
11	Does the DOD believe that the vessels and aircraft currently operated are sufficient and are they of adequate design for patrol duties in areas of responsibility? If not, comment on vessel/ aircraft numbers required and types needed.			

Question No	Question	Yes	No	Response
12	Have any efforts been made to simplify existing C² structures with other GDs that also use command centres eg. the DAFF and MRCC? If no, explain why there is a perceived resistance to form a single maritime domain control centre.			
13	Does the DOD support a singular maritime domain protection agency rather than a host of separate GD contributors? If yes, please indicate a structural concept of such an agency ito mandate and responsibilities.			

Questionnaire completed by: ………………………………………………………….

State Department: ………………………………………..

City: ……………………………………….

If you would prefer to remain anonymous, could you please just indicate as such.

Your participation in completing this questionnaire is very much appreciated and will contribute in no small part to the research detail and accuracy of the paper.

APPENDIX F: INVOLVEMENT OF NATJOC IN OP LAB – MARINE PROTECTION & GOVERNANCE

Question No	Question	Yes	No	Response
1	Has the NATJOC been formally (in writing) tasked at Ministerial level to participate as the C² structure for MPSGL related activities (planning and operations)?			
2	If answer to previous question was no, how, if at all, has the NATJOC been authorised to participate in coordinating efforts within the MPSGL?			
3	Does the NATJOC participate in the MPSGL forums to discuss relevant issues and what are typical agenda topics of discussion?			
4	As the current C² structure for MPSGL activities, does the NATJOC consider their C² capabilities to be sufficient to effectively command maritime operations on a 24/7 – 365 basis? If no, what areas of C² need attention?			
5	Does the NATJOC believe that role player GDs should supply staff on a permanent or temporary basis to man the operations centre for maritime operations? Please justify the response made.			
6	Are there any plans to update the structures of NATJOC to include maritime operations at a national level?			

Question No	Question	Yes	No	Response
7	Does the NATJOC support the concept of a singular national C^2 operations centre for all maritime related operations? If yes, where should this centre be located and which GD or agency should be mandated to lead the effort of maritime policing and protection activities?			
8	Does the NATJOC consider that sufficient planning is done by all GD role players prior to any maritime related operations taking place and is the NATJOC involved in this process?			

Questionnaire completed by: ………………………………………………………….

State Department: …………………………………………..

City: ……………………………………….

If you would prefer to remain anonymous, could you please just indicate as such.

Your participation in completing this questionnaire is very much appreciated and will contribute in no small part to the research detail and accuracy of the paper.

APPENDIX G: INVOLVEMENT OF SAPS IN OP LAB – MARINE PROTECTION & GOVERNANCE

Question No	Question	Yes	No	Response
1	Has the SAPS (water wing) been formally (in writing) tasked at Ministerial level to participate as a role player in the MPSGL?			
2	If no, how, if at all, has the SAPS been authorised to participate in coordinating efforts within the MPSGL?			
3	Does the SAPS participate in the MPSGL forums to discuss relevant issues and what are typical agenda topics of discussion?			
4	Does the SAPS believe that adequate progress has been made in terms of the MPSGL and within that Lab, the Initiate 5 mandate of providing for enhanced and coordinated enforcement programmes? If no, please expand (in the "response" column) giving reasons			
5	What are considered to be the main areas of hindrance/obstruction in moving forward toward a coordinated GD effort within this MPSGL?			
6	Does the SAPS consider that a clear C² framework has been established that deals with reacting to any marine/maritime protection service requirement? If no, please expand (in the "response" column) giving reasons.			

Question No	Question	Yes	No	Response
7	Since the inception of the MPSGL in 2014, has the SAPS participated in any scheduled inter GD maritime exercise(s) either planned and/or executed where objectives were to assess the levels of interoperability/inoperability between role players?			
8	If no, have at least any meetings/forums been scheduled to discuss this topic of interoperability? Have differences in equipment, training and operating procedures been tabled in order to determine what areas (if any) of commonality do exist?			
9	What plans (if any) have been/are being made to close the interoperability gap between GD role players?			
10	Has the SAPS received any of the government allocated MPSGL operating budget, and if so, is it considered adequate to cover what SAPS activities have been planned for in each financial year?			
11	Does the SAPS believe that their IPVs currently operated are sufficient and are they of adequate design for patrol duties in areas of responsibility? If not, comment on vessel/ aircraft numbers required and types needed.			

Question No	Question	Yes	No	Response
12	Are any projects on the horizon to expand the SAPS (water wing) patrol and/or air surveillance capabilities? If yes, please expand on details if possible.			
13	Does the SAPS support a singular maritime domain protection agency rather than a host of separate GD contributors? If yes, please indicate a structural concept of such an agency ito mandate and responsibilities.			

Questionnaire completed by: ……………………………………………………….

State Department: ………………………………………..

City: ……………………………………

If you would prefer to remain anonymous, could you please just indicate as such.

Your participation in completing this questionnaire is very much appreciated and will contribute in no small part to the research detail and accuracy of the paper.