



**RHODES UNIVERSITY**

**INVESTEC BUSINESS SCHOOL**

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PROPOSED SOUTH AFRICAN MANAGEMENT FRAMEWORK  
FOR THE IMPLEMENTATION OF THE INTERNATIONAL  
CONVENTION FOR THE CONTROL AND MANAGEMENT OF  
SHIPS' BALLAST WATER AND SEDIMENTS

A dissertation submitted in partial fulfilment of the requirements for the degree of

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by

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## Integrative Summary

South Africa, strategically situated at the southern tip of Africa, is edged on three sides by almost 3000 km of coastline surrounded by the Indian Ocean and the Atlantic Ocean (South African Tourism, 2011). This vast ocean expanse is responsible for conveying approximately 96% of South Africa's exports (Brand South Africa, 2011). Despite the positive economic effects of the shipping industry, translocation of harmful organisms and pathogens via ballast water and sediments inside ballast water tanks has far reaching global environmental (and economic) impacts (Oliviera, 2008:1; David and Gollasch, 2008:1966).

Ballast water is the water that is taken on in order to manage the draft of the ship, to help with propulsion, manoeuvrability, trim control, list and stability (Oliviera, 2008:2). The discharge of ballast water into the world's oceans has resulted in the transfer of ecologically harmful sea-life into non-native environments (IMO, 2011), resulting in major environmental threats to our oceans (Bax, Williamson, Agüero, Gonzalez and Geeves, 2003:313).

Various international documents have been developed to deal with the ballast water issue, culminating in the introduction of the International Convention for the Control and Management of Ships' Ballast Water and Sediments ("the Convention") in 2004. The Convention aims at achieving a reduction in the transfer and subsequent impacts of aquatic organisms via the ballast water and sediment of ships.

On a local level, South Africa does not have direct legislation or regulations dealing with ballast water (Duncan, 2007:34) and relies on the combination of a number of pieces of legislation relating to environmental management, coastal management, biodiversity, alien invasive species control, port control and ship safety (National Environmental Management Act, 1998, National Environmental Management: Biodiversity Act, 2004, National Environmental Management: Integrated Coastal Management Act, 2009, National Ports Act, 2005 and Merchant Shipping Act, 1951). Although the Convention

was ratified by South Africa in 2008 (Department of International Relations and Co-operation, 2011) it is still not in force and there still exists no other consolidated legal mechanism through which ballast water is managed.

This research has investigated the various roles, responsibilities and mandates of South African competent authorities under the aforementioned legislation in managing ballast water, and has determined that there is definite legislative and institutional fragmentation as well as overlaps.

A comparative analysis of management frameworks developed both locally and internationally was conducted in order to develop a management framework for ballast water management in South Africa. Various legislative, institutional and functional aspects were identified and adapted for inclusion in a South African management framework.

A co-ordinated approach to ballast water management has been developed in the management framework which is anticipated to result in more definitive roles and responsibilities of the various South African departments involved in the management of ballast water and implementation of the Convention.

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## **SECTION 1: EVALUATION REPORT**

### **1. Introduction**

South Africa, strategically situated at the southern tip of Africa, is edged on three sides by a nearly 3000 km coastline washed by the Indian Ocean and the Atlantic Ocean (South African Tourism, 2011). Before the opening of the Suez Canal in 1869, the safest and most feasible sea route between Europe and the East ran past the southern tip of Africa, making South Africa one of the oldest shipping routes (South African History On line, 2008). Major shipping lanes pass along the South African coastline, with approximately 96% of South Africa's exports being conveyed by sea (Brand South Africa, 2011). The strong shipping trade in South Africa places a large strain on our marine environments, with the contribution to marine pollution by ships being one of the biggest environmental concerns today, not only in South Africa, but internationally (International Maritime Organisation, 2011). Apart from the obvious environmental concerns arising from oil spills and pollution from ships, a more problematic environmental issue is at play (David and Gollasch, 2008). Various studies have reported large numbers and densities of non-native species being carried in ships' ballast water (Gollasch, David, Voigt, Dragsund, Hewitt and Fukuyo, 2007). It is estimated that more than twenty two million tons of ballast water are discharged annually into South African waters (Robinson, Griffiths, McQuaid and Ruis, 2005:300).

With over eighty percent of the world's commodities being moved by shipping each year, the result is that 10 billion tones of ballast water is transferred throughout the world's marine environments (Raaymakers and Pughuic, 2000:2). Despite the positive economic effects arising from the transfer of world commodities by shipping, there is a more sinister negative impact, which has only in the last decade gained international importance (Oliviera, 2008:1). Over and above the issues of shipping disasters and spills, there is a more damaging and permanent issue according to David and Gollasch (2008:1966), namely the translocation of harmful organisms and pathogens via ballast water and sediments inside ballast water tanks.

Various international documents have been developed to deal with the ballast water issue, culminating in the introduction of the International Convention for the Control and Management of Ships' Ballast Water and Sediments ("the Convention") in 2004. The Convention was ratified by South Africa on 5 March 2008 (Department of International Relations and Co-operation, 2011) although it is not yet in effect. Having regard to this, on a local level, although South Africa still does not have a legal mechanism dealing directly with ballast water (Duncan, 2007:34), numerous other pieces of legislation exist which can be applied to the control of ballast water. These include, *inter alia*, the National Environmental Management Act, 1998, the National Environmental Management: Biodiversity Act, 2004, the National Environmental Management: Integrated Coastal Management Act, 2009, the National Ports Act, 2005 and the Merchant Shipping Act, 1951. This diversity of legislation has relevance in that various competent authorities are given mandates to control a variety of issues falling within the ambit of these specific pieces of legislation, namely, port control, coastal management, alien species management, biodiversity and shipping matters. This broad spectrum of mandates for competent authorities forms the basis of this research which has the following research goals:

*Goal 1: To review and identify existing roles and responsibilities set out in South African legislation pertaining to ballast water management. This will focus particularly on gaps and duplications of roles and responsibilities of government departments.*

*Goal 2: To review the appropriateness of the existing mandates, roles and responsibilities. This will highlight areas of fragmentation and overlap within the South African and International arenas with regard to biodiversity, alien invasive species, coastal management and port management.*

*Goal 3: To identify gaps that exist in the current mandates, roles and responsibilities. An investigation will be conducted into gaps that exist between*

*government departments related to managing biodiversity, alien invasive species, coastal areas and ports.*

*Goal 4: To make recommendations and develop an effective management framework for South Africa for improvements in the management of ballast water and implementation of the Convention. This will involve methods for integration and co-operation within South African mandated governmental departments to implement the Convention.*

## 2. Background and Context

### 2.1. Ballast Water Definition

Raaymakers and Pughuic (2000:2) simply define ballast as any material used to weight and/or ballast an object. Solid ballast, namely rocks, sand or metal were carried by ships for thousands of years (Raaymakers and Pughuic, 2000:2). More recently, water has been utilized as ballast as it is easier to load on and off the ship, making it more efficient and economical (Raaymakers and Pughuic, 2000:2). A ship empty of cargo fills with ballast water to maintain its stability, balance and structural integrity, whilst a ship loaded with cargo, discharges the ballast water into the marine environment to achieve the same functions (Raaymakers and Pughuic, 2000:2).

A comprehensive definition of ballast water has been provided by Oliveira (2008:2) and without which there would be no starting point in providing a solution to the resultant need for management of alien invasive species and biodiversity threats in the coastal zone. Oliviera (2008:2) defines ballast water as “*water (salty, brackish or fresh water) with its common suspended matter, necessary to manage the draft of ships, which helps their propulsion and manoeuvres; control their trim, list and stability and keeps the levels of stress on their structure within acceptable limits*”.

It is normal for ships to have various ballast tanks distributed across their hulls (Oliviera, 2008:2). After taking on ballast water, any suspended matter present in the water sinks to

the bottom of the ballast tank and forms a layer of sediment (organic and inorganic constituents) (Oliviera, 2008:2).

Global concerns about the threats arising from the introduction of ballast water into port environments were first raised with the International Maritime Organisation (“IMO”) in the early 1970’s (Gollasch *et al.*, 2006:586).

## 2.2. *Alien Species Management*

The IMO (2011) estimates that approximately three to ten billion tones of ballast water are transferred to or from ships each year, accounting for the transfer of ecologically harmful sea-life into non-native environments. Genovesi and Shine (2004:5) argue that successful invasive alien species proliferate to the point of “driving out” native species that occupy the same ecological niche. Invasive alien species (after habitat deterioration) are the second largest cause of species extinction in the world (Genovesi and Shine, 2004:5).

Endresen, Behrens, Brynstad, Ndersen, and Skjong (2004) claim that the rate of introductions of alien species into non-native environments has increased exponentially since the 1800’s and poses one of the greatest and most debilitating threats to the oceans of the world. The introduction of alien species has become a major threat to marine biodiversity and as such to environmental change (Bax, Williamson, Aguero, Gonzalez and Geeves, 2003:313).

Since this research does not intend to go into detail of the impact of alien species into non-native environments, it will be accepted that the transfer of ecologically harmful sea-life into non-native environments poses great threats to both biodiversity and ocean sustainability.

## 2.3. *The Convention*

The need for management of alien species and its impact on global biodiversity led to the development of a large number of instruments centred around, with specific reference to

the subject matter of this research, controlling the problems associated with the discharge of ballast water from ships. This started with the mandating of the IMO in 1992 to take action to address the transfer of harmful organisms by ships (Raaymakers and Pughuic, 2000:2). In South Africa, a ballast water management task force has been operational since 2000. Voluntary guidelines developed under the Convention are being followed to manage ballast water discharge (The Global Ballast Water Management Programme (Globallast) In Africa, 2011). Additional guideline documents have been developed over the years, with the most recent addition to the international guideline documents, protocols and conventions in 2004 being the International Convention for the Control and Management of Ships' Ballast Water and Sediments (“the Convention”).

According to Gollasch *et al.* (2007:585), the Convention, which is extremely complex, aims to achieve a reduction in the transfer and subsequent impact of aquatic organisms in the ballast water and sediment of ships. The mechanism utilized to achieve this is the reduction of the load of these organisms in the discharged ballast water (Gollasch *et al.*, 2007:585).

A critical review of the Convention was undertaken by Gollasch *et al.* (2007) and although there is some legitimacy to their claims, the actual effectiveness of the Convention is outside of the scope of this research. The Convention was ratified by South Africa on 5 March 2008 (Department of International Relations and Co-operation, 2011). For purposes of this research, and even though the Convention is not yet in force, it shall be accepted as the internationally relevant instrument applicable within the South African context.

The debilitating effect of alien invasive species in marine environments has necessitated the introduction of management mechanisms to control such alien species (Genovesi and Shine, 2004:5). Dovetailing into the requirements of the Convention, these management mechanisms tend to include attempts by governments to control alien species proliferation using management frameworks (Genovesi and Shine, 2004:5).

### 2.3.1. Key Aspects Under the Convention

The Convention aims to prevent the potentially devastating effects of the spread of harmful aquatic organisms carried by ships' ballast water between regions (International Maritime Organisation, 2011).

The main objective under the Convention is for all ships to implement a Ballast Water and Sediments Management Plan in terms of which ships will have to carry a Ballast Water Record Book and will have to carry out ballast water management procedures to a given standard (International Maritime Organisation, 2011).

Under Article 2 of the Convention (2004), parties ratifying the Convention are required to ensure that ballast water management practices do not cause greater harm than any preventative measures. This is in order to prevent, minimize and ultimately eliminate the transfer of harmful aquatic organisms and pathogens through the control and management of ships' ballast water and sediments. Specifically under Article 7 of the Convention (2004), ships are required to be surveyed and certified. Inspections are conducted by Port State control officers who verify the ships' certificate, inspect the Ballast Water Record Book and/or sample the ballast water (Article 9 of the Convention, 2004).

### 3. South African Context

South Africa has very little in the way of legislation that deals directly with the ballast water issue (Duncan, 2007:34). As identified by Kotze (2006:3), the framework of environmental legislation in South Africa is generally fragmented. In fact, despite very progressive environmental laws, the reality of fragmented environmental governance efforts cannot be ignored (Kotze, 2006:1). Kotze (2006:3) distinguishes two types of fragmentation, namely legislative and institutional fragmentation. Legislative fragmentation refers to a multitude of environmental statutes that are silo based and environmental-media specific (Kotze, 2006:1). Institutional fragmentation reveals itself as structural fragmentation between the various governmental spheres as well as the various line functionaries operating in each sphere (Kotze, 2006:1).

Specific legislation was identified based on applicability to the ballast water issue and a brief investigation was undertaken to determine the legislative framework applicable to the management of biodiversity, alien invasive species management and ballast water, which has, in turn identified the various institutional governmental departments having competency and responsibility for the management of these issues. Although the purpose of this research is not to conduct an investigation into national legislation applicable to controlling ballast water discharge, but rather to utilize the Convention as the legislative standard, it is necessary to investigate specific legislation in order to identify the various South African institutional governmental departments with mandates for managing issues related to ballast water. This specific legislation was singled out on the basis of its legal applicability to either singly or jointly, ballast water, alien invasive species management, biodiversity management and control of ships. Those pieces of legislation dealing with the mandates and responsibilities of the Department of Environmental Affairs and the Department of Transport, and the relationship between the two were also investigated.

As a starting point, Chapter 3 of the Constitution of the Republic of South Africa, 1996 (“the Constitution”) espouses the principles of co-operative governance (Bekink, 2001a:139). Co-operative governance envisages intergovernmental co-operation and co-ordination between all governmental levels as opposed to competition between them and manages the relationship between different spheres of government (Bekink, 2001a:139). More specifically, the different spheres of government, whether they are national, provincial or local, are required to co-operate in harmonizing the government (Bekink, 2001a:139).

The Constitution is very specific in the requirement for co-operative governance, requiring in section 41(1)(h) that:

*“All spheres of government and all organs of state within each sphere must:*

*Co-operate with one another in mutual trust and good faith by:*

- i. Fostering friendly relations;*

- ii. *Assisting and supporting one another;*
- iii. *Informing one another of, and consulting one another on, matters of common interest;*
- iv. *Coordinating their actions and legislation with one another;*
- v. *Adhering to agreed procedures; and*
- vi. *Avoiding legal proceedings against one another.”*

South African Constitutional law protects the distribution of government authority between the provinces and the national government (Bekink, 2001b:52). In this regard, neither the national government nor the provincial government may limit the powers of the other or assume powers not granted to it (Bekink, 2001b:52). Schedule 4 of the Constitution thus lists the functional areas over which both national government and provincial government have concurrent legislative authority (Bekink, 2001b:52) (the list of Schedule 4 Functional Areas is contained in Annexure 1).

Under Schedule 4, “the environment” is clearly listed as a functional area overlapping between the national and provincial spheres of government (the Constitution, 1996). This means that all functional areas falling within the ambit of “the environment” require co-operative governance between national and provincial spheres of government (leading to vertical fragmentation) (Kotze, 2006:44) and co-operative governance between different national spheres of government (leading to horizontal fragmentation) (Kotze, 2006:45). “The environment” is all encompassing and is defined in the National Environmental Management Act, 1998 (“NEMA”) as:

*“the surroundings within which humans exist and that are made up of—*

*(i) the land, water and atmosphere of the earth:*

*(ii) micro-organisms, plant and animal life:*

*(iii) any part or combination of (i) and (ii) and the interrelationships among and between them: and*

*(iv) the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being”.*

Although the marine environment forms an integral part of “the environment” as defined (Kotze, 2006:44), it is not specifically listed as an area of concurrent legislative authority between national government and provincial government in Schedule 4 of the Constitution, which may lead to confusion as to which sphere of government or line functionary is responsible for which functional area (Kotze, 2006:17).

Bekink (2001a:141) observes that although the idea of close co-operative governance exists within the Constitution, there is no clear separation of powers and functions between the spheres of government and their powers. Paterson (2006:5) correctly argues however, that co-operative environmental governance is critical on account of the many relevant pieces of legislation which are administered by many different authorities.

The Intergovernmental Relations Framework Act, 2005 supports the co-operative governance requirement of the Constitution in prescribing a framework for the national, provincial and local governments to promote and facilitate intergovernmental relations. It also provides mechanisms and procedures to facilitate the settlement of intergovernmental disputes (Intergovernmental Relations Framework Act, 2005:2).

### *3.1. Legislation*

Specific pieces of legislation relating to ballast water have been investigated in order to assess the mandates applicable to the different competent authorities under such legislation. Due to the lack of legislation dealing specifically with ballast water in South Africa (Duncan, 2007:34), various pieces of legislation from different perspectives, not only environmental, have relevance. Although other legislation not dealt with below impacts on the management of ballast water, legislation has been limited to that which deals with coastal management, alien invasive species, biodiversity, port control and shipping management. This avoids a legislative review and rather allows for the building of an adequate and appropriate management framework. In discussing applicable legislation, both the enabling Act and its supporting regulations are referred to in the sections below.

Two broad categories of legislation relate to the categories identified above, namely environmental legislation and maritime legislation and are discussed in more detail below.

### *3.1.1. Environmental Legislation*

Coastal management, alien invasive species control and biodiversity (within the sphere of ballast water) fall under specific environmental legislation. Although the scope of environmental legislation is extremely wide (Glazewski, 2000:11), very specific legislation has been investigated and is discussed below.

The overarching piece of environmental legislation is NEMA, quite simply because it encompasses the main fields of environmental concern, namely resource conservation and exploitation; pollution control and waste management; and land use planning and development (Glazewski, 2000:166). NEMA is considered as South Africa's umbrella environmental framework legislation (Kotze, 2006:22 and Paterson, 2006:4), particularly since its function is to define overarching principles, procedures and institutions for effective environmental governance (Kotze, 2006:22). NEMA gives effect to the principles of co-operative governance arising from the Constitution (Paterson, 2006:4), and further, co-ordinates the functions of the different authorities whose activities impact on the environment (Paterson, 2006:5). In fostering co-operative governance, NEMA establishes institutions for horizontal and vertical co-ordination between governmental departments (Paterson, 2006:5; NEMA, 1998:14) as well as requiring government departments to prepare environmental implementation plans (Paterson, 2006:6; NEMA, 1998:21). The intention therewith is to minimize duplication and consistency by co-ordinating and harmonizing the environmental policies, functions and activities of departments (Paterson, 2006:6) who exercise functions which may affect the environment (NEMA, 1998:20).

NEMA is underpinned by the principles of sustainable development in requiring that development must be socially, environmentally and economically sustainable

(Glazewski, 2000:168; NEMA, 1998:12). NEMA also incorporates eight sub-principles of sustainable development which include, *inter alia*:

- The preventative principle which requires that where possible there should be an avoidance of environmental disturbance, and where it cannot be avoided, it should be minimized and remedied (NEMA, 1998:12);
- The precautionary principle which requires that a risk averse and cautious approach is applied in evaluating environmental issues (NEMA, 1998:12); and
- The polluter pays principle which requires that those responsible for harming the environment bear the costs of remedying such harm (NEMA, 1998:12);

NEMA requires that two institutions be established, namely the National Environmental Advisory Forum (“the Forum”) and the Committee for Environmental Co-ordination (“the CEC”) (NEMA, 1998:14-20). The Forum consists of stakeholders and other experienced persons who inform the Minister of Environmental Affairs on the application of the principles contained in NEMA (Glazewski, 2000:170). The CEC consists of all ministries having involvement in environmental matters (including the Departments of Environmental Affairs, Water Affairs, Mineral Resources and Land Affairs) and has the mandate of promoting integration and co-ordination of environmental functions (Glazewski, 2000:170).

NEMA makes provision for the involvement of the provincial and local authorities by way of delegation of environmental powers and making of bylaws by the Minister of Environmental Affairs.

The Department responsible for the administration of NEMA is the Department of Environmental Affairs and Tourism (“DEAT”) (NEMA, 1998:8) whose name has, since the promulgation of NEMA, been changed to the Department of Environmental Affairs (“DEA”) (Presidential Minute, 2009).

Falling under the range of specific environmental management acts created by NEMA is the National Environmental Management: Biodiversity Act, 2004 (“NEMBA”), which contains provisions of general and specific relevance to the control of alien and invasive species (Paterson, 2006:12). Chapter 5 of NEMBA contains provisions relating to species and organisms posing potential threats to biodiversity (Paterson, 2006:13; NEMBA, 2004:56). It is important to realize that NEMBA creates different control mechanisms for alien species and invasive species (Paterson, 2006:13).

NEMBA requires the establishment of the South African National Biodiversity Institute (“SANBI”) which consists of persons qualified in the field of biodiversity and has the function of, *inter alia*, monitoring and reporting on the status of listed alien invasive species as well as co-ordinating and implementing programmes for prevention, control and eradication of listed invasive species (NEMBA, 2004:26).

In terms of mandates, roles and responsibilities attributable to provincial and local authorities, NEMBA contains specific requirements for these government departments to prepare biodiversity planning documentation such as bioregional plans, biodiversity management plans and biodiversity management agreements (NEMBA, 2004:44). NEMBA further requires alignment and co-ordination between the three levels of government in ensuring the continued management of biodiversity (NEMBA, 2004:46).

The Department responsible for the administration of NEMBA is the Department of Environmental Affairs and Tourism (“DEAT”) (NEMBA, 2004:14) whose name has, since the promulgation of NEMBA, been changed to the Department of Environmental Affairs (“DEA”) (Presidential Minute, 2009).

Another act falling under the range of specific environmental management acts created by NEMA is the National Environmental Management: Integrated Coastal Management Act, 2008 (“ICM Act”) which contains provisions requiring integrated coastal management of South African coastal waters as well as the control of dumping of waste and other materials at sea (ICM Act, 2009:4). Section 70 of the ICM Act prohibits the

importing of any waste or other material into South Africa which is dumped at sea within our coastal waters (ICM Act, 2009:90) or the dumping of any waste or material from a South African vessel into an area of the sea under the jurisdiction of another state (ICM Act, 2009:90).

Although the Department responsible for the administration of ICM Act is the National Department responsible for Environmental Affairs (ICM Act, 2009:18) whose name has been nominated as the Department of Environmental Affairs (“DEA”) (Presidential Minute, 2009), the ICM Act makes provision for the establishment of a National Coastal Committee (ICM Act, 2009:50). The National Coastal Committee is tasked with promoting integrated coastal management and effective co-operative governance by co-ordinating the effective implementation of the ICM Act (ICM Act, 2009:52). In attempting to achieve this, the National Coastal Committee consists of representatives of national government departments which play a significant role in undertaking or regulating activities that may have an adverse effect on the coastal environment, and includes (specifically relating to coastal waters) the Department of Transport, the Department of Water Affairs and the Department of Trade and Industry (ICM Act, 2009:52).

The ICM Act requires that both provincial and local authorities prepare coastal management programmes (in consultation with the national authority) which will describe how the coastal zone within that particular provincial or local authority will be managed (ICM Act, 2009:66). The ICM Act furthermore requires alignment and consistency between these coastal management programmes and other statutory provincial and municipal plans (such as provincial or municipal land development plans) (ICM Act, 2009:66).

### 3.2. Maritime Legislation

Although there exists an array of maritime legislation both from an environmental pollution perspective as well as from a shipping transport perspective, only two pieces of legislation have been investigated for purposes of this research. The legislation pertaining

to control of ports and safety of ships in South African ports is of relevance. Legislation pertaining to pollution from ships (which relates largely to oil spills) has not been investigated particularly since the Convention, for purposes of this research, is deemed to cover the aspects relating to pollution from ships in the context of ballast water.

The Merchant Shipping Act, 1951 (“the Merchant Shipping Act”) was implemented to control merchant shipping and matters incidental thereto (Merchant Shipping Act, 1951:2). Although the South African Maritime Safety Authority (“SAMSA”) is responsible for the administration of the act and has control on all matters relating thereto (Merchant Shipping Act, 1951:27), the Department of Transport is the controlling government department responsible for assigning all duties for the effective administration of the Act to SAMSA (Merchant Shipping Act, 1951:27). The primary functions of the Merchant Shipping Act is to regulate the seaworthiness of ships leaving South African ports and to provide SAMSA with the statutory powers needed to ensure compliance of ships with international and national safety at sea requirements (Merchant Shipping Act, 1951:104). Various regulations have been promulgated under the Merchant Shipping Act (Merchant Shipping Act, 1951:144) which give effect to and enable the regulation of seaworthiness and safety of ships in South African ports.

Within the context of safety of ships at sea (and the control of discharge from ships), the definition of Port State Control then has relevance. Port State Control is the term referred to for the enforcement of safety of maritime ships (Hare, 1999:342). It comprises the powers vested in and exercised by a national maritime authority, in this case SAMSA, in terms of enabling national legislation, the Merchant Shipping Act (Hare, 1999:342). Furthermore, Port State Control measures are applicable to ships visiting ports to ensure their compliance with both international conventions and local requirements (International Maritime Organisation, 2009:16)

In order to determine ownership and control of South African ports, the National Ports Act, 2005 (“National Ports Act”) has relevance. The National Ports Act has the object of promoting and improving the efficiency and performance in the management and

operation of ports (National Ports Act, 2005:10). All ports fall under the jurisdiction of the National Ports Authority, which is a subsidiary of the company Transnet (National Ports Act, 2005:16). It is commonly referred to as the Transnet National Ports Authority (National Ports Act, 2005:8), but to remain consistent with the National Ports Act, it shall be referred to as the National Ports Authority for purposes of this research. The National Ports Authority is required to report to the Minister of Transport on an annual basis (National Ports Act, 2005:18). The National Ports Authority is mandated to own, manage, control and administer all declared ports in South Africa (National Ports Act, 2005:16) consequently is required to maintain the sustainability of all ports and surrounds (National Ports Act, 2005:16) as well as control pollution and the protection of the environment within the port limits (National Ports Act, 2005:18).

The National Ports Act attempts to give effect to the co-operative governance principles contained in the Constitution by providing that all organs of state must co-operate together to ensure the effective management and oversight of ports (National Ports Act, 2005:20).

From a legislative perspective and in light of the environmental and maritime legislation discussed above, it is firstly clear that there is no comprehensive piece of legislation that deals exclusively with ballast water management and the control of alien invasive species or biodiversity arising out of the exchange of ballast water from ships. In line with the findings of Kotze (2006:3), Paterson (2006:39) and Kotze and de la Harpe (2008:3), the environmental legislative framework in South Africa is fragmented. This is reiterated by Glazewski (2000:632) who (in a pollution context) observes that:

*”Pollution control laws have traditionally been applied by different national, provincial and local levels of government, corroborating the general criticism that the administration of environmental laws is diffuse and uncoordinated. This situation has been exacerbated rather than simplified by the new Constitution, as seen in chapter 4, which creates concurrent national, provincial and, in some*

*instances, local government legislative competence in the sphere of pollution control”.*

The roles and responsibilities of competent authorities (to manage ballast water) as mandated in the legislation as discussed above is summarized in Table 1 below:

**Table 1: Legislative Authority Summary (Paterson, 2006)**

Legislation	Mandate of Responsibility	Relevant Authority*	Competent
NEMA	NEMA Principles	All organs of state	
	Environmental Management Plans	DEA	
NEMBA	National Biodiversity Framework	DEA	
	Invasive species control and eradication strategies	Management Authority, organs of state and municipalities	
	Bioregional Plans and Biodiversity Management Agreements	DEA or Provincial Authority	
ICM Act	Administration of Act	DEA	
	Integrated Coastal Management	National Coastal Committee (consisting of the Department of Transport, the Department of Water Affairs and the Department of Trade and Industry)	
	Coastal Management Programmes	Provincial and Local Authority	
Merchant Shipping Act	Administration	South African Maritime Safety Authority	
	Responsible Department	The Department of Transport	
National	Administration	National Ports Authority	

Legislation	Mandate of Responsibility	Relevant Authority*	Competent
Ports Act		(Transnet subsidiary)	
	Responsible Department	Department of Transport	
	Co-operative Governance	All organs of state	

\*Note: The term Competent Authority, which will include “Governmental Departments” has been used to replace “Governmental Department” as it can be seen from the table above that not all areas of functionality are mandated to “Government Departments”.

The above summary and table indicates a definite fragmentation of roles and responsibilities both from a legislative and institutional perspective (Kotze, 2006:3) on ballast water management. Such legislative and institutional fragmentation leads to impediments in achieving (Ekstrom, Young, Gaines, Gordon and McCay, 2009:533) and ineptitude in regulating (Paterson, 2006:3) environmental management in the context of this research.

According to Kotze and de la Harpe (2008:6), proper governance cannot proceed without a sound integrated legal framework that dovetails into good governance. Although the legislative framework is fragmented, this research does not highlight legislative inadequacies but rather identifies the roles and mandates of different competent authorities responsible for managing ballast. For purposes of this research, the Convention is the sound integrated legal platform used to develop solutions for the fragmented institutional framework.

The mandates, roles and responsibilities of the various competent authorities identified in Table 1 above, fall within a “hit and miss” scenario when specific actions relating to ballast water arise. For example, there is no clear mandate for any of the aforementioned competent authorities to act pre-emptively to monitor ballast water release and/or uptake. Activities relating to ballast water management fall into various categories of roles and responsibilities of competent authorities because there is a lack of specific legislation to manage ballast water.

It therefore follows, due to fragmented legislation dealing with ballast water as well as alien invasive species being controlled at different political, administrative and enforcement levels, that there are both gaps and duplications in efforts to manage ballast water. Areas of duplication arise where for example different competent authorities are all required to develop management plans addressing the same issues.

There are fragmentation and gaps within specific legislation (Paterson 2006). For example in NEMBA, there is no interim list of invasive species pending the publication of the final national and provincial lists of invasive species (Paterson, 2006:15). Further to this, there is fragmentation and gaps between distinct pieces of legislation. NEMBA is administered by DEA who mandates SANBI to monitor and report on the status of listed alien invasive species (NEMBA, 2004:26). Furthermore, SANBI is required to coordinate and implement programmes to prevent, control and eradicate alien invasive species (NEMBA 2004:26) by way of biodiversity management plans (NEMBA 2004:44). The Merchant Shipping Act, on the other hand, is administered by SAMSA under the guidance of the DOT to give effect to the seaworthiness and safety of ships (Merchant Shipping Act, 1951:27). In the ballast water context SANBI will develop programmes to control or eradicate alien invasive species under their mandating legislation. SANBI is not specifically obliged to consult with SAMSA (or any other ship safety body) on the development of such programmes (NEMBA 2004) other than to cooperate where required, even though SAMSA has knowledge on the subject matter particularly in light of their enforcement of the International Convention for Prevention of Marine Pollution from Ships (“MARPOL”) (International Maritime Organisation, 2011). The administration of these two pieces of legislation does not allow for integration between SANBI and SAMSA on aspects relating to ballast water and management of alien invasive species.

This research aims to develop a workable management framework to guide all South African government departments and organs of state that have an overlap in competence

and responsibility how to manage ballast water discharge from ships and implement the Convention.

The management framework comprises the basis for effective good governance (Kotze and de la Harpe, 2008:6). The management framework thus sets the stage for proper implementation of legislative requirements and mandates of all role players in the management of ballast water.

#### 4. Literature Review

A detailed literature review relating to ballast water management issues, which reviewed issues of management of biodiversity, alien invasive species management, coastal management and port control, was conducted.

Of key importance within this research was the issue of co-operative governance, which refers to the relationship between different spheres of government (Bekink, 2001a:139). Co-operative governance has been broadly defined as the integration of the different spheres of government and line functionaries at international, intra-regional and intra-governmental levels (Kotze and de la Harpe, 2008:31). Accordingly, government departments need to review and align their policy agendas to determine gaps and duplicity (Kotze and de la Harpe, 2008:40).

The idea of co-operative management (Kotze and de la Harpe, 2008; Kotze, 2006; Kotze and du Plessis, 2006; Bax *et al.*, 2003; Österblom, Gårdmark, Bergström, Müller-Karulis, Folke, Lindgren, Casini, Olsson, Diekmann, Blenckner, Humborg and Möllmann, 2010; Ekstrom *et al.*, 2009; Kusuma-Atmadja and Purwaka, 1996) form a strong basis for the development of a management framework for ballast water management.

#### 5. Methodology

The research methodology utilised in conducting this research did not follow a typical research design. A qualitative research design, founded in postpositivism (Kruger,

2000:6) was utilised. This allowed for a deeper understanding of the subject matter whilst still allowing flexibility to explore concepts (Babbie, 2008:343).

Purposive sampling of documentation was utilised to narrow down on the issues of co-operative management and ballast water management. Ethical concerns relating to bias, particularly on the part of the researcher (Babbie 2008:439) were addressed by the researcher relying on her legal ethics training to ensure commitment to the respect for truth, resulting in constant self-evaluation to ensure objective and valid findings (Bassey, 1999).

#### 6. Institutional Fragmentation: Comparative International Problems

This research has established that there is institutional fragmentation in South Africa in managing ballast water. There is no single department tasked with managing ballast water and as Table 1 indicates there are numerous competent authorities involved in ballast water management due to legislative fragmentation.

When considering fragmentation in general on an international level, Johnston and VanderZwaag (2000:156) are of the opinion that fragmentation in addressing environmental crises are prevalent at an international level, because of separate treaty regimes for *inter alia*, maritime transport. Ekstrom *et al.* (2009:532) hold that it is well established that a major contributor to deteriorating ocean health is the fragmented approach of sector-based marine management. Without co-ordination or consistency, functional and jurisdictional overlaps create obstacles to effective and efficient regulation of the marine environment (Ekstrom *et al.*, 2009:532).

In New Zealand, the previous environmental management framework in place was plagued by weak inter-governmental co-operation and co-ordination (Furuseth and Cocklin, 1995:248). Flaws that were identified in the administrative framework included overlapping institutional responsibilities, conflicting mandates of government agencies and poor co-ordination amongst such agencies (Furuseth and Cocklin, 1995:248). The administrative reform that took place in New Zealand set to facilitate consistency in the

approaches to management across different settings and environmental conditions (Furuseth and Cocklin, 1995:254). Although the new policy initiative remains unsettled in many respects, (Furuseth and Cocklin, 1995:264), significant progress has been made in New Zealand towards sustainable management (Furuseth and Cocklin, 1995:270).

In Australia, Barrett (2003:1) argues that when one or more portfolio is responsible for delivering Government's portfolio objectives, the concept of reporting through a lead agency (and co-operating) is an area for potential improvement. In the South Pacific, Australia has been instrumental in moving regional co-operation to an advanced stage (Bergin and Michaelis, 1996:58).

In Indonesia, it is rare for conflict to arise as a result of a sector or authority insisting on its own competence or jurisdiction (Kusuma-Atmadja and Purwaka, 1996:75). However, one of the most important achievements in Indonesia towards effective coastal zone management will be integrated management as an interactive process leading to improvements in co-operation amongst agencies (Kusuma-Atmadja and Purwaka, 1996:86). Co-operation between agencies will then allow for greater co-ordination and integration (Kusuma-Atmadja and Purwaka, 1996:86).

In Canada, the need to adopt a co-operative approach to management, co-ordination of policies and programs across all levels and departments of government has been highlighted in order to recognize the inter-relatedness of coastal activities (Ricketts and Harrison, 2007:7).

In the European Union, fragmented agency and legal structures led to conflicting decisions and plans by various arms of a state, which resulted in the recent emergence of integrated national ocean policies (Koivurova, 2009:173).

Within South Africa, functional and jurisdictional overlaps in environmental management are prevalent (Kotze and de la Harpe, 2008:7) and it is argued that this extends to the management of ballast water. Different governmental institutions have overlapping

responsibility for specific regions. For instance, the coastal zone is managed by the DEA but requires the input of the DOT and DWA in fulfilling the requirement of integrated coastal management (ICM Act, 2009:50). Port State Control is exercised by SAMSA under the guidance of the DOT (Merchant Shipping Act, 1951:104). SANBI are responsible for the control of alien invasive species (NEMBA 2004:26) throughout South Africa (including coastal areas). It can be clearly seen that the DEA, DOT, DWA, SAMSA and SANBI would all have functional and jurisdictional (by way of the prevailing legislation) control over ballast water in the coastal zone. The difficulty arises as how to manage the overlap in responsibility for these specific competent authorities.

#### 7. Towards the Development of a Management Framework

Fragmentation on an institutional and administrative level has led to the need for the adoption of a co-operative approach to the management of oceans across the globe (Ekstrom *et al.*, 2009; Johnston *et al.*, 2000; Koivurova, 2009). Although a vast number of international treaties relating to ocean management have been drafted (and implemented) over the last twenty years, few take into consideration aspects relating to local level based co-operative frameworks (Khalimonov, 1999:370).

The concept of good governance is often used in conjunction with sustainable development and has gained credence in the financing markets (Kotze and de la Harpe, 2008:2). Barrett (2003:2) concisely describes corporate governance as the strategic responsiveness to risk. Kotze and de la Harpe (2008:31) define co-operative governance as:

*“The integration of the different spheres of government and line functionaries at international, intra-regional and intra-governmental level; co-operation between individual government officials in each sphere/line functionary; co-operation between government officials in different spheres/line functionaries; integration of policy, regulation methods and tools, service provision and scrutiny; and co-operation with industry and the public in order to achieve the principles of sustainability.”*

The idea of co-operative governance or more particularly, a co-operative approach to management has been identified by Ricketts and Harrison (2007:7) as a mechanism for effective coastal and ocean management in Canada. Barrett (2003:1) moves the idea of co-operative governance more into the public domain with the concept of “joined-up government”. This recognizes a need to integrate government services with primary focus on the needs of the citizen (from an environmental perspective) (Barrett, 2003:1).

Sen and Nielsen (1996:406) define co-management (in the context of fisheries management) as “*an arrangement where responsibility for resource management is shared between the government and user groups*”. Even though this research aims to identify a management framework for government, the involvement of the public sector and user groups should not be ignored (and is discussed in more detail below).

In developing a management framework, the platform of co-operation (a broader collective term for good governance, corporate governance, co-operative governance, joined-up governance and co-management) is the starting point to ensure cohesion and a good working relationship between different competent authorities.

### 7.1. Aspects for Inclusion in a Management Framework

In developing a management framework, this research highlights some common elements that have, from the literature reviewed, in both a South African and international context, been utilized in other successful management frameworks. Their applicability in the South African context, particularly related to the development of a management framework for the implementation of the Convention, are critically analyzed and discussed in more detail under each of the headings below.

#### 7.1.1. Co-ordination

It is commonly agreed in the literature that the starting point in developing a management framework for implementation between differing competent authorities should be a commitment to co-ordination (Kotze, 2006; Kotze and de la Harpe, 2008; Kotze and du

Plessis, 2006; Paterson, 2006; Bax *et al.*, 2003; Purwaka, 1998; Genovesi and Shine, 2004; Kusuma-Atmadja and Purwaka, 1996; Österblom *et al.*, 2010).

According to Österblom *et al.* (2010:1290), an adaptive governance strategy is required to manage complex ecosystems. Governance, in this context, requires a certain level of co-ordination and co-management (Österblom *et al.*, 2010:1290). In order to achieve this, the starting point in implementing and integrating their workable ecosystem based approach model is effective communication and communication strategies (Österblom *et al.*, 2010:1294).

According to Paterson (2006:47), clear mechanisms to facilitate co-ordination are required in order to align agenda's between different mandated competent authorities. In South Africa, mandatory cross-departmental and cross-institutional consultation plays an important role in achieving the constitutional imperative to achieving co-operative governance (Paterson, 2006:47). Consultation between government departments, by way of direct contact (Kotze, 2006:27), is a clear mechanism to enhance co-operative governance (Kotze, 2006: 28). In a biodiversity context, co-operative governance is a mechanism to achieve inter-governmental co-operation, co-ordination and alignment with the end goal of sustainable results having been achieved (Kotze and Du Plessis, 2006:42).

In Indonesia, parties' willingness to co-operate in problem solving has assisted in managing marine environmental issues holistically (Kusuma-Atmadja and Purwaka, 1996:75). Co-operation between regional trading partners has been identified by Bax *et al.* (2003:313) as an essential mechanism to effectively manage the threat of invasive alien marine species. Purwaka (1998:459) recommends that there should be co-operation in exercising rights and duties in respect of the protection and preservation of the marine environment of the Straits of Malacca and Singapore.

In managing invasive alien species in Europe, it is crucial for the initiation of a co-ordinated process to manage strategies and approaches to invasive alien species issues (Genovesi and Shine, 2004:19).

There is consensus in the literature reviewed that effective strategies to control ballast water, biodiversity and alien invasive species centre around co-ordination and co-operation. The legislation in place for the management of ballast water (and by implication alien species, coastal management and biodiversity) has comprehensively provided for co-operation by enforcing co-operation between competent authorities. To this end, the NEMA principles (which guide the implementation of legislation pertaining to protection or management of the environment) (NEMA, 1998:10) requires in section 2(4)(l) that there should be inter-governmental co-ordination and harmonization of policies, legislation and actions relating to the environment (NEMA, 1998:12).

To achieve such co-operative governance, NEMA, in chapter three, sets out specific legislative procedures which involve the preparation of environmental implementation plans and management plans by every governmental department and province that exercises functions which may affect the environment (NEMA, 1998:22). These governmental departments include the Department of Transport and the DEA (NEMA, 1998:66). The environmental implementation plan and management plan is developed to minimize duplication of procedures and functions and to give effect to the principle of co-operative governance (NEMA, 1998:22).

Practically, however, the development of environmental implementation plans and environmental management plans is not a co-ordinated effort between the DEA and the other relevant departments, as NEMA envisages. It tends to be more of a procedural milestone requiring achievement (Kotze, 2006:15), particularly in light of capacity constraints in South African government departments (Kotze and de la Harpe, 2008:32; Paterson, 2006:40).

The establishment of the CEC, which has the object of promoting integration and co-ordination of environmental functions by relevant competent authorities (NEMA, 1998:18) is another area in which NEMA attempts, through legislative control, to ensure co-operation between different competent authorities. The composition of the CEC

however does not include the Department of Transport (or SAMSA) and as such, cannot then ensure co-ordination of environmental functions in ballast water management.

As specific environmental management acts established under NEMA, both NEMBA and the ICM Act, will fall under the requirements of NEMA over and above any specific requirements they may have in terms of co-operative governance. In terms of NEMBA, there is a legislative requirement for co-ordination and alignment of biodiversity plans (which **may** be submitted by persons, organizations or organs of state desiring to contribute to biodiversity management) with other plans that national or provincial legislation requires preparation of (NEMBA, 2004:46).

Under the ICM Act, coastal management programmes (whether provincial or national) should be aligned with environmental implementation plans prepared under NEMA (ICM Act, 2009:66). The ICM Act requires co-ordination of actions between provincial and municipal authorities (ICM Act, 2009:114).

Although NEMA (as well as NEMBA and the ICM Act as specific environmental management acts established under NEMA) adequately provides for co-operation and co-ordination between competent authorities, it falls short in the practical implementation and achievement thereof, specifically in ballast water management. The fact that the DEA (as the legislated centralized lead agency on environmental matters) acts rather as a co-ordinator by providing framework guidance as opposed to being a practical enforcer (Kotze, 2006:16) leads to the ineffectiveness of the co-operation and co-ordination attempts of NEMA. NEMBA, in having an elective requirement to prepare biodiversity plans, fails to add more stringent co-operation and co-ordination requirements above those required by NEMA. Although the ICM Act brings the legislative requirement for co-operation and co-ordination down to the provincial and local levels, it encounters the same practical capacity enforcement constraints as NEMA.

The Maritime Shipping Act is silent on the issue of co-operation. The National Ports Act, however, requires the co-operation of all organs of state in effective port management, port oversight and function co-ordination (National Ports Act, 2005:20).

There is no need for further legislation to enforce co-operative governance between competent authorities, although the Department of Transport (or SAMSA) will have to be included in the composition of the CEC. More importantly in achieving co-operation arising out of NEMA, the DEA will be required to move into a role as enforcer, by becoming a centralized lead agency, with sufficient capacity to enforce the co-operative governance provisions of NEMA. In terms of the National Ports Act, the National Ports Authority will require greater capacity in achieving co-operation in managing South Africa's ports. Amendments, however, will be required to be made to the Merchant Shipping Act to make provision for co-operation between competent authorities.

#### *7.1.2. Knowledge Sharing and Training*

In order to achieve co-ordination and co-operation as a first step in developing an effective management framework for managing ballast water (and by implication alien species, coastal management and biodiversity), Österblom *et al.* (2010:1297) argue that making common databases available and allowing for information sharing is the first step in effective communication and co-ordination strategies. Effective training across mandated competent authorities is highly recommended by Kotze and de la Harpe (2008:34) as a mechanism to bridge the knowledge gap that exists between the different competent authorities. This is irrespective of the nature of the mandate falling within an environmental context or not.

NEMA, through the NEMA principles (which guide the implementation of legislation pertaining to protection or management of the environment) (NEMA, 1998:10) attempts, to some extent, in section 2(4)(f) and (h) to make provision for knowledge sharing and training by requiring that all people must have the opportunity to develop the understanding, skills and capacity to participate in environmental governance and ensuring that community well-being and empowerment is promoted through

environmental education, knowledge sharing and raising of environmental awareness (NEMA, 1998:12).

The SANBI, established under NEMBA, is required, as one of its legislated functions, to collect, generate, process, co-ordinate and disseminate information about biodiversity (NEMBA, 2004:26). The ICM Act only requires the provincial lead agency for coastal management to promote training, education and public awareness programmes relating to the protection, conservation and enhancement of the coastal environment and sustainable use of coastal resources (ICM Act, 2009:54).

Under the National Ports Act, the National Ports Authority has the option (but is not mandated) to collaborate with educational institutions for the promotion of technical education regarding port services and facilities (National Ports Act, 2005:18).

Although the legislation does to some extent address knowledge sharing and training, the extent to which it requires competent authorities to do so is non-obligatory and considered “soft”. More specifically, there is no requirement under NEMA for competent authorities to undergo any training (whether relating to environmental issues or otherwise), and all training relates more to training and involvement of communities and interested and affected parties. The National Ports Act is not definitive in its requirement for training, and more particularly, does not give a clear indication of the specific audience to which technical education should be provided.

Due to the fragmentation of the legislative regime pertaining to ballast water (and by implication, alien species, coastal management and biodiversity) one would expect gaps of knowledge to exist between different competent authorities. For example, it would be contrite to expect a port official (without any training on environmental principles) who is responsible for the enforcement of safety on ships to have any knowledge of environmental principles and their correct implementation.

The requirement for training and knowledge sharing becomes important in achieving co-operation between competent authorities, and as such can either form an aspect for inclusion in a management framework, especially if the legislation is silent. Bringing amendments to specific legislation which will allow for training and knowledge sharing is not recommended. Although such amendments may be specific and effective for the competent authority to which that legislation pertains, it will not allow for effective knowledge sharing between and across different competent authorities.

### 7.1.3. Sustainability

Sustainability and the concept of sustainable development is encouraged by Furuseth and Cocklin (1995) and Johnston and VanderZwaag (2000) as a key aspect to the effective development of a management framework.

Both Furuseth and Cocklin (1995:243) and Johnston and VanderZwaag's (2000) use of sustainability is based on the definition of sustainable development as addressed in the United Nations Conference on Environment and Development ("the Earth Summit") in 1992. Sustainable development in this context relates to the three tiers of development, namely environmental, economic and social development, based on founding principles such as:

- The preservation of natural systems for the benefit of future generations (intergenerational equity);
- The exploitation of natural resources in a "sustainable" manner (sustainable use);
- The equitable use of natural resources (equitable use); and
- The incorporation of environmental considerations into economic and other development plans (integration) (Glazewski, 2000:15)

Since the United Nations Conference on Environment and Development ("the Earth Summit") in 1992, sustainability and sustainable development have become common focal points in achieving a balance between human needs and conserved environmental systems (Furuseth and Cocklin, 1995:243). Although sustainable development dominates as a concept for new strategies, implementation of the concept is rare (Furuseth and

Cocklin, 1995:245). According to Furuseth and Cocklin (1995:254) this is, because the definition for sustainability or sustainable development is interpretative and inconsistent across sectors, in addition to a lack of political commitment for implementation and change (Furuseth and Cocklin, 1995:245).

Kotze (2006:2) argues that fragmentation may inhibit and negate any efforts towards sustainable environmental governance (in a South African context), particularly since it may lead to unsustainable service delivery by competent authorities.

The problems associated with the implementation of sustainability and sustainable development have largely been overcome in New Zealand (Furuseth and Cocklin, 1995:243). A reform in environmental policy arising out of a need for a more streamlined government system in order to overcome overlapping institutional responsibilities, conflicting mandates and poor co-ordination of governmental agencies, was implemented (Furuseth and Cocklin, 1995:248 and 252). Sustainable management had to become the platform off which this reform was driven (Furuseth and Cocklin, 1995:252). Widespread and fundamental changes in the administrative and statutory frameworks around environmental quality and natural resource management were achieved through the implementation of a sustainable management program (Furuseth and Cocklin, 1995:270).

Johnston and VanderZwaag (2000:153) break the concept of sustainability into its founding principles. They also focus on the precautionary principle (in accordance with the sub-principles of sustainable development as described in NEMA). The precautionary principle, as a cornerstone of sustainable development, requires *“that a risk-averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions”* (NEMA, 1998:12). According to Barston (1994:100), in the context of coastal zone management, the precautionary principle encompasses the *“taking of action to avoid activities that are assumed to have significant damaging impact on the environment, even where there is not sufficient scientific evidence to prove a causal link between activities and their impact”*.

Changes in global ocean management regimes in relation to ocean dumping have resulted in the adoption of the precautionary principle approach in that only wastes that are on an approved list will be approved for ocean dumping (Johnston and VanderZwaag, 2000:154). Kotze and de la Harpe (2008:29) argue that the achievement of sustainable development is a by-product of the implementation of good governance in South Africa.

NEMA defines sustainable development as *”the integration of social, economic and environmental factors into planning, implementation and decision making so as to ensure that development serves present and future generations”* (NEMA, 1998:10). It goes further to ensure that the underpinning principles incorporate sustainable development in that development is socially, economically and environmentally sustainable (NEMA, 1998:12).

Since NEMBA and the ICM Act are specific environmental management acts established under NEMA, they both require adherence to the principles of NEMA (as framework legislation) (NEMBA, 2004:22; ICM Act, 2009:24). More specifically, NEMBA tasks SANBI with ensuring sustainable use of indigenous biological resources (NEMBA, 2004:26).

Not unexpectedly, the Merchant Shipping Act and its regulations are silent on the issue of sustainable development. This is mainly because the Merchant Shipping Act was promulgated in 1951, long before the concept of sustainable development took root. The National Ports Act however requires that the National Ports Authority maintains the sustainability of the ports and their surroundings (National Ports Act, 2005:16).

The legislative framework makes adequate provision for incorporation of sustainable development as a guiding principle and, in the case of NEMA, serves as the platform for this umbrella legislation. Consequently on this basis, in the ambit of a management framework, sustainable development therefore serves as a good platform off which the management framework should operate as opposed to a single element that should be incorporated and specifically addressed by competent authorities.

#### 7.1.4. Human Resources and Management

Barston (1994:110) touches on the importance of adequate human resources and knowledge dissemination within the various commissions responsible for the control international conventions and other legislation. Accordingly, coastal zone managers will be tasked with a greater need for awareness of changing international standards, with the result that skilled people will be required to fill roles associated with coastal zone management (Barston, 1994:110).

In implementing the ecosystem approach to managing the marine ecosystem of the Baltic sea, the scales of management should match the relevant ecological scales, which will result in an enhanced ability to manage for maintained structure, resilience and function of the ecosystem approach (Österblom *et al.*, 2010:1290). Leadership and communication skills become the foundation for the successful implementation of the ecosystem approach (Österblom *et al.*, 2010:1294). The momentum for change can thus be mobilized by trust building and the linking of key individuals and the creation of partnerships with shared visions (Österblom *et al.*, 2010:1290).

Success has been achieved in Indonesian coastal zone management through a great emphasis being placed on training and human resources development (Kusuma-Atmadja and Purwaka, 1996:75).

In establishing a European strategy for invasive alien species, Genovesi and Shine (2004:19) call for clear and effective leadership involving relevant sectors and different levels of government as are appropriate. Furthermore, efficient use must be made of expertise relevant to invasive alien species in the development of the European strategy (Genovesi and Shine, 2004:20).

In New Zealand, the development of a successful management framework for sustainable resource management involved the restructuring of environmental administrative departments (Furuseth and Cocklin, 1995:253). Although it was not a simple process, it

facilitated consistency in approaches to management across different settings and different environmental conditions (Furusest and Cocklin, 1995:254).

In South Africa, Kotze and de la Harpe (2008:33) advocate for the establishment of a managing authority to oversee the activities of two or more different mandated competent authorities (in the context of World Heritage Site Management). The establishment of a managing authority that oversees fragmented functions will lead to more co-operative and sustainable governance in South Africa (Kotze and de la Harpe, 2008:33). Accordingly, the staff component of such a managing authority will need to include members with a vast array of skills to ensure the necessary expertise is available to achieve co-operative and sustainable governance (Kotze and de la Harpe, 2003:34).

Paterson (2006:46) is of the opinion that as a result of legislative rationalization (in a South African context), planning and administration of biodiversity issues would be led by the DEA allowing for easier implementation of tools for regulating alien species. This then leads for easier planning and co-ordinating efforts due to fewer administrative players controlling alien invasive species (Paterson, 2006:47).

Under NEMA, and the specific environmental management acts created under it (NEMBA and ICM Act), no legislative provision exists for staffing requirements of the Department of Environmental Affairs nor the effective management of human resources. The composition of the Forum does however take staffing requirements into consideration, in that all fifteen members appointed must be representative of stakeholders, having experience, expertise or skills necessary to carry out the functions of the Forum (NEMA, 1998:14). The CEC (which consists solely of specific government departments) makes no provision for staffing or human resource management.

Under the Merchant Shipping Act, SAMSA is authorized to appoint such officers, which includes specific qualified persons, as is necessary to administer the Act (Merchant Shipping Act, 1951:27). The National Ports Act stipulates that such persons as are

deemed fit to discharge the functions of the National Ports Authority may be appointed as staff.

With regards to human resources management, the legislation is very vague and lacking in detail as to what adequate staffing requirements entail and how to manage staff. The legislation all individually make provision for some form of lead agency or management authority to administer such legislation as well as exercise the functions required thereunder. However, upon taking a consolidated view of the legislation, there is no clear agency or management authority established that has the power to take the lead on an issue such as ballast water.

It is recommended that a lead agency such as the DEA be appointed to manage the ballast water issue, with the remaining management authorities established under the various legislation reporting into the DEA. The management framework would then have clear human resources and management provisions to guide the DEA in adequate staffing and staff management and retention strategies.

#### *7.1.5. Planning and Budgeting*

Planning and budgeting are vital aspects to be considered in the development of a management framework (Barston, 1994; Kotze and de la Harpe, 2008; Kusuma-Atmadja and Purwaka, 1996) to control ballast water (and by implication alien species, coastal management and biodiversity).

In the successful management of the coastal zone in Indonesia, good planning has led to good environmental management (Kusuma-Atmadja and Purwaka, 1996:77). Over and above this, budgeting for environmental protection and preservation is the norm, however, often supplementary budget requirements arise during a year which cannot be funded and this gap needs to be addressed (Kusuma-Atmadja and Purwaka, 1996:77). On a more global scale, there needs to a greater resource commitment by interested organizations to coastal zone issues (Barston, 1994:108).

In the South African context of establishing a single managing authority, budgeting plays a role in the implementation of measures to facilitate accountability (Kotze and de la Harpe, 2008:38).

The Constitution drives the control and management of South Africa's financial affairs (Bekink, 2001b:205) and provides the requirements for national, provincial and local budgets (Bekink, 2001b:207). In particular, there is a requirement for national legislation to prescribe the form, tabling and content of the budgets of each sphere of government (Bekink, 2001b:207). NEMA, NEMBA, the ICM Act, the Merchant Shipping Act and the National Ports Act are silent on the issue of budgets and financial planning. The Public Finance Management Act ("PFMA") and Local Government: Municipal Finance Management Act ("MFMA") regulate financial management in the national and local governments to ensure that all revenue, expenditure, assets and liabilities of that government are managed efficiently and effectively (PFMA, 1999:2 and MFMA, 2003:2).

Whilst there is overarching national and local legislation to manage budgeting and financial planning of government departments (PFMA, 1999; MFMA, 2003), there is very little in the way of legislated requirements for specific departments to manage their budgets and conduct planning. Budgeting on the whole would fall under the scope of the PFMA and MFMA, however, it is recommended that the management framework for implementation of the Convention contain budgeting guidelines on a more specific scale, particularly related to supplementary budget requirements (whilst still complying with the PFMA and MFMA). The National Ports Act requires that sustainable and transparent port planning processes be undertaken (National Ports Act, 2005:56). With this in mind, the management framework should tie in with these requirements and give specific clear guidelines on planning issues related to managing ballast water.

#### *7.1.6. Zone Delineation and Integrated Coastal Management Plans*

The concept of zone delineation involves the delineation of regions on the basis of uniformity of geographical characteristics (Morgan, 1984:300). Problems associated

therewith entail overlapping jurisdictional claims as well as the issue of resource and environmental control by one nation affecting the oceans of another nation (Morgan, 1984:299). In trying to solve problems associated with common oceans, nations are expected to co-operate with one another (Morgan, 1984:300). Morgan (1994:309) concludes that with specific reference to the South-east Asian waters, not all regions have the same probability for success using regional arrangements. The greatest successes in regional management are likely to be where both regional and extra-regional nations have an interest in solving the problem (Morgan, 1994:310).

In the United States, the unique importance of the coastal zone has resulted in integrated coastal zone management programmes being developed (Wood-Thomas, 1994:167). In this context however, the consolidation of federal state and local laws into a single agency has been successful (Wood-Thomas, 1994:173). Integrated management plans (“IMP’s”) have emerged as a result of fragmentation and conflicting decisions and plans by arms of state (Koivurova, 2009:173).

In the European Union (“EU”), the development of an IMP for ocean governance is the first ever social experiment with a governing entity being a supranational organization (Koivurova, 2009:174). The development of an IMP in the EU is contrasted with the Canadian approach of establishing maritime zones and institutional powers and management structures (Koivurova, 2009:174).

Although the ICM Act divides the South African coastline into coastal zones which are managed on a provincial or local level, the National Coastal Committee becomes the lead agency (under the ICM Act) to ensure integrated coastal management and co-operative governance of these coastal zones (ICM Act, 2009:50). NEMBA introduces the concept of bioregions for the division of South Africa into provincial and local zones for biodiversity purposes. The SANBI is responsible for co-ordination and co-operation relating to biodiversity and as a consequence of bioregions. Although the National Ports Act makes no provision for the establishment of zones relating to ports, it does require

co-operation with regards to the management of the different ports in South Africa (which are geographically remote).

There is no need for additional legislation or requirements in the management framework to divide the South African coastline into zones, as this is adequately covered in the legislation referred to above. The recommendation that the DEA become the lead agency however stands, since the division of the South African coastline into zones will require adequate management by a single lead agency that will control all aspects relating to ballast water.

#### *7.1.7. Permitting, Technology and Legislation*

Barston (1994:93) suggests increased permitting requirements in ports to ensure adequate management of port areas and coastal environments. Aquino (2006:115) goes further to suggest the introduction of better technology and legislative requirements. Whilst all three aspects may have a good impact on managing coastal areas and the spread of alien invasive species, there is no indication from the literature reviewed that these aspects would work well within a management framework. The permitting of ports and use of technology falls more within the ambit of an adequate legislative framework as opposed to a management framework.

More particularly, the South African legislation comprehensively covers all aspects related to permitting. NEMA has very complicated requirements relating to listed activities that require an environmental authorization (NEMA, 1998:34) prior to commencement thereof. NEMBA requires a permit for carrying out activities that involve alien species and listed invasive species (NEMBA, 2004:58). The ICM Act requires a permit for the dumping of any material at sea (ICM Act, 2009:92). The Merchant Shipping Act requires the licensing of certain ships (Merchant Shipping Act, 1951:33) and the National Ports Act requires a license to operate a port facility. With these licensing/permitting requirements in place, there is no need for the management framework to create further licensing requirements that will only lead to duplication of those contained in the aforementioned legislation.

#### 7.1.8. Local Community Involvement

The involvement of local communities is strongly recommended in the development of a management framework for different mandated competent authorities (Mackay, 1993:422; Sen and Nielsen, 1996:417; Laban, 2007:356; Kotze and de la Harpe, 2008:37).

In Scotland, the use of local officials who are trusted in the community to assist in pollution control is encouraged (Mackay, 1993:422). Local officials, if properly trained and prepared, will take responsibility in organizing resources, recruiting local labour and implementing effective counter measures against pollution incidents (Mackay, 1993:422). Success using local labour is attributable to the fact that local officials know the scene, are able to anticipate dangers and are trusted by the community to act in the interest of the community (Mackay, 1993:422).

The concept of co-management is defined as an arrangement where responsibility for resource management is shared between the government and user groups (Sen and Nielsen, 1996:406). User groups' capabilities and aspirations determine the type of co-management arrangement that should be implemented (Sen and Nielsen, 1996:417). In Sen and Nielsen's research (1996:417) the effect of co-management is that sustainability, efficiency and equity of a resource and its users will be improved. In addition, lack of resources within government that lead to gaps in the monitoring process can easily be filled by working together with local communities (Sen and Nielsen, 1996:408).

Laban (2007:355) takes the local community involvement a step further with his recommendation of a rights based approach. Essentially, his argument centers around the fact that although non-governmental organizations ("NGO's") and governmental organizations have an important role and responsibility in fulfilling water rights, one cannot ignore local community accountability within water rights allocations and management (Laban, 2007:356). Local level involvement feeds into good governance in

terms of empowerment, equitable access and end user involvement in shared management (Laban, 2007:358).

Community involvement is encouraged in the NEMA principles (which guide the implementation of legislation pertaining to protection or management of the environment) (NEMA, 1998:12) requires in section 2(4)(h) that community well-being and empowerment must be promoted as well as the participation of all interested and affected parties being promoted (NEMA, 1998:12). Apart from the public participation process required by NEMBA in the exercising of powers under the Act (NEMBA, 2005:80), SANBI has the discretion to co-ordinate programmes to involve civil society in the conservation and sustainable use of indigenous biological resources and ecosystem rehabilitation (NEMBA, 2005:26). Under the ICM Act, only the provincial coastal committees are required to appoint one or more members representing community based and non-government organizations (ICM Act, 2009:56). Community involvement is not catered for at a national level by the ICM Act.

The Merchant Shipping Act does not make provision for local community involvement in the administration of the Act. The National Ports Act gives the National Ports Authority the discretion to encourage and facilitate private sector investments and participation in the provision of port services and facilities (National Ports Act, 2005:18).

Although local community involvement is not typical in a management framework between competent authorities, in the South African context the lack of resources, budget and knowledge of governmental departments can easily be supplemented with local community involvement (Kotze and de la Harpe, 2008:38). Where local communities are involved in managing biodiversity and alien invasive species the result is that transparency is further ensured (Kotze and de la Harpe, 2008:37). It is recommended that the management framework include aspects of community involvement over and above that prescribed by the legislation referred to above.

#### 7.1.9. Incentives

Patersen (2006:45) recommends the use of incentives in the regulation of alien invasive species. In this context, the implementation focuses on incentivizing landowners who clear their properties of alien invasive species and does not consider incentivizing government (Paterson, 2006:45). Incentives are essential in light of the frightening costs associated with control and clearing of alien invasive species coupled with capacity and resources constraints in the South African competent authorities (Paterson, 2006:46).

In the United States, incentives are provided to foster state participation in coastal management zone projects (Wood-Thomas, 1994:170). Federal matching grants are given to help states meet the cost of implementing their programmes (Wood-Thomas, 1994:170).

In a South African context, it is imperative that incentives remain within the boundaries of openness and transparency (Kotze and de la Harpe, 2008:37).

Under NEMA, and the specific environmental management acts created under it (NEMBA and ICM Act), no legislative provision exists for any form of incentives whether monetary or not. Similarly, in both the Maritime Shipping Act and the National Ports Act there is no legislative provision for incentivizing governmental departments or agencies created under the specific legislation. In fact, it is imperative that the consideration of inclusion of incentives is based on non-financial natured incentives, whether given to any governmental department or competent authority established under any legislation (PFMA, 1999; MFMA, 2003).

In light of the above, NEMA, NEMBA and the ICM Act (by being specific environmental management acts created under NEMA) have, in terms of the founding principles of NEMA, a very clear requirement for openness and transparency allowing for valid access to information (NEMA, 1998:12).

The National Ports Act requires the promotion of transparency as one of its objects (National Ports Act, 2005:12). The Merchant Shipping Act, being an older piece of legislation, does not have any requirements relating to transparency.

The inclusion of non-financial incentives in the aforementioned legislation would lead to practical difficulties in control and may be contrary to the PFMA and MFMA. Most of the legislation calls for openness and transparency, as does the Constitution, however, the legislation does not have clear provisions as to practical means to achieve openness and transparency, save for compliance with legislation such as the Promotion of Access to Information Act, 2000. It is therefore recommended that non-financial incentives be included in the management framework to encourage competent authorities to work together more harmoniously. Following from this, the management framework would then have to contain clear practical provisions for the implementation of openness and transparency over and above that contained in the legislation discussed above. Examples of the types of incentives that could be made available include the making available of additional resources including administration, offices and staff, which in turn would overcome gaps in capacity.

#### *7.1.10. Ecosystem Approach*

Entities have begun to adopt and implement an ecosystem based approach to management in order to overcome the problems associated with fragmented ocean management (Ekstrom *et al.*, 2009:532). To implement an ecosystem based approach to ocean management, the gaps and overlaps that have arisen from fragmented management governance need to be identified (Ekstrom *et al.*, 2009:532). Ecosystem based management (“EBM”) has two key underlying principles, namely an increase in collaboration between management agencies and the participation by all stakeholders having an interest in the ecosystem being managed (Ekstrom *et al.*, 2009:532). The relevance of ecosystem based management is the development of a quantitative method that generates quick and easy access to baseline information on competent authorities, legislation and regulations involved in any aspect of a specific ecosystem (Ekstrom *et al.*, 2009:532).

Österblom *et al.* (2010:1290) claim that in the EU context that the existing multilevel governance institutions are specifically set up for dealing with individual sectors, but do not adequately support an operational application of the ecosystem approach. Defining scales for management and defining actions and responsibilities for achieving objectives are the first steps identified by Österblom *et al.* (2010:1290) in developing an adequate management framework.

In a South African context, none of the legislation reviewed in this research specifically makes reference to an ecosystem based approach to management. Taking the elements of EBM as identified by Ekstrom *et al.* (2009:532), namely management authority collaboration and stakeholder participation, NEMA, NEMBA, the ICM Act and the National Ports Act all allow for collaboration in their requirements for co-operative governance. The problems identified above with regards to practical implementation remain. Furthermore, stakeholder participation is also encouraged by NEMA, NEMBA, the ICM Act and the National Ports Act, with the constraints identified in the discussion under community involvement above.

The achievement of both collaboration by competent authorities and the involvement and participation of stakeholders as recommended above will result in an indirect implementation of EBM in the management framework and as such, EBM is thus not explicitly required. The implementation of EBM, albeit indirectly, will result in some form of innovation by competent authorities (Österblom *et al.*, 2010:1290).

#### 7.1.11. Autonomy/Authority

No strategy for effective co-operative management is sustainable (or effective) without the relevant government department (or management authority) being given authority and autonomy to make decisions (Kotze and de la Harpe, 2008:39). Clear leadership can make conflict management easier to deal with (Österblom *et al.*, 2010:1294).

Since NEMA is the umbrella legislation under which NEMBA and the ICM Act are established, the purpose of the Forum and the CEC are to provide input to the Minister of Environmental Affairs in order to allow for clear decision making. The decision making capacity of the SANBI and National Coastal Committee (as well as provincial and municipal) are required to report into the DEA, which has been established as the lead authority on environmental matters. The Merchant Shipping Act is again silent on decision making capacities. Insofar as the National Ports Act is concerned, the National Ports Authority is given the mandate to carry out its legislated functions under the National Ports Act. There is however, firstly, no clear autonomy provided to the DEA under NEMA to oversee the functions of the SANBI and National Coastal Committee. Secondly, there is no link in the legislation between the National Ports Authority and the DEA, as well as no clear indication of which entity would become the lead authority. It is recommended then that the management framework remove any ambiguity on interactions between the various role players by clearly stipulating who the lead authority should be as well as providing such lead authority with clear autonomy to make decisions.

#### 7.1.12. Ethics

In their strategy for co-operation and integration, Kotze and de la Harpe (2008:40) highlight the importance of various issues that have been grouped under the general heading of ethics. In the South African context, and in the content of Kotze and de la Harpe's (2008:33) recommendation of a central management authority between different mandated competent authorities, they recommend, *inter alia*, the following aspects to be included in the strategy for co-operation and integration:

Firstly, a respect for the rule of law (Kotze and de la Harpe, 2008:36) which requires adherence by all involved in the management of biodiversity, coastal management, ports and alien invasive species to the specific legislation and regulations relating to the aspect being managed. To this end, it goes without saying that a thorough knowledge of the law (Kotze and de la Harpe, 2008:36), not only by government departments, but also local

communities, is imperative to enable enforcement of applicable legislation, tying in with the requirement for training and knowledge sharing discussed above.

Secondly, all decisions and actions taken must be done in an open and transparent manner (Kotze and de la Harpe, 2008:37). Transparency can really only be achieved through representation by important role players, which include local communities and other important stakeholders willing to take ownership (Kotze and de la Harpe, 2008:37) of ballast water management, biodiversity and the control of alien invasive species. Proper communication between the competent authority and stakeholders will assist in maintaining transparency (Kotze and de la Harpe, 2008:37).

Thirdly, fairness and equity in dealing with citizens must form part of any management framework (Kotze and de la Harpe, 2008:38). To achieve this it is important that consultation with and participation by interested and affected parties be promoted (Kotze and de la Harpe, 2008:38).

Fourthly, the management framework must have adequate measures in place in which accountability must be provided for and measured (Kotze and de la Harpe, 2008:38). Kotze and de la Harpe (2008:39) recommend that proper criteria should be set for measurement of accountability, allowing for time limits to be set for service-delivery tasks.

The final aspect for inclusion in the management framework is the adoption of high standards of ethical behaviour (Kotze and de la Harpe, 2008:40). These high standards are only able to be realized if an ethical culture is instilled in both the management authority responsible for the implementation of the management framework and the different mandated competent authorities (Kotze and de la Harpe, 2008:41). To achieve this, the management framework must contain an effective and enforceable code of conduct for all officials and stakeholders (Kotze and de la Harpe, 2008:41).

None of the legislation discussed in this research makes any provision for respect for rule of law. In fact, legislating and enforcing such a concept is practically impossible and it is recommended that reference to respect for the rule of law be included as an objective of the management framework. Adequate staffing and human resources management will go a long way towards establishing a basis for respect for the rule of law, as will consistency and proper management in government departments.

The aspect of openness and transparency, as well as fairness and equity (and as a result public participation requirements) with relevance to the legislation applicable to ballast water has been discussed in great detail under incentives and local community involvement above, and the recommendations stand.

The aspect of accountability is largely catered for in the PFMA and MFMA, as well as specific (additional) requirements under the National Ports Act whereby the National Ports Authority is held accountable to the Ports Regulator (National Ports Act, 2005:40). Over and above this, all government departments are held accountable in terms of the Constitution. These provisions cover accountability in the broad sense, but do not deal with specifics in terms of performance of competent authorities. More particularly, clear time frames and quantitative requirements for measuring accountability are recommended for inclusion in the management framework. This can also be controlled, to a large extent through adequate human resource management.

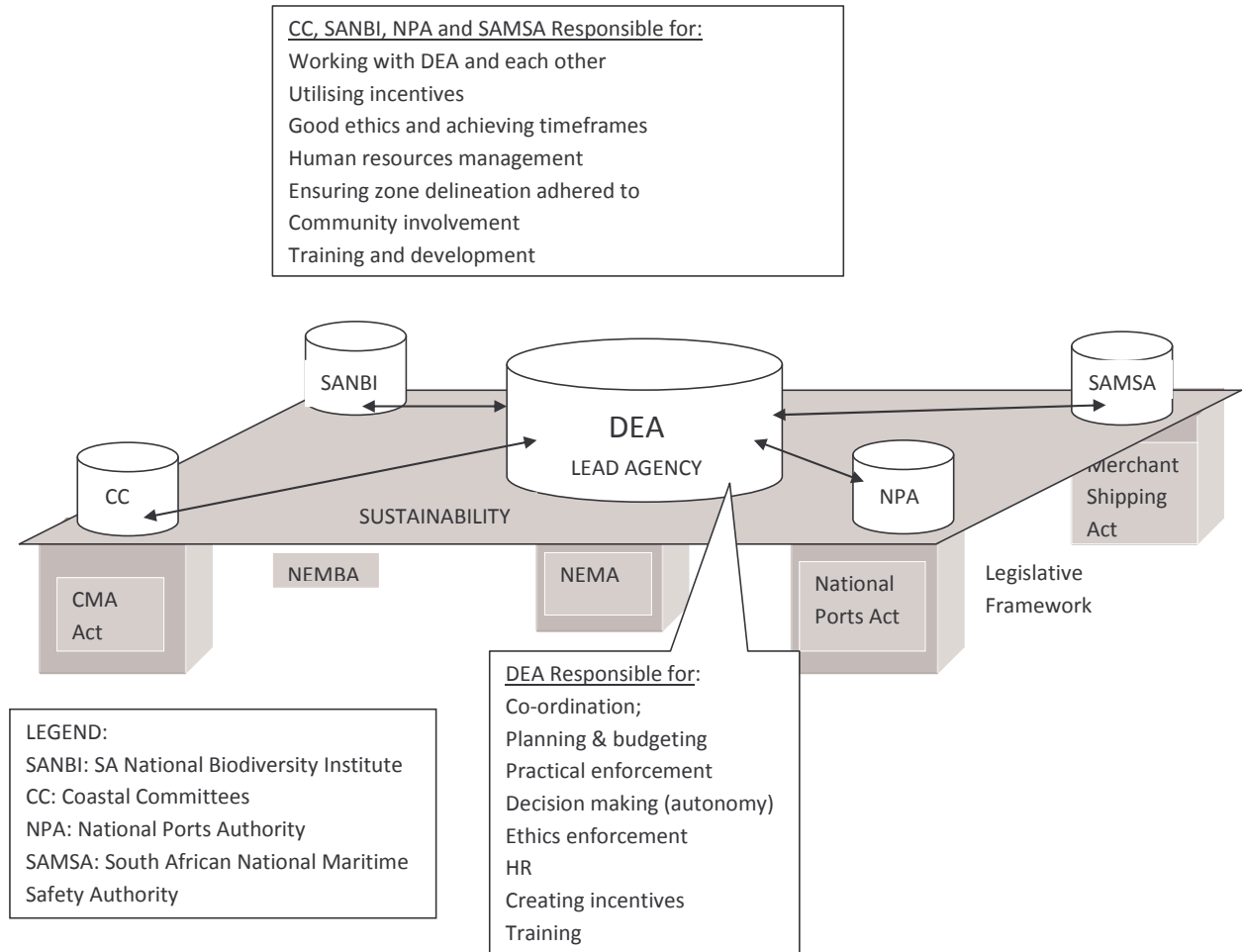
Finally, none of the legislation deals with ethical behaviour, particularly since ethics is not something that is implementable through mandated requirements. Whilst it is recommended that a code of conduct be developed for inclusion in the management framework, the effective implementation thereof can only arise out of good values and adequate management.

#### 8. Management Framework for Implementation of the Convention

Taking the concepts explored above and evaluating them in the South African context a management framework has been developed for implementation of the Convention. A diagrammatic representation of the management framework is contained in Figure 1. It should be noted that this management framework is by no means comprehensive and only focuses on key laws identified as relating to ballast water management. Other relevant legislation may have been excluded in order to limit the extent of this study and to avoid a legal review.

The management framework cannot operate without being supported by the legislative framework. As can be seen from Figure 1, NEMA, NEMBA, the ICM Act, the Merchant Shipping Act and the National Ports Act form the foundation of the management framework. Furthermore, the Convention will have to be fully integrated into the national legislative framework for proper implementation thereof. Sustainability must be the platform off which the management framework operates. This is to ensure compliance with supporting legislation as well as to ensure the sustainable use of resources in South Africa. Principles for achieving sustainability are included in the supporting legislation and there is no requirement for legislative amendments.

**Figure 1: Diagrammatic Representation of Management Framework**



Leadership has been defined as “*the principle dynamic force that motivates and co-ordinates the organisation in the accomplishment of its objectives*” (Dubrin, 2001:3). Co-ordination and co-operation cannot be achieved without a clear lead agency (Kotze and de la Harpe, 2008:33). It is recommended that a lead agency is established in order to effectively manage ballast water and bridge the gap between different competent authorities (International Maritime Organisation, 2010:24). There is no single competent authority in any one country which will be ideal to manage ballast water (International Maritime Organisation, 2010:25). Most important is to select the most suitable competent

authority and establish a framework which facilitates co-operation (International Maritime Organisation, 2010:25).

The lead agency is most commonly the competent authority with overall responsibility for invasive alien species or with overall responsibility for ballast water management (International Maritime Organisation, 2010:25). The national lead agency on invasive alien species typically is a Ministry of Environment or Agriculture (International Maritime Organisation, 2010:25) and this is true in South Africa where the DEA has overall responsibility for invasive alien species management (NEMBA, 2004:14). There is no specific legislative control for ballast water management even though the DOT and SAMSA have responsibility for the control of ports and ship safety.

According to the International Maritime Organisation (2010:26), the lead agency should have the following responsibilities:

- Establishment of necessary legislation to give effect to management framework;
- Responsible for scientific, operational and administrative requirements for ships coming into ports;
- Familiarising and training key stakeholders on management framework;
- Monitor and review of management framework;
- Enforcing legislation and regulations;
- Administration of international ballast water management instruments;
- Continually improving management framework on best practice requirements;
- Ensuring co-operation of key stakeholders; and
- Participation in ballast water matters on international, regional and national scale.

The list of requirements for the lead agency fit well with the current mandates of the DEA. More particularly, the DEA has comprehensive powers granted under NEMA (1998) which dovetail with the lead agency responsibilities set out above. More particularly, the DEA is required to:

- Put procedures in place for co-operation between stakeholders (NEMA, 1998:21);

- Implement integrated environmental management (NEMA, 1998:34);
- Ensure enforcement of international obligations and agreements (NEMA, 1998:38);
- Ensure the enforcement of and compliance with legislation and regulations (NEMA, 1998:41);
- Concluding environmental management co-operation agreements both internationally and nationally (NEMA, 1998:56);
- Establishing specific legislation (NEMA, 1998: 58).

The DEA, as the competent authority responsible for invasive alien species management (NEMBA, 2004:14) and with the responsibilities tasked to it under NEMA (1998) is nominated as the lead agency for implementation of the management framework. The DEA will take responsibility for all matters relating to ballast, although, as will be discussed below, specific departments will support the DEA in the implementation of the management framework.

In terms of maritime issues, the DOT is still required to answer to the IMO (International Maritime Organisation, 2011). The positioning of the DEA as the lead agency will not affect this reporting line. The DOT will still maintain its reporting line to the IMO, keeping the DEA informed at all times. In terms of capacity of the DEA, a more streamlined department, working together with other departments without overlap or fragmentation, would alleviate some of the capacity restraints. Bigger budgets and knowledge transfer would also assist with capacity restraints. The legislative incorporation of the Convention into South African law will give structure to allow for the controlled enforcement of the Convention. The placing of the DEA as the lead agency and the development of the management framework will ensure that the implementation and enforcement of the Convention.

It is recommended by the International Maritime Organisation (2011:26) that a task force be established to advise and support the lead agency in the establishment of a ballast water management framework. The task force should encompass all stakeholders

(International Maritime Organisation, 2011:26). With the legislative mandates of the DEA (“the Lead Agency”) falling within the scope of NEMA, NEMBA and the ICM Act, support from the other competent authorities under this and other legislation is required. Because of the role played by SANBI in implementing NEMBA and the mandated requirement of the Coastal Committees (National, Provincial and Local) under the ICM Act, both SANBI and the Coastal Committees would be obvious choices for inclusion in the task force. Furthermore, the specific requirements of the Merchant Shipping Act would require the active involvement of SAMSAs. Under the National Ports Act, the involvement of the DOT, as well as the National Ports Authority, are also critical. Incorporating other stakeholders, such as the local community, in the task team (Mackay, 1993:422, Sen and Nielsen, 1996:417, Laban, 2007:356 and Kotze and de la Harpe, 2008:37) aids in closing gaps that may exist in the task force (Sen and Nielson, 1996:408).

The primary responsibilities of the task force are detailed below (International Maritime Organisation, 2010:27):

- Gather data and information relating to ballast water management and ships entering ports;
- Evaluate facts concerning ships entering ports with a view to balancing competing interests whilst advising on aspects for inclusion in the management framework;
- Recommend suitable policies, practices, legislation and operational procedures and responsibilities for ballast water management;
- Assist in editing and revising the management framework;
- Assist in the implementation of the management framework; and
- Provide guidance and advice to the Lead Agency on ballast water management.

From the suggested responsibilities described above for both the Lead Agency and the task force, it is clear that the Lead Agency will have primary responsibility for administering the operational arrangements (International Maritime Organisation, 2010:27) of the management framework. With the suggestions described above for inclusion in the management framework, it is clear that certain aspects will fall under the

responsibility of the Lead Agency (autonomy/authority, training, management, and planning and budgeting), whilst others fall under the responsibility of the task force (local community involvement and zone delineation). There are certain aspects that will require responsibility under both the Lead Agency and the task force (co-ordination, knowledge sharing and incentives).

Expanding on the responsibilities of the Lead Agency, as recommended by the International Maritime Organisation (2010:26), the Lead Agency would have the following responsibilities for the implementation of a South African management framework:

- Ensure co-ordination and co-operation between itself and the task force as well as between the task force in terms of ballast water management;
- Make and take decisions (with input from the task force) in all aspects relating to ballast water (including amendments to legislation and implementation of policies and International Conventions);
- Prepare and manage budgets for managing ballast water, as well as ensuring supplementary budget requirements can be met where necessary;
- Ensure adequate planning for ballast water management, set clear objectives and measurables;
- Ensure practical enforcement of legislative issues on ballast water management (for instance licences, permits and management plans);
- Adequately manage human resources within the ballast water sphere through recruitment, selection and retention of qualified staff and managing performance;
- Provide training and prepare training matrices on aspects specific to ballast water management to both its staff as well as staff of the task force;
- Encourage and set up systems for knowledge sharing relating to ballast water management internally and between the task force;
- Develop non-financial incentives regarding ballast water management for the task force and stakeholders;

- Implement good ethical behaviour within the sphere of ballast water management realm through:
  - Developing and enforcing a code of conduct;
  - Adhering to the PFMA and MFMA;
  - Developing compliance timeframes and adhering thereto;
  - Remaining fair, open and transparent, and complying with the Promotion of Access to Information Act and with public participation best practice and legislative provisions;

Then expanding on the responsibilities of the task force as recommended by the International Maritime Organisation (2010:27), the South African task force would have the following responsibilities:

- Ensure co-ordination and co-operation internally, amongst themselves and with the Lead Agency;
- Advise the Lead Agency on adequate non-financial incentives for stakeholders and ensure implementation and effective control thereof;
- Comply with ethical behaviour code of conduct as guided by the Lead Agency and specified time frames;
- Implement good human resource management practices in line with that followed by the Lead Agency to ensure sufficient and skilled staff able to fulfil their mandates;
- Ensure that the delineation of coastal zones is adhered to (within the specific task force's delegated powers);
- Involve all stakeholders and ensure their buy in and commitment, specifically communities;
- Implement training to internal staff, Lead Agency staff and communities in accordance with the training matrices developed by the Lead Agency.

Following the responsibilities highlighted above, the implementation of the Convention will depend on the Lead Agency performing the following actions (International Maritime Organisation, 2010:29):

- Identifying and implementing legislation to support the enforcement of the Convention;
- Ensuring, through the task team, that ships entering South African ports meet the requirements of the Convention;
- Instituting, through the task team, ship inspections and enforcement of Port State Control;
- Implementing education, training and awareness programmes relating to the Convention and ballast water;
- Conduct training of inspectors and managers in terms of ship inspections and ballast water management;
- Development of ballast water reporting requirements and a regime for the inspection of ships;
- Ensure constant review of the management framework to ensure it is up to date and supports the enforcement of the Convention; and
- Ratify and implement the Convention.

## 9. Conclusion

The elements of the management framework are important in the context of ballast water management since they bring all the role players together in a manner which creates supportive relationships. These elements create an environment in which it becomes more streamlined for the various departments to work together in achieving a common goal of ballast water management and implementing the Convention.

The development of the management framework is not without its limitations. Specifically due to gaps in the legislation, there are no mandates for some of the functions of the Lead Agency and the task force. These gaps in legislation centre around the development of incentives, knowledge sharing, training, adequate staffing and human resource management, good ethical behaviour and planning and budgeting. Whilst there may be other legislation dealing with these issues, the legislation focussed on in this research failed to adequately deal with them. The gaps in the legislation will require amendments to incorporate some of these aspects. It may, however, not be possible to

include other aspects (such as planning and incentives) through legislative amendments. These could be addressed at policy level for competent authorities to ensure compliance therewith.

The roles and responsibilities of competent authorities as required in the South African legislation were reviewed and identified in this research. Table 1 provided a summary of areas of fragmentation (and areas of duplication) in terms of the mandates of responsibility of competent authorities. In addition, the appropriateness of the existing mandates, roles and responsibilities was reviewed. This review highlighted that firstly there is no direct legislation or regulations dealing with ballast water (Duncan, 2007:34) and that the legislation reviewed is not necessarily directly appropriate to the ballast water issue. Gaps in the current roles of competent authorities were in order to develop a management framework for managing ballast water. Very specific requirements for inclusion in a management framework for ballast water were investigated in light of their relevance to institutional and legislative fragmentation.

The management framework developed above is a first step for use by competent authorities to close the gaps and eliminate the duplication arising out of the implementation of the Convention (and prevailing legislation). It is hoped that by utilising the management framework, legislative and institutional fragmentation can be overcome to foster good relationships between competent authorities. This should improve co-ordination and co-operation, which in turn will lead to sustainable management of coastal areas and the successful management of ballast water issues.

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## Annexure 1: Schedule 4 of the Constitution of the Republic of South Africa

This Schedule lists the functional areas over which national government and provincial government have concurrent legislative authority (Bekink, 2001a:52).

### Schedule 4 - Functional areas of concurrent national and provincial legislative competence

#### **Part A**

- Administration of indigenous forests
- Agriculture
- Airports other than international and national airports
- Animal control and diseases
- Casinos, racing, gambling and wagering, excluding lotteries and sports pools
- Consumer protection
- Cultural matters
- Disaster management
- Education at all levels, excluding tertiary education
- Environment
- Health services
- Housing
- Indigenous law and customary law, subject to Chapter 12 of the Constitution
- Industrial promotion
- Language policy and the regulation of official languages to the extent that the provisions of section 6 of the Constitution expressly confer upon the provincial legislatures legislative competence
- Media services directly controlled or provided by the provincial government, subject to section 192
- Nature conservation, excluding national parks, national botanical gardens and marine resources
- Police to the extent that the provisions of Chapter 11 of the Constitution confer upon the provincial legislatures legislative competence
- Pollution control
- Population development
- Property transfer fees
- Provincial public enterprises in respect of the functional areas in this Schedule and Schedule 5
- Public transport
- Public works only in respect of the needs of provincial government departments in the discharge of their responsibilities to administer functions specifically assigned to them in terms of the Constitution or any other law
- Regional planning and development
- Road traffic regulation
- Soil conservation
- Tourism
- Trade
- Traditional leadership, subject to Chapter 12 of the Constitution
- Urban and rural development

- Vehicle licensing
  - Welfare services
- 

## **Part B**

The following local government matters to the extent set out in section 155(6)(a) and (7):

- Air pollution
- Building regulations
- Child care facilities
- Electricity and gas reticulation
- Firefighting services
- Local tourism
- Municipal airports
- Municipal planning
- Municipal health services
- Municipal public transport
- Municipal public works only in respect of the needs of municipalities in the discharge of their responsibilities to administer functions specifically assigned to them under this Constitution or any other law
- Pontoons, ferries, jetties, piers and harbours, excluding the regulation of international and national shipping and matters related thereto
- Stormwater management systems in built-up areas
- Trading regulations
- Water and sanitation services limited to potable water supply systems and domestic waste-water and sewage disposal systems

## **SECTION 2: LITERATURE REVIEW**

### **1. Introduction**

A literature review was undertaken within the context of developing a management framework for effective co-operation between government departments that have a functional overlap in terms of their mandated areas of control. The localized setting in which this management framework is to be developed is the arena of ballast water management which incorporates management of biodiversity, alien invasive species management (Oliveira, 2008), coastal management (Ricketts and Harrison, 2007) and port control.

A wide variety of literature exists, particularly relating to the issue of ballast water management and the control of alien invasive species. This literature relates more particularly to aspects of technological control and legal frameworks in place for control (Khalimonov, 1999). Many of the frameworks recommended in the literature search gave good recommendations on mechanisms to improve legislative framework and co-operation within legislation (Kusuma-Atmadja and Purwaka, 1996). Due to the fact that this research is based on specific legal frameworks and has no intention of reviewing the legislation and recommending changes thereto, further investigation was needed into mechanisms outside of changing legislative regimes to manage overlaps and fragmentation between different mandated government departments.

A further investigation into the literature revealed some specific South African research, specifically related to the issue of co-operative management and strategies for good governance (Kotze and de la Harpe, 2008; Kotze, 2006). These strategies form a good basis for the development of a management framework for co-operation between different mandated government departments. This is irrespective of the fact that these studies do not look directly at aspects relating to different mandated government departments.

### **2. Literature Review**

## 2.1. South Africa: Co-Operative Governance

Within South Africa, the control and management of biodiversity and invasive species is controlled at different legislative, political, administrative and enforcement levels. In particular, Chapter 3 of the Constitution of the Republic of South Africa (Act No. 108 of 1996) (“the Constitution”) espouses the principles of co-operative government (Bekink, 2001:139). In a South African constitutional context, co-operative governance determines the relationship between different spheres of government (Bekink, 2001:139). This requires the different spheres of government, be they national, provincial or local, to co-operate in harmonizing the administration of the government (Bekink, 2001:138, 139). Of particular importance in the principle of co-operative governance is the requirement in terms of section 41(1)(h) of the Constitution that:

*“All spheres of government and all organs of state within each sphere must:*

*Co-operate with one another in mutual trust and good faith by:*

- vii. Fostering friendly relations;*
- viii. Assisting and supporting one another;*
- ix. Informing one another of, and consulting one another on, matters of common interest;*
- x. Coordinating their actions and legislation with one another;*
- xi. Adhering to agreed procedures; and*
- xii. Avoiding legal proceedings against one another.”*

The principles of co-operative governance and the effectiveness of this clause will be investigated in light of the functional areas of concurrent national and provincial legislative competence and functional areas of exclusive provincial legislative competence granted in terms of Schedule 4 under the Constitution. In addition, the specific mandates granted to the appropriate environmental government departments (whether national, provincial or local) will be investigated in terms of the National Environmental Management Act (Act 107 of 1998) (“NEMA”), the National Environmental Management: Biodiversity Act (Act No. 10 of 2004) (“NEMBA”) and the

National Environmental Management: Integrated Coastal Management Act (Act No. 24 of 2008) (“ICM Act”). The mandates granted under the specific environmental legislation will be compared with the mandates granted to the appropriate governmental departments granted competency under Maritime Law, more specifically the Merchant Shipping Act (Act No. 57 of 1951) and the National Ports Act (Act No. 12 of 2005). This comparison will serve to highlight areas of overlap and areas of fragmentation. According to Kotze (2006:1), fragmentation is evident in terms of structural fragmentation between the various spheres of government and the various line functionaries in each sphere.

## 2.2. Institutional and Legislative Fragmentation

It will be investigated whether the fragmented nature of the legislation dealing with biodiversity, coastal management, port authority and maritime law gives rise to duplication of administrative procedures, jurisdictional overlap and a time-consuming and confusing governance effort as alleged by Kotze (2006:1). Kotze (2006:3) divides the concept of fragmentation into specific levels of institutional fragmentation and specific levels of legislative fragmentation. Ekstrom, Young, Gaines, Gordon and McCay (2009:533) state that the impediment to achieving ocean management goals relates to jurisdictional and functional overlaps in fragmented approaches to sector based marine management. Paterson (2006:3) highlights that ineptitude in regulating alien invasive plants in South Africa is a direct result of a fragmented administration and a “command and control” approach to regulation.

Allowing for the fact that Kotze’s (2008) investigation relates to fragmentation only within the environmental context, this research sets to evaluate whether commonality and duplication leading to fragmentation exists between an environmental, port control and maritime safety context or whether these are in fact distinct areas with no commonality or duplication. Aspects of institutional and legislative fragmentation will then be determined from this evaluation.

## 2.3. Causes of Fragmentation

One of the reasons given by Kotze (2006:15) for this fragmentation, with particular importance being placed on South African historical developments, are assessed in relation to the development of awareness of the impacts of ballast water on a global scale. From the literature reviewed, the problem of fragmentation is not isolated to South Africa and its unique history, but is also visible in Canada (Ricketts and Harrison, 2007), Australia (Barrett, 2003), the European Union (Koivurova, 2009; Österblom, Gårdmark, Bergström, Müller–Karulis, Folke, Lindgren, Casini, Olsson, Diekmann, Blenckner, Humborg and Möllmann, 2010) and New Zealand (Furusetth and Cocklin, 1995). Another reason given by Kotze (2006:16) is lack of detail contained in Schedule 4 of the Constitution citing specific examples such as marine environment and inland water resources not having been identified in terms of a specific national or provincial competency.

Johnston and VanderZwaag (2000:142) highlight that the challenges stem from political opposition to environmental commitments and practical problems of implementation. In the South African context, we will investigate whether political opposition to environmental commitments has in fact led to fragmentation and then duplication of governance and management of resources and whether and if so, how much the history of South Africa has contributed thereto. Practical problems associated with implementation relate to lack of finances and as a result, lack of training, poor recruitment, lack of development and transfer of technologies as well as a lack of monitoring capacity (Johnston and VanderZwaag, 2000:156). Joyner (2000) lists criminal law, peace and arms control, fisheries management, resource conservation and global processes as contributors to the legislative regime in place controlling the international ocean regime. There is little relevance of these to the lack of a management framework for controlling biodiversity and coastal management in South Africa.

#### *2.4. Co-operative Governance Frameworks and Good Governance*

Although Khalimonov (1999) references a vast number of international treaties that have been drafted (and implemented) over the last 20 years, few of them take into

consideration aspects relating to co-operative governance frameworks on a local level and tend to focus on a more general global legislative framework level.

Proper governance cannot proceed without a sound integrated legal framework dovetailing into good governance (Kotze and de la Harpe, 2008:6) and with this legal framework covered by NEMBA, ICM Act, the Merchant Shipping Act and the National Ports Act a management framework needs to be developed to ensure smooth uniform and aligned decisions (Kotze and de la Harpe, 2008:5) by the South African maritime, port control and environmental governance authorities.

The concept of good governance is often used in conjunction with sustainable development and gained credence in the financing markets (Kotze and de la Harpe, 2008:29). Barrett (2003:2) summarizes corporate governance as the organization's strategic response to risk. Various definitions for good governance exist and the definitions are not disputed, but accepted as the basis for developing a management framework aligned with the concept of good governance.

Kotze and de la Harpe (2008:31) define co-operative governance as:

*“The integration of the different spheres of government and line functionaries at international, intra-regional and intra-governmental level; co-operation between individual government officials in each sphere/line functionary; co-operation between government officials in different spheres/line functionaries; integration of policy, regulation methods and tools, service provision and scrutiny; and co-operation with industry and the public in order to achieve the principles of sustainability.”*

The idea of co-operative governance or more particularly, a co-operative approach to management has been identified by Ricketts and Harrison (2007:7) as a mechanism for effective coastal and ocean management in Canada. Barrett (2003:1) moves the idea of co-operative governance more into the public domain with the concept of “joined-up government”. This recognizes a need to integrate government services with primary focus

on the needs of the citizen (from an environmental perspective) (Barrett, 2003:1). Sen and Nielsen (1996:406) define co-management (in the context of fisheries management) as “*an arrangement where responsibility for resource management is shared between the government and user groups*”. Even though this research aims to identify a management framework for government, the involvement of the public sector and user groups should not be ignored.

## 2.5. Towards Development of a Management Framework

The basis for the development of a management framework for the various mandated governmental departments in managing biodiversity, coastal management, ballast water and alien invasive species consists of a sound, well integrated legislative regime (Kotze, 2006; Kotze and de la Harpe, 2008; Barston, 1994; Aquino, 2006). Since the objective of this research is not to develop a legislative framework, nor delve too deeply into the shortfalls of the current legislative framework, the status quo will have to be used as the platform off which to develop the management framework.

In developing this management framework, the various literature sources have common elements which should be incorporated and some contain unique solutions which will be investigated on their own relevance. The literature is also evaluated according to case studies or international comparisons which have gained previous successes.

### 2.5.1. Co-ordination

It is commonly agreed that the starting point in the management framework between differing governmental departments should be a commitment to co-ordination (Kotze, 2006; Kotze and de la Harpe, 2008; Kotze and du Plessis, 2006; Paterson, 2006; Bax *et al.*, 2003; Purwaka, 1998; Genovesi and Shine, 2004; Kusuma-Atmadja and Purwaka, 1996; Österblom *et al.*, 2010). This commitment to co-ordination would not be possible without effective communication and communication strategies (Österblom *et al.*, 2010:1294). Paterson (2006:47) correctly holds that alignment of agenda's between different mandated governmental departments is the first step in effective communication. Although the political agenda's of the different mandated governmental

departments is the same (due to the fact that they are functionaries of the same ruling party, the ANC), there is still a need for a review and alignment of their policies to identify gaps and duplicity (Kotze and de la Harpe, 2008:40).

#### 2.5.2. Knowledge Sharing and Training

Österblom *et al.* (2010:1297) argue that making common databases available and allowing for information sharing is the first step in effective communication and co-ordination strategies. To this end, large gaps of knowledge exist between the various mandated governmental departments in managing biodiversity, coastal management, ballast water and alien invasive species not particularly because their mandates are so vastly different. For example, it would be contrite to expect a port official enforcing safety of ships to have any knowledge of environmental principles. This is where effective communication and policy alignment bring early successes.

Effective training across mandated governmental departments is highly recommended by Kotze and de la Harpe (2008:34) as a mechanism to bridge the knowledge gap that exists between the different departments. This is irrespective of the nature of the mandate falling within an environmental context or not.

#### 2.5.3. Sustainability

Sustainability and the concept of sustainable development is encouraged by Furuseth and Cocklin (1995) and Johnston and VanderZwaag (2000) as a key aspect to the effective development of a management framework. Although the importance of sustainability and sustainable development cannot be ignored, the proper context of good corporate governance (Kotze, 2006; Kotze and de la Harpe, 2008) carries more importance in the development of the management framework for the mandated government departments.

#### 2.5.4. Human Resources and Management

Barston (1994:110) highlights the importance of adequate human resources in the various mandated government departments and this is strongly supported by Österblom *et al.* (2010:1294) and Genovesi and Shine (2004:19) in their call for clear and effective

leadership in establishing any management framework. Kotze and de la Harpe (2008:33) are more definitive in calling for a clear management authority to oversee the activities of two or more different mandated government departments. The scope of study of Kotze and de la Harpe (2008) in the South African context makes their recommendations far more relevant and likely to be successful in a South African context. The idea of restructuring government departments as recommended by Furuseth and Cocklin (1995:253) cannot be ignored, especially when coupled with recommendations of rationalization of departments (Paterson, 2006:46) and strategic appointments of key personnel (Kotze and de la Harpe, 2008:34).

#### 2.5.5. Planning and Budgeting

An additional aspect that requires consideration and holds importance in the South African context is adequate planning (Kusuma-Atmadja and Purwaka, 1996:77), which ties in with agenda alignment (discussed above) and proper and effective budgeting and control (Barston, 1994; Kusuma-Atmadja and Purwaka, 1996). Budgeting in a South African context is not necessarily an easy solution (Kotze and de la Harpe, 2008:38), but comprises a vital step in ensuring an effective and operational management framework for different mandated government departments.

#### 2.5.6. Zone Delineation

In terms of building the management framework around zone delineation as recommended by Morgan (1984:300) or by developing integrated coastal management zones as recommended by Wood-Thomas (1994:167), these concepts do not fit well with the development of a management framework for mandated government departments, but have more relevance in developing integrated legislative frameworks. Since this is outside of the scope of this research, as well as the fact that both the ICM Act and NEMBA deal adequately with the delineation of zones, the aspect of zone identification and zone delineation will not be addressed in the development of the management framework.

#### 2.5.7. Integrated Coastal Management Plan

Koivurova (2009:174) recommends the development of integrated coastal management plans (ICMP's) which slots in well with the different mandates of the relevant government departments. In this regard, with a combination of some of the above factors in the development of the management framework, an all encompassing ICMP which spans all of the different mandated government departments, implemented along with good leadership, restructuring, adequate appointments and effective budgeting, may go very far in ensuring less fragmentation and duplication and overlap across the different mandated government departments.

#### 2.5.8. Permitting, Technology and Legislation

Barston (1994:93) suggests increased permitting requirements in ports to ensure adequate management of port areas and coastal environments. Aquino (2006:115) goes further to suggest the introduction of better technology and legislative requirements. Whilst all three aspects may have a good impact on managing coastal areas and the spread of alien invasive species, there is no indication that these aspects would work well within a management framework. The permitting of ports and use of technology falls more within the ambit of an adequate legislative framework as opposed to a management framework. Since this research does not attempt to address any short-falls in the legislative framework save to recommend a management framework for different mandated government departments to work together, these aspects as recommended by Barston (1994) and Aquino (2006) fail to add substance to any management framework.

#### 2.5.9. Local Community Involvement

Many authors recommend the involvement of local communities in the development of a management framework for different mandated government departments. Mackay (1993:422), Laban (2007:356) and Sen and Nielsen (1996:417) encourage the involvement of local communities to ensure the enforcement and compliance of specific environmental legislation. In addition, lack of resources within government that lead to gaps in the monitoring process can easily be filled by working together with local communities (Sen and Nielsen, 1996:408). Although this is not typical of a management framework between government departments, in the South African context the lack of

resources, budget and knowledge of governmental departments can easily be supplemented with local community involvement (Kotze and de la Harpe, 2008:37). The development of a management framework for co-operation between different mandated government departments can incorporate aspects of community involvement and training.

Laban (2007:355) takes the local community involvement a step further with his recommendation of a rights based approach. Essentially, his argument centers around the fact that although non-governmental organizations (“NGO’s”) and governmental organizations have an important role and responsibility in fulfilling water rights, one cannot ignore local community accountability within water rights allocations and management (Laban, 2007:356). This concept is important in deciding whether the local community involvement should form part of the management framework for different mandated government departments or whether it should be left out of the management framework entirely.

#### 2.5.10. Incentives

Paterson (2006:45) recommends the use of incentives in government departments for the achievement of coastal management goals. Within a South African context, this concept can play an important role in the co-operation and co-management of resources between different mandated government departments (Kotze and de la Harpe, 2008:31), but it is imperative that any incentives are from a non-financial nature, taking into consideration various legislation such as the Public Finance Management Act and the Local Government: Municipal Finance Management Act.

#### 2.5.11. Ecosystem Approach

Ekstrom *et al.* (2009:532) claim that in order to implement a strong ecosystem approach, one first needs to identify the gaps and overlaps in governance that have arisen from fragmented management. Ecosystem based management (“EBM”) includes two key underlying principles, namely an increased collaboration between management agencies and the participation of all stakeholders having an interest in the ecosystem being managed (Ekstrom *et al.*, 2009:532). Ekstrom *et al.* (2009) however fails to give adequate

input into the development of a management framework, except for providing a system which helps with identification of the gaps and overlaps.

Österblom *et al.* (2010:1290) claim that the existing multilevel governance institutions are specifically set up for dealing with individual sectors, but do not adequately support an operational application of the ecosystem approach. This has importance in the development of a management framework for different mandated government departments in that using bottom up pilot initiatives allow for innovation within the existing governance framework (Österblom *et al.*, 2010:1290) and in the development of the management framework for the different mandated government departments, the stimulation of innovation in individuals and departments as a whole is an important aspect of developing a sustainable, efficient, practical management framework (Österblom *et al.*, 2010:1290). Defining scales for management and defining actions and responsibilities for achieving objectives are the first steps identified by Österblom *et al.* (2010) in developing an adequate management framework.

#### 2.5.12. Ethics

In their strategy for co-operation and integration, Kotze and de la Harpe (2008:40) highlight the importance of various issues that we group under the general heading of ethics. In the South African context, and in the content of Kotze and de la Harpe's (2008:33) recommendation of a central management authority between the two different mandated government departments, they recommend, *inter alia*, the following aspects to be included in the strategy for co-operation and integration.

Firstly, a respect for the rule of law (Kotze and de la Harpe, 2008:36) which requires adherence by all involved in the management of biodiversity, coastal management, ports and alien invasive species to the specific legislation and regulations in place. Kotze and de la Harpe (2008:36) envisage for this to happen there must be adequate knowledge and enforcement of the applicable legislation.

Secondly, all decisions and actions taken must be done in an open and transparent manner and in accordance with the specific legislation (Kotze and de la Harpe, 2008:37). To this end, Kotze and de la Harpe (2008:37) encourage participation by private individuals (and land owners) and local communities who act as the check and balance system for government transparency.

Thirdly, Kotze and de la Harpe (2008:38) recommend fairness and equity in dealing with citizens, including mechanisms for consultation and participation. This is applicable in the management framework both from an environmental perspective and from a port control perspective.

Fourthly, any management framework must have adequate measures in place in which accountability must be provided for and measured (Kotze and de la Harpe, 2008:38). Kotze and de la Harpe (2008:39) recommend that proper criteria should be set for measurement of accountability, allowing for time limits to be set for service-delivery tasks.

Finally, Kotze and de la Harpe (2008:40) maintain that high standards of ethical behaviour can only be realised if such a culture is instilled in both the management authority and the different mandated government departments. The recommendation is the establishment of an effective and enforceable code of conduct for all officials and stakeholders involved in each government department (Kotze and de la Harpe, 2008:41).

A review of all the strategic components recommended by Kotze and de la Harpe (2008) above, particularly in a South African context, can only serve to strengthen and add to the management framework that this research seeks to develop.

#### 2.5.13. Autonomy/Authority

Kotze and de la Harpe (2008:39) agree that no strategy for effective co-operative management can be sustainable unless the stakeholders engaged in decision making are given the authority and autonomy to make decisions. This concept needs to be developed

adequately within the confines of the South African legal system applicable to decision making within governmental departments.

### 3. Conclusion

A review of the available literature relating to the general and specific aspects that this research intends to address, as more fully discussed above, indicates that adequate concepts and knowledge exists. Some of the literature reviewed does not specifically relate to examples of co-operative governance between more than one government departments allocated with different mandates which may overlap and/or be fragmented. This literature, however, does provide sufficient information in terms of problem identification and development of strategies that can be applied to the research being undertaken.

The idea of co-operative management (Kotze and de la Harpe, 2008, Kotze, 2006, Kotze and du Plessis, 2006, Bax *et al.*, 2003, Österblom *et al.*, 2010, Ekstrom *et al.*, 2009; Kusuma-Atmadja and Purwaka, 1996) form a strong base line for the starting point of the management framework. The remaining literature review serves to build on these concepts.

The main area of focus of this research is the development of a management framework to implement the Convention (and as a by product, prevailing legislation). The ideas of Kotze and de la Harpe (2008), Barston (1994), Paterson (2006), Furuseh and Cocklin (1995), Johnston (2000), Österblom *et al.* (2010), Ekstrom *et al.* (2009), Kusuma-Atmadja and Purwaka (1996), Purwaka (1998), Genovesi and Shine (2004), Kotze and du Plessis (2006) and Kotze (2006) provide a strong basis for the development of a management framework that is translatable to the management of biodiversity, alien invasive species, coastal management and port control. These authors provide sufficient literature to allow for the development of a workable management framework that is practical and implementable in a South African context and more particularly relates to biodiversity issues within South Africa.

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## **SECTION 3: RESEARCH METHODOLOGY**

### 1. Introduction

This section of the research gives a description of the manner in which the development of a management framework for the implementation of the Convention will be conducted. This evaluative research relies heavily on document analysis and purposive sampling of documents and the aspects of ethics and bias are highlighted and discussed.

### 2. Methodology

In conducting this qualitative research, the choice of research design is influenced by the research question and the shaping thereof in relation to the desired end product of the research (Merriam, 1991:6). The qualitative research design, which methods are associated with postpositivism (Kruger, 2000:6) will be utilised in this research. Using a qualitative research design will allow for a deeper understanding of the subject matter as well as allowing flexibility in exploring concepts (Babbie, 2008:343). Since the nature of the knowledge being investigated is non-falsified hypotheses that are probable facts or laws (Guba and Lincoln, 1994:112 cited in Denzen and Lincoln, 1994) a postpositivist paradigm will be adopted with a critical realist ontology.

Purposive sampling of the documents will be utilised to narrow down on issues of integration, co-operation and management within an environmental context. Data will be organised in relation to relevance to coastal management, invasive species control and biodiversity issues. Further purposive sampling will organise data, books and journal articles in accordance with relevance and topics on co-operative governance, integrated management (of natural resources), co-operative management and good environmental governance.

An assessment will be conducted into available documentation relating to roles, responsibilities and mandates of various governmental departments, which will include, for instance, South African Legislation and Government Department publications. These

roles, responsibilities and mandates will be investigated in the context of locally, regionally and internationally developed and implemented management frameworks.

Using Babbie's (2008:24) inductive reasoning mode, the general principles relating to integrated management and co-operative management will be determined from the specific observations made by authors in the context of coastal management, invasive species control and biodiversity management. Further concept interrogation from integrated management and co-operative management sources will form the basis of the development of an integrated and co-operative management framework specifically developed for this research. Going further, a benchmarking and assessment of internationally and locally implemented management framework concepts, assessments and documents will be conducted in order to identify suitable components contained therein for inclusion in the integrated and co-operative management framework that this research seeks to develop. The components that will be included will be assessed in light of their ease of integration into a workable South African integrated and co-operative management framework for the implementation of the Convention.

### *2.1. Ethical Considerations*

Ethical considerations that may arise during the course of this research relate more specifically to bias on the part of the researcher (Babbie, 2008:439). Objectivity is required by the researcher when conducting qualitative research in picking up a wide range of documents and organising and making sense of the data (Hitchcock and Hughes, 1995:215). The researcher is aware of concerns relating to subjectivity and to avoid same, will draw on her legal ethics training in ensuring a commitment to the respect for truth (Bassey, 1999). In this way, the research will be conducted with rigour and depth, with constant self re-evaluation to ensure valid findings that are objective (Bassey, 1999).

## 3. Research Method

### *3.1. Goals of the Research*

The overall objective of the research, by way of a qualitative study, is to develop an integrated & co-operative management framework allowing for cross functional

competencies for implementation in different mandated South African governmental departments allowing for the effective implementation of the Convention. The following project goals have been identified:

*Goal 1: To review and identify existing roles and responsibilities set out in South African legislation pertaining to ballast water management. This will focus particularly on gaps and duplications of roles and responsibilities of government departments.*

*Goal 2: To review the appropriateness of the existing mandates, roles and responsibilities. This will highlight areas of fragmentation and overlap within the South African and International arenas with regard to biodiversity, alien invasive species, coastal management and port management.*

*Goal 3: To identify gaps that exist in the current mandates, roles and responsibilities. An investigation will be conducted into gaps that exist between government departments related to managing biodiversity, alien invasive species, coastal areas and ports.*

*Goal 4: To make recommendations and develop an effective management framework for South Africa for improvements in the management of ballast water and implementation of the Convention. This will involve methods for integration and co-operation within South African mandated governmental departments to implement the Convention.*

#### 4. Conclusion

This evaluative research, using a strong reliance of various forms of documentation, proposes a management framework for the implementation of the Convention to control and manage ballast water. The results of the research present a workable management framework for implementation by the relevant competent authority that relies on lessons learnt from both nationally and internationally relevant research.



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