

CHAPTER 6: SOUTH AFRICAN LEGISLATION PERTAINING TO LBMP REGULATORY PRIORITIES

Chapter 5 provided an analysis of the general environmental legal framework pertaining to LBMP and especially of the four main relevant statutes in this context, namely the NEMA, the NWA, the NEM:ICMA and the NEM:ICMA. However, there are sectoral statutes which are relevant for the regulation of some of the main regulatory priorities related to LBMP in South Africa, including LBMP from agricultural activities, water services, specific substances and products. This Chapter sets out and analyses the main sectoral regulatory instruments prescribed by such sectoral statutes which can assist in the regulation of some of the key regulatory priorities in terms of LBMP, identified in South Africa. In order to do so, this chapter adopts the methodological framework presented in Chapter 2 and used in Chapters 3, 4 and 5. This chapter provides for each regulatory priority (agriculture, water services, substances and products) a legal analysis of the main regulatory features which are relevant for LBMP regulation. This chapter particularly focuses on the key regulatory instruments prescribed by the identified sectoral statutes.

6.1 The regulation of agricultural sources of LBMP

As stated previously,¹⁸¹⁵ researchers have long suspected that fertilizer run-off from farms can trigger sudden explosions of marine algae capable of disrupting ocean ecosystems and even producing "dead zones" in the sea.¹⁸¹⁶ Agriculture contributes to a wide range of water quality problems, including anthropogenic erosion and sedimentation. It is probable that agriculture, in the broadest context, is responsible for much of the global sediment supply to rivers, lakes, estuaries and finally into the world's oceans.¹⁸¹⁷ Highly productive regions of the ocean are

1815 See 2.2 and 2.3.6.

1816 For further information about such phenomena see *FAO Control of water pollution from agriculture*.

1817 *FAO Control of water pollution from agriculture* Chapter 2.

highly vulnerable to agricultural run-off.¹⁸¹⁸ Almost all other non-point source control techniques in agriculture involve control or modification of run-off processes through various land and animal (manure) management techniques. The table below provides an overview of the main impacts on water quality from agricultural activities.¹⁸¹⁹

Agricultural activity	Impacts
	Surface water
Tillage/ploughing	Sediment/turbidity: sediments carry phosphorus and pesticides adsorbed by sediment particles; siltation of river beds and loss of habitats, spawning grounds, etc.
Fertilizing	Runoff of nutrients, especially phosphorus, leading to eutrophication causing taste and odour in public water supply, excess algae growth leading to de-oxygenation of water and the death of fish.
Manure spreading	Carried out as a fertiliser activity; spreading on frozen ground results in high levels of contamination of receiving waters by pathogens, metals, phosphorus and nitrogen leading to eutrophication and potential contamination.
Pesticides	Runoff of pesticides leads to contamination of surface water and biota; dysfunction of ecological system in surface waters by loss of top predators due to growth inhibition and reproductive failure; public health impacts from eating contaminated fish. Pesticides are carried as dust by wind over very long distances and contaminate aquatic systems 1000s of miles away (e.g. tropical/subtropical pesticides found in Arctic mammals).
Feedlots/animal corrals	Contamination of surface water with many pathogens (bacteria, viruses, etc.) leading to chronic public health problems. Also contamination by metals contained in urine and faeces.
Irrigation	Runoff of salts leading to salination of surface waters; run-off of fertilisers and pesticides to surface waters with ecological damage, bioaccumulation in edible fish species, etc. High levels of trace elements such as selenium can occur with serious ecological damage and potential human health impacts.
Clear cutting	Erosion of land, leading to high levels of turbidity in rivers, siltation of bottom habitat, etc. Disruption and change of hydrologic regime, often with loss of perennial streams; causes public health problems due to loss of potable water.
Silviculture	Broad range of effects: pesticide run-off and contamination of surface water and fish; erosion and sedimentation problems.
Aquaculture	Release of pesticides and high levels of nutrients into surface water and ground

1818 FAO Control of water pollution from agriculture Chapter 2.

1819 FAO Control of water pollution from agriculture Chapter 2.

Table 14. Overview of the main impacts on water quality from agricultural activities.¹⁸²⁰

In the terms of the South African legislation, three main statutes specifically regulate to agricultural activities and are to some extent relevant to LBMP regulation:

- The *Conservation of Agricultural Resources Act* 43 of 1983 (referred to hereinafter as CARA), which provides for the conservation of the natural agricultural resources of the Republic by the maintenance of the production potential of land, by the combating and prevention of erosion and weakening or destruction of the water sources, and by the protection of the vegetation and the combating of weeds and invader plants.¹⁸²¹
- The *Agricultural Pest Act* 36 of 1983 (referred to hereinafter as APA), which provides for measures to prevent and combat agricultural pests for connected matters.¹⁸²²
- The *Fertilisers, Farm Feeds, Agricultural Remedies and Stock Remedies Act* 36 of 1947 (referred to hereinafter as FFASA), which implements a registration procedure for fertilisers, farm feeds, agricultural remedies, stock remedies, sterilising plants and pest control operators. The Act also regulates the importation, sale, acquisition, manufacture, advertisement, disposal or use of fertilisers, farm feeds, agricultural remedies and stock remedies.

1820 *FAO Control of water pollution from agriculture Chapter 2.*

1821 For further general information about CARA refer to Kidd *Environmental law* 116-118 and Strydom and King *Environmental management* 317-326. Kidd indicates that the primary aim of the Act is to address soil conservation, to maintain its production potential. He also indicates that the Act is largely built on the idea of compliance through persuasion rather than coercion. He also identifies weak implementation of the Act as the main element limiting its effectiveness.

1822 For further information also refer to Kidd *Environmental law* 148-150. Kidd indicates that the Act might be dealing with too many issues to be effective.

The NWA prescribes general resource-directed regulatory instruments which are relevant to the regulation of LBMP from agricultural activities.¹⁸²³ The NWA also sets out source-directed regulatory instruments which are specifically designed to reduce water pollution from agricultural activities, especially from the management of sludge.¹⁸²⁴ The planning management-based instruments prescribed by the NWA are also relevant for agricultural activities, especially for the management of the use of water.¹⁸²⁵ The *Genetically Modified Organism Act* 15 of 1994 and the NEM:BA are also relevant in the context of sources-directed measures for agricultural activities involving genetically modified organisms (GMO).¹⁸²⁶ In the context of LBMP, the introduction of GMO in the coastal and marine environment could have damaging impacts the marine ecosystems and resources. For the sake of completeness it has therefore been decided to highlight in this section only the main regulatory instruments regarding the management of GMO, which ultimately could reduce the risk of LBMP from such activities.

6.1.1 The regulatory scope and objectives

The CARA is the main Act in this context as it strives to implement a regulatory regime to provide for the conservation of the natural agricultural resources of the Republic. The Act defines conservation as the protection, recovery and reclamation of the natural agricultural resources, which include the soil, the water sources and the vegetation, excluding weeds and invader plants. However, the Act does not provide a definition of water sources. It provides a definition only for

1823 Refer to 5.3.1.2.

1824 Refer to Appendix 4 and 6.3.

1825 Refer to 5.3.3.1(e) and 5.3.3.2(a)

1826 As discussed in 2.2 in relation to activities involving alien and invasive species, one has to ask if activities involving GMO (especially the introduction of GMO into the environment) can be qualified as LBMP, and more specifically pollution. As previously said, the answer depends mainly on the definition of pollution which is selected - the one provided by NEMA or the one provided by the NWA. In terms of the definition of pollution given by the NWA, activities such as the introduction of GMO in water resources might be legally qualified as pollution, but it would be more difficult to use the definition of pollution provided by NEMA.

a "water course", which is defined as a natural flow path in which run-off water is concentrated and along which it is carried away. It is therefore difficult to ascertain legally if such water sources could include coastal and marine waters. However, it seems that water course might only encompass inland surface waters and groundwater. The objectives of the CARA might also be too restricted to enable effective integrated pollution management, especially LBMP, from agricultural activities. By limiting the regulatory objective of the Act to the conservation of natural agricultural resources, it does not address holistically the protection and conservation of all natural resources potentially affected by agricultural activities, protecting the whole environment (including the marine environment), within the context of sustainable development in South Africa. It is conceded that priority should be given to the protection of natural agricultural resources in order to ensure the sustainability of the agricultural sector. However, considering the interactivity between different environmental media, ecosystems and activities, the Act should adopt a more integrated approach to the environmental management of agricultural activities. The ultimate goal should be "sustainable agriculture".

The aim of the FFASA is to regulate the import, manufacture, sale, acquisition, disposal or/and use of fertilisers, farm feeds, agricultural remedies and stock remedies. This Act is especially relevant as it regulates the manufacture, use, sale, import and disposal of fertilisers, which have been identified as a major source of LBMP in South Africa.¹⁸²⁷

The APA also prescribes certain regulatory instruments which could assist the regulation of LBMP due to agriculture-related activities, especially related to the introduction and proliferation of plants, pathogens, insects, exotic animals, growth media, and infectious things which could negatively impact on water resources and/or marine water resources. However, its relevancy to LBMP is reduced due to the limited scope of the Act, which is aimed mainly at protecting crops and

1827 Refer to 2.4.1.

cattle and not at the environment as a whole. Its relevance is also limited, as the definitions of "exotic animal" and "insect" explicitly exclude "fish".

These Acts establish a variety of regulatory measures/instruments which could assist the regulation of LBMP from agriculture-related activities.

6.1.2 Key resource-directed instruments

The most relevant Act in this context is the NWA, which establishes very comprehensive source-directed instruments.¹⁸²⁸

6.1.3 Key sources-directed instruments

6.1.3.1 Agricultural "control measures"

Section 6 of the CARA prescribes that the Minister may prescribe control measures which shall be complied with by land users¹⁸²⁹ to whom they apply. Such control measures can assist in the management of LBMP, especially to limit the impact of land erosion on water resources (ultimately reducing sedimentary contamination in marine waters), limit the "pollution" or "degradation" of water resources, especially from run-off (including the pollution of marine waters resources), manage the potential impact of weeds and invader plants on the marine environment (especially on wetlands and estuaries), and manage sedimentation.¹⁸³⁰ Such measures are relevant for agricultural activities taking

1828 See 5.3.

1829 In terms of the Act, a "land user" is defined as an owner of land, and includes:

- (i) any person who has a personal or real right in respect of any land in his capacity as fiduciary, fideicommissary, servitude holder, possessor, lessee or occupier, irrespective of whether he resides thereon or not;
- (ii) any person who has the right to cut trees or wood on land or to remove trees, wood or other organic material from land; and
- (iii) in relation to land under the control of a local authority, that local authority, but not a person who carries on prospecting or mining activities".

1830 In terms of LBMP, the most relevant control measures are those which would relate to the cultivation of virgin soil; the irrigation of land; the prevention or control of waterlogging or salination of land; the utilisation and protection of vleis, marshes, water sponges, water courses and water sources; the regulation of the flow pattern of run-off water; the utilisation and protection of the vegetation; the control of weeds and invader plants; the restoration or reclamation of eroded land or land which is otherwise disturbed or

place close to water resources and in the coastal zone. For example, GN R1048¹⁸³¹ prescribes various control measures related to land and vegetation use¹⁸³² and run-off water management,¹⁸³³ which are relevant to an extent in terms of LBMP. These regulations strive specifically to protect water sources and courses from agricultural activities.

However, these regulations do not seem to be comprehensive enough to efficiently reduce and manage LBMP from agricultural practices. In terms of run-off management, the proposed control measures are aimed mainly at preventing soil erosion and preserving the use of water resources (from a quantitative perspective). Agricultural run-off is regarded as the main pathway for pollutants (fertilisers and pesticides residues) from agricultural activities to the marine waters and/or water resources. Currently, the control measures under the CARA do not provide for the effective management of agricultural run-off, especially in terms of quality and the management of its potential impact on water resources (including marine water water). Moreover, due to the restricted definition of "water sources" and the lack of a definition of "water courses", the CARA does not contribute to the effective conservation and protection of water resources (as

denuded; the protection of water sources against pollution on account of farming practices; the construction, maintenance, alteration or removal of soil conservation works; and any other matter which the Minister may deem necessary or expedient in order that the objects of this Act may be achieved.

1831 In GG 9238 25 May 1984.

1832 Regulation 7, which deals with the "utilisation and protection of vleis, marshes, water sponges and water courses". This regulation prescribes that: "no land user shall utilise the vegetation in a vleis, marsh or water sponge or within the flood area of a water course or within 10 metres horizontally outside such flood area in a manner that causes or may cause the deterioration of or damage to the natural agricultural resources".

1833 Regulation 8, which deals with the regulation of the flow pattern of run-off water, prescribes that: "no land user shall in any manner whatsoever divert any run-off water from a water course on his farm unit to any other water course, except on authority of a written permission by the executive officer... No land user shall effect an obstruction that will disturb the natural flow pattern of run-off water on his farm unit or permit the creation of such obstruction unless the provision for the collection, passing through and flowing away of run-off water through, around or along that obstruction is sufficient to ensure that it will not be a cause for excessive soil loss due to erosion through the action of water or the deterioration of the natural agricultural resources ... No land user shall remove or alter an obstruction in the natural flow pattern of run-off water on his farm unit if such removal or alteration will result in excessive soil loss due to erosion through the action of water or the deterioration of the natural agricultural resources".

defined by the NWA) and marine waters resources. The CARA would be more relevant to the regulation of LBMP if the scope of the Act was amended to adopt a more integrated approach to water management.

Different control measures may be prescribed in respect of different classes of land users or different areas or in such other respects as the Minister may determine. This is relevant to LBMP regulation as the Minister could prescribe specific control measures in terms of coastal areas to prevent and manage LBMP.¹⁸³⁴

It is also important to note that any published direction order shall be binding upon the land user specified therein and his successor in title in relation to the land described in the direction. This regulatory instrument could enable an effective reactive regulatory intervention to manage LBMP pollution arising from agricultural activities. An example of a direction order, in terms of LBMP, could be the implementation of specific run-off management measures to prevent the pollution of water resources.

The APA also prescribes in section 6 that control measures should be implemented "to prevent and combat the spreading of pathogens, red-billed quelea, insects and exotic animals" and that they shall be complied with or carried out by a user of land.¹⁸³⁵ Different control measures may be prescribed in respect of different plants, pathogens, insects, exotic animals or other things, or in respect of different areas or in respect of different circumstances or in such

1834 The CARA prescribes under S 7 that: "The executive officer may by means of a direction order a land user to comply with a particular control measure which is binding on him on or with regard to the land specified in such direction, or if it is in the opinion of the executive officer essential in order to achieve the objects of this Act, to perform or not to perform any other specified Act on or with regard to such land".

1835 In terms of the Act, a "user of land" is an owner of land, and includes:

- a person who has a personal or real right in respect of land in his capacity of fiduciary, fidei-commissary, holder of a servitude, possessor, lessee or occupier, irrespective of whether or not he resides thereon;
- a person who has the right to cut trees or wood on land or to remove trees, wood or organic material from land;
- a person who has the right to remove sand, soil, clay, stone or gravel from land;
- a person who carries on prospecting or mining activities on land.

other respects as the Minister may think fit.¹⁸³⁶ This might be relevant in terms of LBMP, especially for sensitive marine and coastal areas like coastal wetlands, estuaries and marine protected areas.

6.1.3.2 *Prohibition regarding the spreading of weeds*

The CARA prescribes a general prohibition regarding the spreading of weeds.¹⁸³⁷ Section 5 of the Act prescribes that no person shall:

- sell, agree to sell or offer, advertise, keep, exhibit, transmit, send, convey or deliver for sale, or exchange for anything or dispose of to any person in any manner for a consideration, any weed; or
- in any other manner whatsoever disperse or cause or permit the dispersal of any weed from any place in the Republic to any place in the Republic.

This prohibition could assist the management of LBMP (especially in terms of biodiversity conservation) from the negative impacts of weed invasions in water courses, wetlands, estuaries and coastal waters.

6.1.3.3 *Rendering of services*

Another instrument provided by the CARA is the "rendering of services". Section 10 of the Act prescribes that:

The executive officer, any other officer of the department, a member of a conservation committee or an authorised person may at any reasonable time enter upon land with a view to rendering advice relating to the utilisation and conservation of the natural agricultural resources or the control of weeds and invader plants in accordance with the objects of this Act, to the land user of the land concerned.

1836 The control measures might instruct: the destruction and/or cleansing of plants; the combating of pathogens, red-billed quelea, insects or exotic animals; the notification of the occurrence of specified pathogens, roosting or breeding swarms of red-billed quelea, insects or exotic animals on land; or any other matter which the Minister may deem necessary or expedient to prescribe in order to further the objects of this Act. Control measures might prescribe a prohibition or obligation; an exemption; or set out the fees payable by a person applying for a permit.

1837 The Act defines a "weed" as any kind of plant which has under S 2 (3) been declared a weed, and includes the seed of such a plant and any vegetative part of such a plant which reproduces itself asexually.

This measure is interesting in the sense that it promotes collaborative and co-operative governance. It establishes a voluntary and co-operative management system to promote the achievement of the Act's objectives. But the relevance of this measure to LBMP regulation is limited as it relates only to the utilisation and conservation of the natural agricultural resources or the control of weeds and invader plants.

6.1.4 A key indirect regulatory instrument: financial assistance

The CARA prescribes in section 8 that the Minister may, in collaboration with the Minister of Finance, establish a scheme (which has to be published in the *Government Gazette*) to provide assistance, mainly financial assistance in the form of subsidies, to land users, using moneys appropriated by Parliament for this purpose, to achieve the objectives of the Act.¹⁸³⁸ This instrument has not yet been effectively used.¹⁸³⁹ The scheme could be conducive to the effective management of LBMP, but the current financial provisions are not comprehensive enough to facilitate the implementation of the necessary control measures in terms of erosion and run-off control. It is therefore suggested that a consolidated scheme could be established to facilitate the management of LBMP from agriculture-related activities, especially regarding erosion and run-off. The assistance provided by the scheme (financial or in kind) would have to be informed by clear information on the situation (the pollution on water resources,

1838 The payment of subsidies in respect of the construction of soil conservation works; the reparation of damage to the natural agricultural resources or soil conservation works which has been caused by a flood or any other disaster caused by natural forces; the restoration or reclamation of eroded, disturbed, denuded or damaged land; the combating of weeds or invader plants. The scheme could be used to assist land users to manage land erosion and run-off, and so could minimise LBMP.

1839 The main relevant scheme in the context of LBMP is established by GN R1487. *Irrigation improvement scheme: Establishment* 29 September 1995. The objectives of this scheme: "Shall be, as far as irrigation is concerned, to control or prevent the soil from becoming waterlogged, to control and prevent salinisation, to utilise and protect water courses and water sources, to promote the construction of water utilisation works and to arrange for the payment of subsidies using money voted by Parliament for the purposes of this scheme".

including marine water resources) and would have to promote the implementation of BAT and BPEO.

6.1.5 Integrated regulatory instruments

This section provides an overview of the key integrated regulatory instruments relevant for the regulation of LBMP from agriculture related sources.

6.1.5.1 *The registration of fertilisers, farm feeds, agricultural remedies, sterilising plants, stock remedies and pest control operators*

The FFSA prescribes the establishment of a register associated with a general prohibition to sell and/or import any fertilisers, farm feeds, agricultural remedies, sterilising plants and stock remedies unless they are registered. Pest control operators also have an obligation to be registered. The Act prescribes that the use of any agricultural remedy is prohibited unless it is used by a pest control operator registered in terms of this Act or otherwise than in the presence and under the supervision of a pest control operator so registered. This is relevant to managing the potential environmental damage arising from the use of an agricultural remedy which might also be a source of LBMP. The Act also regulates (in section 16) the importation of fertilisers, farm feeds, agricultural remedies, sterilising plants and stock remedies, which have to be registered and may enter the country only through a prescribed port or place of entry. In accordance with best practice,¹⁸⁴⁰ this is an effective regulatory instrument in the context of LBMP regulation from chemicals used in agricultural activities. It enables a proactive regulation of the different types and categories of fertilisers, farm feeds, agricultural remedies, sterilising plants and stock remedies available or entering the South African market. If used adequately, and adopting a risk-based and precautionary approach, this instrument has the potential to regulate proactively and efficiently pollution in general and more specifically LBMP.

1840 Refer to 2.3.4.1.

6.1.5.2 *The regulation of activities involving GMO*

In terms of section 78 of NEM:BA, if the Minister has reason to believe that the release of a genetically modified organism into the environment under a permit applied for in terms of the GMOA may pose a threat to any indigenous species or the environment, no permit for such a release may be issued in terms of that Act unless an environmental assessment has been conducted in accordance with Chapter 5 of the NEMA, as if such a release was a listed activity contemplated in that Chapter.¹⁸⁴¹ In considering an application, the relevant authority should have regard to scientifically based risk assessments and proposed risk management measures. The Act also prescribes the possibility of prohibiting activities concerning GMO. The GMOA requires any applicant for a permit to use facilities for the development, production, use or application of genetically modified organisms or to release such organisms into the environment to submit through the registrar an assessment of the risk and, where required, an assessment of the impact on the environment of such a development, production, use, application or release, as the case may be. The registrar is required to examine the conformity of an application to the requirements of the GMOA and to maintain a register of all facilities involved in the contained use or the trial release of genetically modified organisms as well as the names and addresses of persons concerned with such a contained use or trial release of genetically modified organisms. In terms of the GMOA, users shall ensure that appropriate measures are taken to avoid an adverse impact on the environment which may arise from the use of genetically modified organisms. The GMOA also provides the power to the Minister to make regulations regarding matters which are relevant in the context of LBMP from genetically modified organisms.¹⁸⁴²

1841 Refer to 5.3.3.1(a) for further information.

1842 Including regulations for the classification and types of genetically modified organisms; regarding requirements for the contained use of genetically modified organisms; regarding requirements for the laboratory development of genetically modified organisms; regarding the standards to which facilities for activities involving genetically modified organisms should conform; regarding requirements for the trial release of genetically modified organisms; regarding requirements for the effective management of waste;

6.2 Regulation of LBMP from water services and sanitation

Water services and sanitation are among the main sources of LBMP in South Africa.¹⁸⁴³ The *Water Services Act* 108 of 1997 (WSA) is the most relevant Act in this context. This section provides a legal analysis of the most relevant direct and indirect regulatory instruments in the context of the regulation of LBMP from these sources.¹⁸⁴⁴

6.2.1 Regulatory scope and objectives

The WSA is aimed¹⁸⁴⁵ at providing for the rights of access to a basic water supply and basic sanitation.¹⁸⁴⁶ It prescribes specific requirements regarding the modalities to provide a basic water supply and sanitation. It addresses the financial considerations related to basic water services, providing for the setting

regarding information to be submitted to the Council in the case of a notification in terms of this Act; regarding requirements for the general release and marketing of genetically modified organisms; regarding the importation and exportation of genetically modified organisms; and regarding the registration of a place or facility where activities concerning genetically modified organisms are undertaken.

1843 Refer to 2.4.2.

1844 Also see IMFO 2010 *Official Journal of the Institute of Municipal Finance Officers* 38-39.

1845 The main objectives of the Act are set out in S 2 of the Act, to provide for: the right of access to a basic water supply and the right to basic sanitation necessary to secure sufficient water and an environment not harmful to human health or well-being; the setting of national standards and norms and standards for tariffs in respect of water services; the preparation and adoption of water services development plans by water services authorities, a regulatory framework for water services institutions and water services intermediaries; boards and water services; the establishment and disestablishment of water committees and their duties and powers; the monitoring of water services and intervention by the Minister or by the relevant Province; financial assistance to water services institutions; the gathering of information in a national information system and the distribution of that information; the accountability of water services providers; and the promotion of effective water resource management and conservation.

1846 In terms of the Act, "water services" means water supply services and sanitation services and "water services work" means a reservoir, dam, well, pump-house, station, borehole, pumping installation, purification work, sewage treatment plant, access road, electricity transmission line, pipeline, meter, fitting or apparatus built, installed or used by a water services institution; (i) to provide water services; (ii) to provide water for industrial use; or (iii) to dispose of industrial effluent. "Sanitation services" means the collection, removal, disposal or purification of human excreta, domestic waste-water, sewage and effluent resulting from the use of water for commercial purposes. "Basic sanitation" means the prescribed minimum standard of services necessary for the safe, hygienic and adequate collection, removal, disposal or purification of human excreta, domestic waste-water and sewage from households, including informal households.

of national standards and of norms and standards for tariffs. The Act establishes a regulatory framework for water service institutions and water service intermediaries and providers.¹⁸⁴⁷ This Act is particularly relevant in the context of LBMP, as it prescribes specific regulatory instruments and measures which have the potential to regulate LBMP from sewage, used water/effluent/waste water and stormwaters. The WSA prescribes in its Preamble that:

The provision of water supply services and sanitation services, although an activity distinct from the overall management of water resources, must be undertaken in a manner consistent with the broader goals of water resource management.

In its Preamble the Act also recognises that there is a duty on all spheres of government to ensure that water supply services and sanitation services are provided in a manner which is efficient, equitable and sustainable. It prescribes that all spheres of government must strive to provide water supply services and sanitation services sufficient for subsistence and sustainable economic activity. The Act acknowledges that municipalities have the authority to administer water supply services and sanitation services, but all spheres of government have a duty, within the limits of physical and financial feasibility, to work towards this object. The Act introduces relevant legal definitions and concepts in the context of LBMP, including the "disposal of industrial effluent",¹⁸⁴⁸ which means the collection, removal, disposal or treatment of effluent emanating from the industrial use of water. The "industrial use" is defined as the use of water for mining, manufacturing, generating electricity, land-based transport, construction, or any related purpose.

1847 In terms of the Act, "water services intermediary" means any person who is obliged to provide water services to another in terms of a contract where the obligation to provide water services is incidental to the main object of that contract; and "water services provider" means any person who provides water services to consumers or to another water services institution, excluding a water services intermediary.

1848 Which has to be interpreted in the light of the provisions of the NWA, NEM:WA and NEM:ICMA.

6.2.2 Resource-directed instruments

The WSA does not provide or implement resource-directed instruments *per se*. However, as said above, it makes reference to the interrelationship between the WSA and the NWA, especially in terms of water resource management.¹⁸⁴⁹ Consequently, the resource-directed regulatory instruments provided by the NWA have to be taken into consideration in the administration and implementation of the WSA. However, a large volume of treated effluents and sewage is directly discharged in the coastal/marine environment through marine outfall and pipelines,¹⁸⁵⁰ and it is therefore important to remember that the resource-directed instruments prescribed by the NWA are not directly relevant in the context of coastal and marine waters.

6.2.3 Sources-directed instruments

Two main sources-directed regulatory instruments are prescribed by the WSA, namely, standards and instruments to control services providers and intermediaries.

6.2.3.1 Standards

In terms of section 9 the Minister may, from time to time, prescribe compulsory national standards relating to the provision of water services; the quality of water discharged into any water services or water resource system; the effective and sustainable use of water resources for water services; the nature, operation, sustainability, operational efficiency and economic viability of water services; requirements for persons who install and operate water services works; and the construction and functioning of water services works and consumer installations. These standards could have sufficient scope potentially to assist in the regulation of LBMP. The Act prescribes specific elements that the Minister must consider

1849 Also see Haigh *et al* *Water SA* 475-486.

1850 Refer to 2.4.1.

before prescribing such standards, including as the most relevant ones in the context of LBMP:

- The need for everyone to have a reasonable quality of life.
- The operational efficiency and economic viability of water services.
- Any other laws or any standards set by other governmental authorities (which will include those in terms of the NWA or the NEM:ICMA).
- Any guidelines recommended by official standard-setting institutions (mainly referring to the South African National Standards).
- Any impact which the water services might have on the environment.
- The obligations of the national government as the custodian of water resources.

These elements can also assist in the integrated and efficient regulation of LBMP from such sources. In this context, it is relevant to make reference to GN R509,¹⁸⁵¹ which prescribes national norms and standards under the WSA relating to compulsory national standards and measures to conserve water. This regulation provides the following legal concepts/definitions which are relevant in the context of LBMP, including "effluent"¹⁸⁵² and "grey water".¹⁸⁵³ In terms of this regulation, water users are categorised into at least either: (a) domestic; (b) industrial; or (c) commercial sectors. Sub-regulation 2 prescribes that the minimum standard for basic sanitation services is the provision of appropriate "health and hygiene education and a toilet which is safe, reliable, environmentally sound, easy to keep clean, provides privacy and protection against the weather, well ventilated, keeps smells to a minimum and prevents the entry and exit of

1851 GN R509 in GG22355 8 June 2001 *Regulations relating to compulsory national standards and measures to conserve water*.

1852 Effluent in terms of the WSA means human excreta, domestic sludge, domestic wastewater, grey water or waste water resulting from the commercial or industrial use of water. There are inconsistent definitions of "effluent" in the South African environmental regulatory framework, a fact which will create implementation issues and limit the effectiveness of the entire framework.

1853 In terms of the WSA, "grey water" means waste water resulting from the use of water for domestic purposes, but does not include human excreta.

flies and other disease-carrying pests". In terms of LBMP, this regulation is very relevant as it regulates and imposes specific obligations on water institutions regarding the discharge of objectionable substances in any storm-water drain and watercourse,¹⁸⁵⁴ the disposal and use of grey water,¹⁸⁵⁵ storm-water management,¹⁸⁵⁶ the use of effluent,¹⁸⁵⁷ the quantity and quality of the industrial effluent discharged into a sewerage system,¹⁸⁵⁸ and the repair of leaks and protection/maintenance of water services infrastructure.¹⁸⁵⁹ Such norms and standards are in principle aligned with international best practise in this context.¹⁸⁶⁰ However, it seems that there is a lack of effective implementation and compliance with these norms and standards¹⁸⁶¹ and that there are other related

1854 Regulation 6: a water services institution must take measures to prevent any substance other than uncontaminated storm water from entering (a) any storm-water drain; or (b) any watercourse, except in accordance with the provisions of the NWA.

1855 Sub-regulation 7: a water services institution may impose limitations on the use of grey water if the use thereof may negatively affect health, the environment or the available water resources.

1856 A water services institution must take measures to prevent storm-water from entering its sewerage system.

1857 In terms of Regulation 8, a water services institution must ensure that the use of effluent for any purpose does not pose a health risk before approving that use. Any tap or point of access through which effluent or non-potable water can be accessed must be clearly marked with a durable notice indicating that the effluent or non-potable water is not suitable for potable purposes. A notice contemplated in Regulation (2) must be in more than one official language and must include the PV5 symbolic sign for non-potable water as described in SABS 1186: Symbolic Safety Signs: Part 1. Standards, Signs and General Requirements.

1858 Regulation 9: a water services institution is only obliged to accept the quantity and quality of industrial effluent or any other substance into a sewerage system that the sewage treatment plant linked to that system is capable of purifying or treating to ensure that any discharge to a water resource complies with any standard prescribed under the NWA.

1859 Regulation 12: a water services institution must repair any major, visible or reported leak in its water services system within 48 hours of becoming aware thereof.

1860 See 2.3.4.1.

1861 For example, in March outraged ratepayers in Noetzie, a Garden Route hideaway famous for its castles along the beach, took their local municipality to task for failing to stop an illegal business that was disposing raw sewage into the sea. For further information consult IOL 2008 http://www.iol.co.za/index.php?set_id=1&click_id=180&art_id=vn20080310060547731C251359. Save the Vaal Environment (SAVE), an NGO striving to protect the Vaal River and its environs, obtained a court order in the High Court of Johannesburg on Tuesday 2 June 2009 against the Emfuleni municipality. Despite strenuous opposition to the application by Emfuleni, Judge Horn ordered Emfuleni to stop the deliberate sewage spillage into the Vaal River that had been occurring unabated for months. For further information consult Federation for a Sustainable Environment 2009 http://www.fse.org.za/index.php?option=com_content&view=article&id=211:-disaster-at-vaal-river-caused-by-emfuleni-officials&catid=35:affiliates&Itemid=53. SAVE 2010

issues¹⁸⁶² which lead to the dramatic pollution of water resources, including marine and coastal waters.

6.2.3.2 Control of water services providers and intermediaries

In terms of section 6 of the Act, "no person may use water services from a source other than a water services provider nominated by the water services authority having jurisdiction in the area in question, without the approval of the water services authority". In terms of section 22 of the Act "no person may operate as a water services provider without the approval of the water services authority having jurisdiction in the area in question". In terms of section 24 a water services authority may, in its bylaws, require the registration of water services intermediaries or classes of such intermediaries within its area of jurisdiction. In this context, GN R80 regarding water services provider contract regulations¹⁸⁶³ is noteworthy. The regulation prescribes that a contract (between a water services provider and a water services authority) must describe the scope of the water services to be provided by the water services provider and must describe the levels of service and standards of service to be provided which, if variable, shall be defined for different geographic areas in the contract area and accompanied by specific requirements, including time frames and, where appropriate, accompanied by a capital development plan to achieve the target levels of the service. Such regulatory measures and instruments are very relevant in the context of LBMP as they enable the contract to impose specific environmental

<http://www.save.org.za/happenings/index.html> and Legalbrief 2010 9 <http://www.legalbrief.co.za/article.php?story=20100215103312581>. It was also recently indicated that the waste water treatment plant in Rietfontein, where the sewage from the Hartbeespoort area is treated, has not been operational for months and that the raw sewage has been flowing into the Hartbeespoort Dam at a rate of two to three million litres per day. Confirmed information indicates that of the 2.5 mega litres of sewage that should reach the treatment plant per day, only 0.2 mega litres does. It can therefore be assumed that the remaining 2.3 mega litres is flowing into the dam. For further information consult <http://www.kormorant.co.za/2010/01Jan/21Jan/Sewage.htm>.

1862 For example, in January an estimated 4 000 litres of raw sewage flowed into the Milnerton lagoon because a sewage pump was shut down due to power cuts. For further information consult IOL http://www.int.iol.co.za/index.php?set_id=1&click_id=13&art_id=vn20080129113743864C370400.

1863 In GG 23636 dated 19 July 2002.

considerations for sanitation services and structures. They therefore have the potential to assist the regulation of LBMP. For example, a contract (as stated above) must set forth the obligations of each party to obtain any licence required for the use of water under section 22(1) of the NWA, 1998.¹⁸⁶⁴ It is also noteworthy that a contract must set out any warranties or performance guarantees to be furnished by the water services provider in respect of its ability to fulfil its contractual obligations and set forth the nature and the level of insurance to be taken by the parties.

6.2.3.3 Planning management and integrated regulatory instruments

The WSA prescribes some planning management and integrated regulatory instruments which are briefly presented below.

a. Regulation of industrial effluent disposal

Section 7 of the WSA prescribes that "no person may dispose of industrial effluent in any other manner than the one approved by the water services provider nominated by the water services authority having jurisdiction in the area in question". The Act also prescribes that the approval does not "relieve anyone from complying with any other law" relating to the use and conservation of water and water resources (including the NWA) or the disposal of effluent (including the NWA and the NEM:ICMA).

b. Water services development plan (WSDP)

In terms of sections 12 and 13 of WSA, a water services authority must develop and implement a WSDP which must contain the specific elements which are relevant in the context of LBMP.¹⁸⁶⁵ The WSDP is regarded as the primary

1864 5.3.3.2 deals specifically with water uses licences.

1865 Including the physical attributes of the area to which it applies; the size and distribution of the population within that area; a timeframe for the plan, including the implementation programme for the following five years; existing water services; existing industrial water use within the area of jurisdiction of the relevant water services authority; existing industrial effluent disposed of within the area of jurisdiction of the relevant water services

instrument of planning in the water services sector. A new WSPD must be developed every five years and it should be updated regularly and as necessary. The WSPD must be integrated with the IDP of the municipality, as required in terms of the *Municipal Systems Act* 32 of 2000. It is also recognised that:

The WSPD must integrate water supply planning with sanitation planning. The WSPD must integrate technical planning with social, institutional, financial and environmental planning. The planning of capital expenditures must also be integrated with the associated operation and maintenance requirements and expenditures. The WSPD must be informed by the business plans developed by water services providers and with the plans of any regional water services providers, as relevant. The WSPD must integrate with the catchment management strategy. The primary purpose of the WSPD is to assist WSA's to carry out their mandate effectively. It is an important tool to assist the WSA to develop a realistic long-term investment plan which prioritises the provision of basic water services, promotes economic development and is affordable and sustainable over time.¹⁸⁶⁶

This approach is in theory very comprehensive and aligned with international best practice in this context.¹⁸⁶⁷ However, as indicated previously, lack of compliance affects its effectiveness.

c. Bylaws

Every water services authority must make bylaws which contain conditions for the provision of water services.¹⁸⁶⁸ A water services authority which provides

authority; the number and location of persons within the area, who are not being provided with a basic water supply and basic sanitation; information regarding the future provision of water services and water for industrial use and the future disposal of industrial effluent, including the water services providers which will provide those water services; the contracts and proposed contracts with those water services providers; the proposed infrastructure necessary; the water sources to be used and the quantity of water to be obtained from and discharged into each source; the estimated capital and operating costs of those water services and the financial arrangements for funding those water services, including the tariff structures; any water services institution that will assist the water services authority; the operation, maintenance, repair and replacement of existing and future infrastructure; the number and location of persons to whom water services cannot be provided within the next five years, setting out the reasons therefore and the time frame within which it may reasonably be expected that a basic water supply and basic sanitation will be provided to those persons; and existing and proposed water conservation, recycling and environmental protection measures.

1866 Witzenberg Municipality *Water Services Development Plan* 2006/07 20.

1867 Refer to 2.3.4.1.

water for industrial use or controls a system through which industrial effluent is disposed of, must make bylaws providing for at least the standards of service; the technical conditions of provision and disposal; the determination and structure of tariffs; the payment and collection of money due; and the circumstances under which the provision and disposal may be limited or prohibited. A number of bylaws have been enacted, and all of them regulate similar issues. Of specific interest in terms of LBMP, such bylaws regulate the following matters:

- The disposal of domestic waste water and sewage from households to a sewage treatment plant.¹⁸⁶⁹
- A water audit for water users using more than 3 650 Kl per annum.¹⁸⁷⁰

1868 The bylaws must also provide for at least the standard of the services; the technical conditions of supply, including quality standards, units or standards of measurement; the verification of meters; acceptable limits of error and procedures for the arbitration of disputes relating to the measurement of the water services provided; the installation, alteration, operation, protection and inspection of water services works and consumer installations; the determination and structure of tariffs; the payment and collection of money due for the water services; the circumstances under which water services may be limited or discontinued and the procedure for such limitation or discontinuation; the prevention of unlawful connections to water services works; and the unlawful or wasteful use of water. See appendix 8 for a template of such bylaws.

1869 Most of the bylaws prescribe that this discharge must be based on: (i) the volume discharged, where volume is measured as a percentage of the total water supplied; (ii) an estimate of the cost that will be reasonably incurred in collecting, conveying, treating and disposing of the industrial effluent to comply with the quality standards set for discharge to a water resource, including the additional costs related to the treating of specific pollutants, and (iii) any costs that may be payable for discharge to a water resource. The Act prescribes that for the disposal of industrial effluent discharged to a sewage treatment plant must be based on: (i) the volume discharged to a water services work; (ii) an estimate of the cost that will be reasonably incurred in collecting, conveying, treating and disposing of the effluent to comply with quality standards set for discharge to a water resource, including additional costs related to the treating of specific pollutants; and (iii) any costs that may be payable for discharge to a water resource.

1870 As prescribed by most of the bylaws in this context, the audit must contain details in respect of:

- (a) the amount of water used during the financial year;
- (b) the amount paid for water for the financial year;
- (c) the number of people living on the stand or premises;
- (d) the number of people permanently working on the stand or premises;
- (e) the seasonal variation in demand through monthly consumption figures;
- (f) the water pollution monitoring methods;
- (g) the plans to manage their demand for water;
- (h) estimates of consumption by various components of use; and
- (i) comparison of the above factors with those reported in each of the previous three years, where available.

- The control of objectionable discharge to a sewage disposal system.¹⁸⁷¹
- Standards and criteria for the discharge of sewage or effluent or other substances into the sewage disposal system or sea outfall discharge point.
- Stormwater discharge into the sewage disposal system (a general prohibition).
- Water services infrastructure.¹⁸⁷²
- Applications and conditions for disposal of industrial effluent.¹⁸⁷³

1871 Most of the bylaws in this context prescribe that no person shall discharge, or permit the discharge or entry into the sewage disposal system of any sewage or other substance which does not comply with the standards and criteria prescribed in bylaws, which contains any substance in such concentration as will produce or be likely to produce in the effluent for discharge at any sewage treatment plant or sea outfall discharge point or in any public water any offensive, or otherwise undesirable taste, colour, odour, temperature or any foam: which may prejudice the re-use of treated sewage or adversely affect any of the processes whereby sewage is purified for re-use, or treated to produce sludge for disposal; which contains any substance or thing of whatsoever nature which is not amenable to treatment to a satisfactory degree at a sewage treatment plant or which causes or is likely to cause a breakdown or inhibition of the processes in use at such a plant; which contains any substance or thing of whatsoever nature which is of such strength, or which is amenable to treatment only to a degree as will result in effluent from the sewage treatment plant or discharge from any sea outfalls not complying with standards prescribed under the National Water Act, Act No. 36 of 1998; which may cause danger to the health or safety of any person or may be injurious to the structure or materials of the sewage disposal system or may prejudice the use of any ground used by the authority or the authorised provider, for the sewage disposal system, other than in compliance with the permissions issued in terms of these bylaws; and which may inhibit the unrestricted conveyance of sewage through the sewage disposal system.

1872 Including authorisation for on site sanitation, the removal or collection of conservancy tank contents, night soil or the emptying of pits, permissions and conditions for sewage delivered by road haulage. The bylaws generally prescribe that an authority or the authorised provider may, at its discretion, and subject to such conditions as it may specify, accept sewage for disposal delivered to the municipalities sewage treatment plants by road haulage. They also prescribe that no person shall discharge sewage into the municipality's sewage treatment plants by road haulage except with the written permission of the authority or the authorised provider, and subject to such period and any conditions that may be imposed in terms of the written permission. When sewage is delivered by road haulage, the nature and composition of the sewage shall be established to the satisfaction of the authority or the authorised provider prior to the discharge thereof, and no person shall deliver sewage that does not comply with the standards laid down in terms of these bylaws.

1873 Bylaws generally prescribe that the authority or the authorised provider, may, if in its opinion the capacity of a sewage disposal system is sufficient to permit the conveyance and effective treatment and lawful disposal of the industrial effluent, for such period and subject to such conditions as it may impose, grant written permission to discharge industrial effluent.

Considering the scope of the bylaws, they could be relevant to LBMP regulation. Most of the bylaws prescribe specific source-directed regulatory instruments, including quality standards for industrial effluent to be discharged into the sewage disposal system of the authority or the authorised provider. The authority or the authorised provider may, by prescription in the authorisation concerned, relax or vary the standards, provided that they are satisfied that any such relaxation represents the BPEO. In this context, most of the bylaws prescribe specific criteria to determine whether relaxing or varying the standards established in the bylaws represents the BPEO.¹⁸⁷⁴ The bylaws also prescribe the conditions for disposal of industrial effluent.¹⁸⁷⁵ It is noteworthy that most of the water services bylaws prescribe that any person who wishes to construct or cause to be constructed a building which shall be used as a trade premises shall at the time of lodging a building plan in terms of section (4) of the *National Building Regulations and Building Standards Act* 103 of 1977, as amended, also lodge applications for the provision of sanitation services and for permission to

1874 The authorities will consider:

- whether or not the applicant's undertaking is operated and maintained at optimal levels;
- whether or not the technology used by the applicant represents the best available option available to the applicant's industry and, if not, whether or not the installation of such technology would entail unreasonable cost to the applicant;
- whether or not the applicant is implementing a programme of waste minimisation which complies with national and local waste minimisation standards to the satisfaction of the authority or the authorised provider;
- the cost to the authority or the authorised provider of granting the relaxation or variation; and
- the environmental impact or potential impact of such a relaxation or variation.

1875 The conditions prescribed directly by law or by permission from the authority or authorised provider might demand that the applicant do the following:

- subject the industrial effluent to such preliminary treatment as will ensure that the industrial effluent conforms to the prescribed standards before being discharged into the sewage disposal system;
- install equipment and infrastructure;
- provide all such information as may be required by the authority or the authorised provider, to enable it to assess the tariffs or charges due to the authority or the authorised provider;
- provide adequate facilities such as level or overflow detection devices, standby equipment, overflow catch-pits, or other appropriate means to prevent a discharge into the sewage disposal system which is in contravention of the bylaws;
- cause his or her industrial effluent to be analysed as often and in such manner as may be prescribed by the authority or the authorised provider, and provide it with the results of these tests when completed.

discharge industrial effluent, a fact which could also efficiently assist LBMP regulation.

These instruments are in theory comprehensive and aligned with international best practice in this context.¹⁸⁷⁶ However, lack of compliance limits their effectiveness.¹⁸⁷⁷

6.2.4 Indirect regulatory instruments

The NWA prescribes some indirect instruments mainly relating to effectiveness assessment, monitoring, information management, capacity building and finance.

6.2.4.1 Effectiveness assessment

The Act contains various provisions which establish measures and instruments related to effectiveness assessment. Section 27 prescribes that every water services authority must monitor the performance of water services providers and water services intermediaries within its area of jurisdiction.¹⁸⁷⁸ The water services contracts must also prescribe periodic performance reviews. Moreover, service providers must annually report on the level and standard of services they provide. Section 62 of the Act prescribes that the Minister and any relevant MEC must monitor the performance of every water services institution.¹⁸⁷⁹ Such performance assessment could assist in preventing LBMP from the work undertaken by services providers and intermediaries. Water services institutions must report on the implementation of their respective development plans during each financial

1876 Refer to 2.3.4.1.

1877 Refer to 4.4.5.

1878 To ensure that prescribed standards and norms and standards for tariffs are complied with; any condition set by a water services authority is met; any additional standards set by a water services authority for water services intermediaries are complied with; and any contract is adhered to. Contracts between services providers and water services authority must provide for performance targets and indicators which enable annual effectiveness assessment, especially in terms of levels and standards of services.

1879 In order to ensure compliance with all applicable national standards prescribed under this Act; compliance with all norms and standards for tariffs prescribed under this Act; and compliance with every applicable development plan, policy statement or business plan adopted in terms of this Act.

year. Such a requirement is aligned with international best practice as it is aimed at ensuring the effectiveness of the development plans. Another interesting tool prescribed by the Act is the water services audit, which is a type of effectiveness assessment which could assist in minimising LBMP from water services related activities. The policy statement of a water board must also set out the measures by which the performance of the water board will be assessed. However, most of the statutory provisions in this context are very generic and do not provide detailed guidance in terms of the scope, extent and methodology of the assessment. No comprehensive national annual assessment is conducted in terms of the state and performance of water services and sanitation services in South Africa. No indicator exists to assess the national level of quality and performance of such services, especially regarding their impacts on the environment. There is definitely a need to improve effectiveness assessment in this area, to ensure more efficient pollution management from such sources, including LBMP regulation. Some instruments related to effectiveness assessment should be focused on reducing pollution, including LBMP, from water services related sources. There should maybe be a target to reduce the disposal of effluents into the environment and promote the effective treatment and reuse of all waste water, including effluents.

6.2.4.2 Monitoring and information management

In terms of section 67 of the Act, the Minister must ensure that there is a national information system on water services which may form part of a larger system relating to water generally. The purpose of the national information system is to record and provide data for the development, implementation and monitoring of national policy on water services and to provide information to water services institutions, consumers and the public to enable them to monitor the performance of water services institutions; for research purposes; and for any other lawful reason. This system is in principle aligned with international best practice, but effective implementation is lacking behind in this regard.

Bylaws relating to water services authorities and general or specific conditions attached to the authorisations to discharge effluent/waste water/sewage or other substances might impose specific monitoring obligations (internal or external) or request specific data or information (especially regarding the quantity and quality of effluents to be discharged), a fact which could assist the regulation of LBMP.¹⁸⁸⁰

A contract between a water services provider and a water services authority must include a provision that the water services provider must provide the water services authority with such information as may be reasonably required for the water services authority to enable them to monitor the implementation of the contract, the water services authorities must report to the Minister and the Province on the compliance with the Act and the relevant regulations by the water services provider. Such contracts must also provide for annual reports to be submitted by water services provider.

Despite the existence of these instruments, major problems in terms of monitoring and information management are still experienced in South Africa, especially regarding the state of pollution of the marine and coastal environment, as demonstrated above.¹⁸⁸¹ It is very important to assess the impact of water services activities on the coastal and marine environment, especially the disposal of effluents.¹⁸⁸² It is also important to monitor the evolution of the situation overtime to assess progress and effectiveness of the regulatory instruments.

6.2.4.3 *Capacity building*

The water boards are responsible mainly for public awareness as set out in section 39 of the WSA, which prescribes that the policy statement of a water

1880 Most bylaws also set out specific provision in terms of enforcement monitoring, prescribing for example that test samples may be taken at any time by a duly qualified sampler to ascertain whether or not the industrial effluent complies with effluent quality standards or any other standard laid down in a written permission.

1881 Refer to 4.4.1.

1882 Refer to 4.3.3.

board must contain the measures, including public awareness campaigns, to be taken to promote water conservation and water demand management, and section 34 which indicates that a water board's activities include taking reasonable measures to promote water conservation and water demand management, including promoting public awareness of these matters. In addition, national departments, in particular the DWEA and provincial governments must "provide support to municipalities in the form of capacity building, financial assistance and operational support",¹⁸⁸³ a requirement which is essential in the South African context and relevant to institutional structures, as discussed in 5.6. However, there seems to be a lack of appropriate skills at local government level which is affecting the reliability, quality and effectiveness of such water services and ultimately increasing the risks of water pollution, including LBMP.¹⁸⁸⁴

6.2.4.4 Finance

Section 10 of the WSA prescribes the implementation of norms and standards for tariffs. These norms and standards may differentiate on an equitable basis between different users of water services; different types of water services, and different geographic areas, taking into account, among other factors, the socio-economic and physical attributes of each area.¹⁸⁸⁵ The Act prescribes factors that the Minister must consider when developing norms and standards for tariffs.¹⁸⁸⁶ In

1883 GN R65 in GG 21310 30 June 2000, *Introductory policy note regarding regulation of water services providers*.

1884 Subsidies for capacity development in local government are traditionally provided through a single consolidated capacity grant (CG). SA task group on the environment, Business South Africa, 24 May 2002 and *Water Service White Paper*, "Subsidies for capacity development in local government are provided through a single consolidated capacity grant (CG). This is a conditional grant and DWAF should negotiate with Department for Provincial and Local Government and National Treasury to ensure that adequate resources are made available for the development of appropriate WSA capacity".

1885 They might place limitations on surplus or profit; place limitations on the use of income generated by the recovery of charges; and provide for tariffs to be used to promote or achieve water conservation.

1886 Including any national standards prescribed by him or her; social equity; the financial sustainability of the water services in the geographic area in question; the recovery of costs reasonably associated with providing the water services; the redemption period of any loans for the provision of water services; and the need for a return on capital invested for the provision of water services.

this context, GN R652, which sets the norms and standards in respect of tariffs for water services,¹⁸⁸⁷ is relevant. It prescribes that a water services institution must, when setting tariffs for water services provided to consumers and other users within its area of jurisdiction differentiate, where applicable, between at least the following categories:

- water supply services to households;
- the industrial use of water supplied through a water services work;
- water supply services other than those specified previously;
- sanitation services to households;
- the discharge of industrial effluent to a sewage treatment plant; and
- sanitation services other than those specified previously.

The Act also prescribes that the cost of most water treatment, plant, works or analysis which the permit holder may be required to carry out, construct or install shall be borne by the permit holder concerned, a prescription which is aligned with the polluter-pays principle and with international best practice in this context.¹⁸⁸⁸ The WSMP as described above must contain specific financial provisions, including "the estimated capital and operating costs of those water services and the financial arrangements for funding those water services, including the tariff structure", which seems to be very comprehensive in terms of financial planning and mobilisation.¹⁸⁸⁹ However, the problem of under-spending seems to have limited the effectiveness of these provisions.

In terms of section 64 of the Act, the Minister may after consultation with any relevant Province make grants and loans and give subsidies to a water services

1887 GN R652 in GG 2247 July 2001, *Norms and standards in respect of tariffs for water services* in terms of S 10 (1) of WSA.

1888 Refer to 2.3.4.2(c).

1889 The Act also provides the criteria to be used in assessing financial viability (especially that of water boards) including if it is able to repay and service its debts; to recover its capital, operational and maintenance costs; to make reasonable provision for the depreciation of assets; to recover the costs associated with the repayment of capital from revenues (including subsidies) over time; and to make reasonable provision for future capital requirements and expansion.

institution taking into consideration the requirements of equity and transparency; the purpose of the grant, loan or subsidy; the main objects of this Act; and the financial position of the applicant. This is useful in terms of financial mobilisation, even if it is considered as too generic.

6.3 The regulation of products and substances sources of LBMP

There are three main acts which are relevant to the regulation of priority substances and products in terms of LBMP, including the *Hazardous Substances Act* 15 of 1973 (HSA), the *Foodstuffs, Cosmetics and Disinfectants Act* 54 1972 (FCDA) and the *Nuclear Energy Act* 46 of 1999 (NEA). Regulations under the *Occupational Health and Safety Act* 85 of 1993 (OHSA) are also relevant for the regulation of specific substances (i.e. asbestos), prescribing specific instruments and measures which could assist in the regulation of LBMP.¹⁸⁹⁰ The APA and the FFASA are also relevant to the regulation of agriculture related substances and products in the context of LBMP. Their provisions are analysed in this section. The NEM:ICMA and the NEM:WA also prescribe specific provisions for the regulation of pollution or impact on the environment from products, and have the potential to assist in the regulation of LBMP. Their specific provisions are addressed in this section, but section 5.3 of this research provides a more comprehensive analysis of these two acts.

6.3.1 The regulatory scope and objectives

The HSA provides for the control of substances which may cause injury or ill-health to or the death of human beings by reason of the substances' toxic, corrosive, irritant, strongly sensitising or flammable nature or the generation of pressure thereby in certain circumstances, and for the control of certain electronic products. In this context it provides for the division of such substances

1890 The *Petroleum Products Act* 120 of 1977 is not relevant in the context of this research, as its regulatory objectives and instruments are not aimed and do not contribute to the control of pollution or the protection of the environment.

or products into groups in relation to the degree of danger.¹⁸⁹¹ Its main regulatory measures and instruments relate to the control and regulation of the import, manufacture, sale, use, operation, application, modification, disposal or dumping¹⁸⁹² of such substances and products. As a preliminary statement, it seems that the Act adopts a "restricted" anthropocentric regulatory approach, as the control of substances takes into consideration only the potential health-related risks and impacts. Therefore, the control of such substances in terms of this Act will not directly affect environmental considerations, for example pollution. However, environmental factors and impact might indirectly be considered if they are interrelated with human health, for example, the impact of the discharge of substances on water quality (especially potable water) or the impact of their discharge on animals or air quality due to their correlative potential impacts on human health. As demonstrated by international best practice, the

1891 "A Group I, Group II or Group III hazardous substance" means a substance, mixture of substances, product or material declared in terms of the HSA to be a Group I, Group II or Group III hazardous substance. "A Group IV hazardous substance" means radioactive material which is outside a nuclear installation as defined in the *Nuclear Energy Act*, 1999, and is not a material which forms part of or is used or intended to be used in the nuclear fuel cycle. In terms of the Act, an "electronic product" means (a) any manufactured product which, when in operation, contains or acts as part of an electronic circuit and emits (or in the absence of effective shielding or other controls would emit) electronic product radiation; or would, as a result of the failure or breakdown of any built-in safety measure or shielding, pose an electrical, mechanical, chemical, biological, ergonomic or other hazard, or cause excessive temperature, excessive pressure or ignition of flammable material, which may cause injury, ill-health or death to human beings; or any manufactured article which is intended for use as a component, part or accessory of a product described previously and which, when in operation emits (or in the absence of effective shielding or other controls would emit) such radiation; or would, as a result of the failure or breakdown of any built-in safety measures or shielding, pose an electrical, mechanical, chemical, biological, ergonomic or other hazard, or cause excessive temperature, excessive pressure or ignition of flammable material, which may cause injury, ill-health or death to human beings.

1892 In terms of the Act to "dump", in relation to a grouped hazardous substance, means to deposit, discharge, spill, release or cause or permit to be deposited, discharged, spilled or released (whether or not the substance in question is enclosed in a container), in such a place, under such circumstances or for such a period that the person depositing, discharging, spilling, or releasing or causing or permitting it to be deposited, discharged, spilled, or released, may reasonably be assumed to have abandoned it; and "dumping" has a corresponding meaning.

control and regulation of certain substances (in terms of their manufacturing, transport, use and disposal) is essential in the regulation of LBMP.¹⁸⁹³

The FCDA aims to control the sale, manufacture and importation of foodstuffs, cosmetics and disinfectants and to provide for incidental matters. In terms of LBMP regulation, this Act is mainly relevant in the context of disinfectants.¹⁸⁹⁴ However, it is important to note that the Act does not specify regulatory objectives. Consequently, it is not clear if the regulatory tools and measures implemented by the Act (to control the sale, manufacture and importation of disinfectants) are aimed at protecting human health and/or preventing environmental degradation. The control of foodstuffs in terms of this Act is not directly relevant to the regulation of LBMP as it relates only to "any article or substance ordinarily eaten or drunk by man or purporting to be suitable, or manufactured or sold, for human consumption". However it might have regulatory implications for LBMP in terms of the specifications for the quality of "marine related foodstuffs" (i.e. fish or shellfish).

The NEA is relevant to the regulation of LBMP (from nuclear substances and products) as it establishes a regulatory regime regarding the acquisition and possession of nuclear fuel,¹⁸⁹⁵ certain nuclear¹⁸⁹⁶ and related material and certain related equipment, as well as the importation and exportation of, and certain other acts and activities relating to, that fuel, material and equipment in order to comply with the international obligations of the Republic. It also prescribes measures regarding the discarding of radioactive waste and the storage of irradiated nuclear fuel.

1893 Refer to 2.3.4 3 for further information on international best practice in this context.

1894 In terms of the Act, "disinfectant" means any article or substance used or applied or intended to be used or applied as a germicide, preservative or antiseptic, or as a deodorant or cleansing material, which is not a cosmetic.

1895 In terms of NEA, "nuclear fuel" means any material capable of undergoing a nuclear fission or nuclear fusion process on its own or in combination with some other material and which is produced in a nuclear fuel assembly or other configuration.

1896 In terms of the Act, "nuclear material" means source material and special nuclear material.

6.3.2 *Resource-directed regulatory instruments*

The abovementioned statutes do not prescribe any resource-directed instruments or measures, as their regulatory scope is not directly aimed at the protection of the environment or the prevention of pollution. The main resource-directed instruments and measures described and analysed in 5.3.1.2, especially in terms of the NWA, might be applicable to some extent.

6.3.3 *Sources-directed regulatory instruments*

6.3.3.1 *Declaration of grouped hazardous substances and nuclear material*

In terms of the HSA, the Minister has declared four groups of hazardous substances.¹⁸⁹⁷ These substances are not assessed in terms of their eco-toxicity or potential ecological impacts. However, considering the nature of the substances, their regulation should ultimately reduce LBMP at source. In terms of the NEA, section 2, the Minister may declare some substances (in consideration of specific criteria) to be restricted materials, source materials, or special nuclear materials. The Minister may also declare equipment and material specially designed or prepared for the processing, use or production of nuclear material to be nuclear-related equipment and material. Specific requirements will apply to each declared substance. This approach could enable effective regulation of some priority substances in relation to LBMP, but the regulatory scope may be too limited and may not include all substances relevant to LBMP.

1897 Any substance or mixture of substances which, in the course of customary or reasonable handling or use, including ingestion, might, by reason of its toxic, corrosive, irritant, strongly sensitising or flammable nature or because it generates pressure through decomposition, heat or other means, cause injury, ill-health or death to human beings, is a Group I or a Group II hazardous substance. Any electronic product is a Group III hazardous substance. Any radioactive material which is outside a nuclear installation as defined in the *Nuclear Energy Act*, 1999, and is not a material which forms part of or is used or intended to be used in the nuclear fuel cycle, is a Group IV hazardous substance.

6.3.3.2 *Licensing and the requirements for specific activities involving identified groups of hazardous substances*

The HSA prescribes specific regulatory instruments and measures to control:

- The sale of Group I hazardous substances (including the control of supply).
- The sale, letting, use, operation, application and installation of Group III hazardous substances.
- The production, acquisition, disposal, and importation and exportation of Group IV hazardous substances.

This regulatory approach is aligned with international best practice in terms of substances and products.¹⁸⁹⁸ The main regulatory instrument established by the Act in respect of this matter is a licence mechanism and/or written authority (which in itself is more a planning instrument) and the imposition of related conditions (which will encompass source-based regulatory instruments).¹⁸⁹⁹ The Act also prescribes specific measures regarding the examination, control and disposal of imported substances. Section 9A of the Act introduces an interesting regulatory instrument, an embargo, prescribing that an inspector may at any time place an embargo for an indefinite or prescribed period on any hazardous substance (categorised in one of the above groups), appliance, vehicle or other object which is concerned in or is on reasonable grounds believed by him to be concerned in a contravention or suspected contravention of any provision of the

1898 Refer to 2.3.4, 2.3.4.3 and 2.3.6.

1899 No person shall sell any Group I hazardous substance or sell, let, use, operate or apply any Group III hazardous substance unless they are the holder of licence and otherwise than subject to the conditions prescribed or determined by the Director-General. No person shall install or keep installed any Group III hazardous substance on any premises unless a licence is in force in respect of such premises, and otherwise than subject to the conditions prescribed or determined by the Director-General. No person shall produce or otherwise acquire, or dispose of, or import into the Republic or export from there, or be in possession of, or use, or convey or cause to be conveyed, any Group IV hazardous substance, except in terms of a written authority and in accordance with the prescribed conditions and such further conditions (if any) as the Director-General may in each case determine.

Act.¹⁹⁰⁰ Such a tool might be a good "reactive" instrument to prevent LBMP from such a specific appliance, vehicle or other object which is concerned in or is on reasonable grounds believed by him to be concerned in a contravention or suspected contravention of any provision of the Act. The regulations under the HSA are also relevant to controlling activities involving hazardous substances. For example, GN R453 regarding group I hazardous substances¹⁹⁰¹ prescribes specific general requirements applicable to licensees regarding the packaging of the substance (the requirements relating to containers), the conditions of sale and supply, the labelling of the containers¹⁹⁰² and the disposal of empty container, which could be relevant in the regulation of LBMP at source. GN R247 regarding group IV hazardous substances¹⁹⁰³ regulates the disposal and transportation of group IV hazardous substances and also has the potential to assist in LBMP regulation from such substances.

6.3.3.3 *Identification of "prohibited substances", standards of composition, and the prohibition of the sale, manufacture or importation of certain disinfectants and related articles*

The FCDA prescribes that it is an offence to sell, manufacture or import for sale disinfectant which contains or has been treated with a prohibited substance; or which contains a particular substance in a greater measure than that permitted

1900 The Act defines "embargo" in relation to any grouped hazardous substance, appliance, vehicle or other object, as meaning a prohibition on the export, sale, dumping, lease, use, operation, application, or installation on any premises.

1901 In GG 5467 dated 25 march 1977 as amended.

1902 The regulation prescribes that each container of a Category A Group I hazardous substance imported, manufactured or packed in the Republic shall be clearly and conspicuously labelled with (i) the name of the product and the chemical name of the specific hazardous substance or substances contained therein; (ii) the name and address of the supplier; (iii) a skull and crossbones symbol, together with the words "Poison" and "Vergif"; (iv) the words "Act 15 of 1973: Group I"; and (v) the words "Keep out of reach of children" and "Hou buite bereik van kinders". A Group I hazardous substance acquired for mining or industrial purposes and placed in smaller containers for transfer from one section to another within an establishment may, if there is a wall-chart in the latter section indicating the risks involved in using the substance, the precautions to be observed and the first aid treatment, be conspicuously labelled only with the name of the substance".

1903 GN R247 in GG 14596 26 February 1993 *Regulations relating to group IV hazardous substances*.

by regulation or has been treated with a substance containing a particular substance in a greater measure than that permitted by regulation; or which does not comply with any standard of composition, strength, purity or quality prescribed by regulation for or in respect of it or any standard so prescribed for or in respect of any of its other attributes; or the sale of which is prohibited by regulation. Such provisions have the potential to assist the regulation of LBMP from disinfectants and associated substances.

6.3.3.4 Identification of a prohibited process, method, appliance, container or object used in connection with disinfectants

The FCDA prescribes that it is an offence to employ or use a prohibited process or method or a prohibited appliance or container or other prohibited object in or in connection with the manufacture, treatment, packing, labelling, storage or conveyance of any disinfectant; or to sell or import for sale disinfectant in or in connection with the manufacture, treatment, packing, labelling, storage or conveyancing of which a prohibited process or method or a prohibited appliance or container or any other prohibited object has been employed or used. Such provisions also have the potential to regulate potential pollution, including LBMP, from such processes and activities.

6.3.3.5 The regulation of the import, manufacture or sale of a priority waste or a product that is likely to result in the generation of a priority waste

In terms of the NEM:WA, the Minister may declare a waste to be a priority waste if he believes on reasonable grounds that the waste poses a threat to health, well-being or the environment because of the composition of the waste. One of the consequences of the declaration of priority wastes is very relevant in the context of the control of products and substances. Section 15 of the Act prescribes that no person may import, manufacture, sell or import a priority waste or a product that is likely to result in the generation of a priority waste unless that waste or product complies with specific waste management measures, an industrial waste management plan or any other requirement in terms of the Act.

Such provisions can also assist the regulation of LBMP from priority waste and related products which have been identified as source(s) of LBMP in South Africa.

6.3.3.6 Extended producer responsibility

Section 18 of the NEM:WA (section 18) establishes an extended producer responsibility. The Minister after consultation with the Minister of Trade and Industry may identify a product or class of products in respect of which extended producer responsibility applies and specify the measures that the producer must take in respect of that product or class of products. The Minister, with the concurrence of the Minister of Finance may specify the requirements in respect of the implementation and operation of an extended producer responsibility programme, including the requirements for the reduction, reuse, recycling, recovery, treatment and disposal of waste; and the financial arrangements of a waste minimisation programme. These requirements may also concern the percentage of the product that must be recovered under a waste minimisation programme and the labelling requirements in respect of waste. The Minister may also require that the producer of a product or class of products identified in that notice to carry out a life-cycle assessment in relation to the product. The producers of a product may also have to comply with specific requirements in respect of the design, composition or production of a product or packaging, and clean production measures. In terms of section 17 of the NEM:WMA, the Minister may in addition, after consultation with the Minister of Trade and Industry, require any person or category of persons to provide for the reduction, re-use, recycling and recovery of products or components of a product manufactured or imported by that person; or to include a determined percentage of recycled material in a product that is produced, imported or manufactured by that person or category of persons.

Such measures could assist the reduction LBMP from waste, especially marine debris.¹⁹⁰⁴ They may also assist in reducing chemical pollution of the marine and coastal environment due to unsound disposal of specific products like batteries and chemicals. These are regarded as very comprehensive and progressive and have the potential to efficiently assist general pollution prevention from such products and their associated waste, including LBMP.

6.3.3.7 *Specific measures regarding nuclear related products and substances*

In terms of the NEA, the Minister may issue directions.¹⁹⁰⁵ Section 34 of the Act also prescribes that except with the written authorisation of the Minister, no person (except under certain circumstances enunciated by the Act) may be in possession, acquire, import, export (at the exception of uranium hexafluoride and nuclear fuel) process, enrich or reprocess any source material; restricted material; uranium hexafluoride; or nuclear fuel.¹⁹⁰⁶ GN R207¹⁹⁰⁷ of the NEA sets out an obligation to develop radioactive waste acceptance and disposal criteria in compliance with applicable regulatory health, safety and environmental requirements as well as any other technical and operational requirements. It also prescribes that any person who has to dispose of radioactive waste must apply to the chief executive officer for a radioactive waste disposal certificate. Such provisions, even if generic, can assist the regulation of LBMP from nuclear-related products and substances. The provisions also enable a focused and

1904 Refer to 1.1.

1905 These are directions concerning the measuring methods and systems with regard to nuclear material; the undertaking of periodic physical stocktaking of nuclear material; on the operation of accounting systems in relation to any materials; relating to the keeping of records and reporting on nuclear material; and on the provision of information about the importation into, and exportation from, the Republic of nuclear material and nuclear-related equipment and material.

1906 The Act also prescribes that except with the written authorisation of the Minister, no person may produce, import, export, acquire use or dispose of nuclear-related equipment and material; dispose of, store or reprocess any radioactive waste or irradiated fuel; transport any of the abovementioned materials; and dispose of any technology related to any of the abovementioned materials or equipment. Such authorisations may be granted subject to any conditions.

1907 GN R207 in GG 31954 February 2009.

customised regulatory approach for radioactive products and substances, which have to be managed with greater care than normal waste.

6.3.3.8 *Asbestos, lead, hazardous biological agents and hazardous chemical substances-related measures and instruments*¹⁹⁰⁸

Regulation GN R155¹⁹⁰⁹ under the OHSA prescribes various regulatory instruments and measures aimed at the control of activities involving asbestos substances and the control of asbestos substances to minimise exposure and minimise health-related risks. Most of these measures and instruments have an anthropocentric regulatory objective, which is to reduce the health impact connected to asbestos exposure. However, some of these measures and instruments have the potential to reduce pollution from asbestos, especially water pollution (including coastal and marine waters).¹⁹¹⁰ The regulations also prescribe requirements regarding the cleaning of asbestos; the disposal, transport, handling and labelling of asbestos; monitoring, training and information; and the assessment of potential exposure, facts which should ultimately assist in the minimisation of LBMP from this substance.

1908 Also note the new SANS code: SANS 10234: 2008 "Globally Harmonised System of Classification and labelling of chemicals(GHS)" and the supplement: SANS 10234:2008 "List of Classification and labelling of Chemicals in accordance with the Globally Harmonised System (GHS)". The supplement is referred to in the EIA listing notices under the definition of "dangerous goods".

1909 GN R155 in GG 23108 2001.

1910 The most relevant provisions in this context are set out in regulation 13, which prescribes that an employer or self-employed person shall ensure that the release of asbestos dust into any environment or water system complies with the provisions of the APA, ECA, NWA, and NEMA. An employer or self-employed person shall also ensure that to reduce airborne emissions, all work performed with asbestos should be controlled as far as is reasonably practicable and that suitable filtration systems are used to control the release of asbestos dust into the environment to levels as low as is reasonably practicable. Any water that is contaminated with asbestos as a result of work being performed has to be passed through a filtration system before being released into any environment or water system and a suitable water filtration system is used which will ensure that the asbestos being released or entering into any environment or water system is reduced as far as is reasonably practicable. The Regulation also prescribes that all contaminated parts of the filtration system, when discarded, are disposed of as asbestos waste and that appropriate measures are taken to prevent the release of asbestos dust into the environment arising from the transport of asbestos.

GN R236¹⁹¹¹ prescribes various regulatory instruments and measures aimed at the control of activities involving lead to minimise exposure and minimise health-related risks. However, some of these measures and instruments have the potential to reduce pollution from lead, especially water pollution (including coastal and marine waters). These regulations apply to every employer and self-employed person at a workplace where lead is produced, processed, used, handled or stored in a form in which it can be inhaled, ingested or absorbed by any person in that workplace. An employer or a self-employed person must prevent lead being released into the environment and he/she also has specific duties in terms of the cleaning up and disposal of materials containing lead, and general housekeeping at the workplace. He/she must also perform regular assessment of potential exposure.¹⁹¹² These provisions are relevant in terms of pollution prevention and control, and could assist in reducing LBMP from such products. However, the regulatory scope may be too limited to be effective, especially in terms of the persons targeted by such obligations, who are limited to an employer or a self-employed person.

1911 GN R236 in GG 23175 28 February 2001 under S 43 of the *Occupational Health and Safety Act* 85 of 1993.

1912 In terms of Regulation 6 of GN R236 in GG 23175, when making the assessment, the employer or a self-employed person shall take the following into account: the presence of any lead (organic or inorganic) to which a person may be exposed; where the lead may be present, in what physical form it is likely to be and the extent to which a person may be exposed; the nature of the work, process and any likely deterioration in, or failure of, any control measures; the details of expected exposures; the steps to be taken to reduce exposure to the lowest level reasonably practicable and the steps to be taken to reduce the release of airborne lead into the environment; procedures for dealing with emergencies; and procedures for the removal of lead waste from the workplace, and the disposal thereof. The regulation also prescribes requirements regarding the cleaning of lead; the disposal, transport, handling, the labelling of lead; and monitoring, training and information; which should ultimately assist in the minimisation of LBMP from this substance. Sub-regulation 15 also sets out specific prohibitions which have the potential to reduce LBMP from such a substance, prescribing that no person shall use compressed air to blow away particles of lead from any surface, or require or permit any other person to use compressed air to blow away particles of lead from any surface. Lead paint shall not be scraped or rubbed down from a surface by a dry process. The employer or self-employed person shall ensure that the release of lead into any environment or water system complies with the provisions of the APA, ECA, NWA and NEMA.

GN 1390¹⁹¹³ prescribes similar measures and instruments in the context of hazardous biological agents, and GN 1179¹⁹¹⁴ prescribes similar measures and instruments in the context of hazardous chemical substances. In addition, every person who manufactures, imports, sells or supplies any hazardous chemical substance for use at work shall, as far as is reasonably practicable, provide the person receiving such a substance, free of charge, with a "material safety data sheet" in the prescribed form, containing all of the information as contemplated in either ISO11014 or related South African National Standards.¹⁹¹⁵ These provisions are very important in terms of pollution prevention, including LBMP.

6.3.3.9 *The regulatory requirements in terms of fertilisers, farm feeds, agricultural remedies, sterilising plants and stock remedy-related products*

The FFASA prescribes sale requirements for fertilisers, farm feeds, agricultural remedies, sterilising plants and stock remedies. Section 7 of the Act prescribes the different requirements for the sale of such substances, including: packaging, labelling, marking, recommendation for use, composition, marketing/advertisement, and efficacy. For example, some regulations¹⁹¹⁶ prescribe that the label on the packaging should indicate amongst other elements the properties and the purpose for which the agricultural remedy is intended; the directions for use and precautionary measures (if any); the skull and cross bones in case of a very toxic agricultural remedy; and any other requirements under the *Food, Drugs and Disinfectants Act* 13 of 1929. These provisions, as previously indicated for other

1913 GN R1390 in GG 22956 27 December 2001.

1914 GN R1179 in GG 16596 25 August 1995 as amended by GN R930 in GG 25130 25 June 2003.

1915 Including information regarding product and company identification; composition/information on ingredients; hazards identification; first-aid measures; fire-fighting measures; accidental release measures; handling and storage; exposure control/personal protection; physical and chemical properties; stability and reactivity; toxicological information; ecological information; disposal considerations; transport information; regulatory information; and other information. Some of the provisions of the HCS would assist in the regulation of LBMP from such substances, especially regarding the exposure limits.

1916 S 5 GN R1375 in GG 3629 11 August 1972, *Regulations pertaining to the registration and sale of agricultural remedies*.

substances/products, can be very effective in managing LBMP from specific sources, and they are aligned with international best practice in this context.¹⁹¹⁷

Another regulatory instrument prescribed by the FFASA¹⁹¹⁸ is the prohibition¹⁹¹⁹ of the acquisition, disposal, sale or use of fertilisers, farm feeds, agricultural remedies, sterilising plants, and stock remedies. The prohibition may apply throughout the Republic or in one or more specified areas,¹⁹²⁰ to any person or only a specified class or group of persons, in respect of all or one or more classes or kinds of fertilisers, farm feeds, agricultural remedies, sterilising plants, and stock remedies. This instrument can be very effective banning the use of fertilisers and other identified¹⁹²¹ farm feeds, agricultural remedies, sterilising plants and stock remedies in coastal areas or other sensitive areas (e.g. areas close to wetlands, estuaries, water resources, or specific catchment areas), ultimately reducing the sources of LBMP from agricultural activities. These provisions could also be used to ensure that potentially harmful fertilisers, farm feeds, agricultural remedies, sterilising plants and stock remedies are disposed of in an environmentally sound manner which does not represent a risk to the environment and especially the marine environment.

The FFASA provides various regulatory instruments to regulate and manage the requirements regarding containers, the labelling and marking of containers, the supplying of invoices, the composition of the substances, advertisements, manufacturing facilities, establishments, records keeping, the use, handling, storage and disposal of farm feeds, agricultural remedies, sterilising plants, and stock remedies. The Act therefore offers a wide range of regulatory interventions which can assist the regulation of LBMP related to the manufacturing, use and disposal of farm feeds, agricultural remedies, sterilising plants, and stock

1917 Refer to 2.3.

1918 In S 7 bis of the Act.

1919 Exceptions may be granted with such requirements as may be specified.

1920 For example: GN R949 in GG 10723 30 April 1987 *prohibiting the acquisition and use of certain agricultural remedies in certain areas*.

1921 Identified as being potentially harmful to the marine environment and/or water resources in South Africa.

remedies. Most of the instruments provided under the Act (in particular pertaining to the registration, conditions of use and disposal) enable the pro-active management of LBMP in this context.

6.3.3.10 Control of the importation of "controlled goods"

The first measure/instrument that the APA prescribes is the control of the importation of "controlled goods", including but not limited to any plant, pathogen, insect, exotic animal, growth medium, infectious thing, honey, beeswax or used apiary equipment; and anything determined by the Minister by notice in the *Government Gazette*.¹⁹²² The Act implements a "permit" system to control the import of these elements, a fact which can facilitate the proactive and preventive management of LBMP due to the negative impact on the marine water resources resulting from the introduction of undesirable plants, pathogens, insects, exotic animals, and growth media.

6.3.3.11 The potential for further source-directed measures and instruments: regulation by the Minister

In terms of the FCDA, the Minister may make regulations regarding matters which have the potential to effectively assist LBMP regulation.¹⁹²³ However, very few regulations have been developed regarding disinfectants. The HSA also provides the Minister with the power to make regulations regarding matters which are relevant in the context of LBMP.¹⁹²⁴

1922 Also see 6.1 regarding the regulation of GMOs.

1923 Regulations prescribing the nature and composition of any disinfectant, or standards for the composition, strength, purity or quality or any other attribute of any disinfectant or any ingredient or part of a disinfectant; prescribing, prohibiting, restricting or otherwise regulating the use or employment of any substance or any appliance, container or other object or any process or method for, in or in connection with the manufacture, treatment, packing, labelling, storage, conveyancing, serving or administering of any disinfectant; information to be revealed to a buyer; prohibiting the sale of any particular disinfectants; prohibiting, restricting or otherwise regulating the manufacture, importation, possession, sale or use of any appliance, container or other object; prescribing and prohibiting, restricting or otherwise regulating the packing and labelling of disinfectants.

1924 Regulations authorising, regulating, controlling, restricting or prohibiting the manufacture, modification, importation, storage, transportation, or dumping and other disposal of any

6.3.4 Planning management related instruments

The abovementioned acts do not prescribe specific planning related tools in relation to products control, which are relevant for the regulation of LBMP.

6.3.5 Indirect regulatory instruments

The abovementioned acts have limited provisions regarding indirect regulatory instruments which could assist LBMP regulations. They mainly relate to information management, monitoring, records management, and public participation.

6.3.5.1 Information management, monitoring and records management

The HSA and its related regulations prescribe various obligations in terms of record keeping and information management related to hazardous substances.¹⁹²⁵ The HSA prescribes specific monitoring obligations regarding

grouped hazardous substance or class of grouped hazardous substances; prescribing the procedures to be followed, the forms to be completed, the records to be kept and the other requirements to be complied with in connection with the issue of licences in respect of Group III hazardous substances and in respect of the premises on which they are installed, and the conditions to which the issue of any such licence shall be subject; prescribing the precautions to be taken for the protection from injury, ill health or death of persons in control of or employed or engaged in the manufacture, operation, application or use of grouped hazardous substances or of any other person who is likely to or may be exposed to grouped hazardous substances as a result of the manufacture, operation, application, use, disposal or dumping thereof; prescribing, prohibiting, restricting or otherwise regulating the packing and labelling of any Group hazardous substance; prescribing the duties and responsibilities of any person in control of a Group III hazardous substance or any premises on which such hazardous substance has been or is being used or of any person employed in connection with the operation of such a substance, and generally for the protection of any person from the harmful effects of exposure to radiation emanating from any Group III hazardous substance; regarding safety standards in connection with the importation into and exportation from the Republic, manufacture, packing, disposal, dumping, sale, serving, applying, administering or use of grouped hazardous substances, and the manner in which such standards shall be brought to the notice of persons concerned in any of the said activities in respect thereof.

1925 GN R453 on group I hazardous substances, 1977 requires specific records to be kept by a licensee. GN R690 relating to group III hazardous substances also prescribes specific obligations for approved dealers in terms of recording information. A licensee who is authorised to sell or supply substances listed in Category A or B of Group I also has an obligation to fill in a "Group I hazardous substances book". In terms of Group IV

Group IV Hazardous substances.¹⁹²⁶ The information management, monitoring and records management instruments seem too limited for products and substances.¹⁹²⁷ There is no comprehensive monitoring of their effect on the environment (especially marine resources), research on the potential cumulative effects of specific substances and therefore it makes informed decision making difficult. By not knowing which substances and products are the main sources of LBMP it is difficult to develop/amend the current regulatory framework to ensure effective regulation and prevent LBMP.

6.3.5.2 *Public participation*

In terms of the HSA, if the Minister intends to declare any substance or mixture of substances to be a Group I or Group II hazardous substance or any electronic product to be a Group III hazardous substance or any "Group IV hazardous substance", he or she shall cause to be published in the *Government Gazette* a notice of his or her intention to do so and in such a notice invite interested persons to submit to the Director-General any comments and representations they may wish to make in connection therewith. The FCDA and HSA prescribe similar practices.¹⁹²⁸ However, there is no engagement of stakeholders in the way to prevent pollution, including LBMP from such products and substances. The level of public participation is regarded as limited and not very pro-active.

hazardous substances, a holder of an authority shall open or cause to be opened "a permanent stock record".

1926 The Acts prescribes that a holder of an authority shall when he uses a Group IV hazardous substance in the course of his activities, monitor or cause to be monitored the radiation levels and contamination, as the case may be, at regular intervals as required by the particular activities, in order to ensure that the applicable maximum dose limits prescribed in Appendix 2 are not exceeded. The Act also prescribes further obligation in terms of the calibration of the monitoring equipment and record keeping in terms of monitoring results. Also see 5.4.1 which analyses the information systems prescribed by the NEM:WA and the NEM:ICMA.

1927 See 5.4.1 for further information.

1928 The provisions of the NEM:WA and the NEM:ICMA in terms of public participation are analysed in 4.4.4.

6.4 Conclusion

6.4.1 *The regulatory scope and objectives*

In terms of the sectoral statutes, their regulatory objectives (especially those of the WSA, the CARA, the HSA and the FCDA) are regarded as too anthropocentric, thus limiting the relevance of their provisions and instruments in the context of pollution control and more specifically LBMP. This is regarded as a regulatory weakness of these Acts. The regulatory objectives of the CARA are also not regarded as comprehensive enough as they are too focused on the agricultural resources and not the natural resources in general and especially water resources in particular. The marine and coastal environment is not directly protected by the CARA. The regulatory objectives of the HSA, and the FFASA are comprehensive but once again they are considered as too anthropocentric to enable effective pollution prevention and control, especially from LBMP. The APA regulatory scope is too limited to be relevant in terms of LBMP regulation.

6.4.2 *The key direct regulatory instruments*

The control measures prescribed by the CARA, and to some extent the APA, could be very useful to assist LBMP regulation. However the existing ones would need to be updated and new ones should be developed to prevent water pollution especially from stormwaters, run-off and waste water.

The sources-directed measures prescribed by the NEM:BA and GMOA in terms of GMO are regarded as comprehensive to prevent LBMP from the release of GMO into the marine and coastal environment.

The rendering of services prescribed by CARA are also regarded as regulatory instruments with great potential for LBMP regulation. However, such an instrument should be used more efficiently to this effect, and it will only be effective once the regulatory scope and objectives of the CARA are amended, as indicated above.

The norms and standards prescribed by the WSA can also assist in the regulation of LBMP. However, they might need to be amended to incorporate water pollution and LBMP considerations, especially in terms of waste water and effluents disposal. The provisions of the WSA can assist effluents regulation, ultimately regulating LBMP.

The WSDP in terms of the WSA is also a regulatory instrument with great potential in terms of LBMP regulation. However such plan should take into consideration LBMP considerations. There is also an issue surrounding compliance and enforcement with such instruments which need to be improved and strengthened.

The FFASA prescribes an interesting integrated regulatory instrument with its register associated with a general prohibition to sell and/or import any fertilisers, farm feeds, agricultural remedies, sterilising plant and stock remedies unless they are registered. Such an approach is regarded as comprehensive, adopting a risk-based and precautionary approach which is aligned with international best practice. This instrument could assist in the pro-active regulation of potential LBMP from such substances.

The sources-directed regulatory instruments in terms of substances and products can assist LBMP regulation. However, they are not all dedicated to pollution prevention and control. In this context the provisions prescribed by the NEM:WA are regarded as the most comprehensive, especially regarding the declaration of priority waste and the extended producer responsibility.

6.4.3 The key indirect regulatory instruments

The scheme prescribed by the CARA could be a very effective financial instrument in terms of pollution management including LBMP. However, it has not yet been implemented effectively. A consolidated scheme could be established to facilitate water pollution management, including LBMP.

The WSA contains various provisions regarding indirect regulatory instruments, especially regarding effectiveness assessment, monitoring, information management and capacity building. These instruments are regarded as comprehensive and should be implemented effectively. In terms of finance the WSA also contains various provisions which could assist with LBMP, especially in terms of tariffs and financial provision.

6.4.4 Overall assessment

As demonstrated above, sectoral statutes encompass a wide range of direct regulatory instruments which could effectively assist in the regulation of LBMP regulatory priorities. Most of these instruments are not directly aimed at the management of pollution, including LBMP, a fact which limits their effectiveness in this context. Some of the provisions might be outdated and it might be necessary to amend them to provide for a more sophisticated and holistic regulatory regime. For example, the assessment conducted during the registration process for substances and products is not comprehensive enough to assess the potential impact of the specified product and/or substances on the environment. Currently they mainly require the applicant to provide information pertaining to the toxicity of the product/substances, including "toxicological information relating to properties such as systemic accumulation, chronic poisoning, carcinogenicity and teratogenicity of their active or inert ingredients". The registration process should prescribe a "preliminary environmental risk assessment/overview" by the applicant, to inform the authority of the potential risks associated with the handling, use and disposal of the specified product/substances on the environment, especially water resources (including marine water resources). This assessment should as a minimum identify the potential impact of the specified product on fauna and flora, known environmental impacts, the potential risks linked to bio-accumulation or synergies, and the potential for cross-media contamination. The directions for use of the product are essential in pollution management related to the specified product/substances. However, the current regulations and practices do not enable the development

and implementation of effective directions for use. The directions for use should include specific information related to: the handling, storage, application and disposal of the specific product. Such an intervention could improve the protection of water resources and the marine environment against pollution from such substances/products.

The following table provides an overview of the outcomes of the legal assessment of the South African regulatory framework pertaining to LBMP regulation, conducted in Chapter 5 and 6.

OVERVIEW OF THE SOUTH AFRICAN REGULATORY FRAMEWORK IN THE CONTEXT OF LBMP	
Regulatory Framework	• <i>National Environmental Management Act 107 of 1998 (NEMA);</i> • <i>National Water Act 36 of 1998 (NWA);</i> • <i>National Environmental Management: Integrated Coastal Management Act 24 of 2008 (NEM:ICMA); and</i> • <i>National Environmental Management: Waste Act 58 of 2008 (NEM:WA).</i>
	• <i>Conservation of Agricultural Resources Act 43 of 1983;</i> • <i>Agricultural Pest Act 36 of 1983;</i> • <i>Fertilisers, Fann Feeds, Agricultural Remedies and Stock Remedies Act 36 of 1947;</i> • <i>Genetically Modified Organisms Act 15 of 1994;</i> • <i>Foodstuffs, Cosmetics and Disinfectants Act 54 of 1972;</i> • <i>Hazardous Substances Act 15 of 1973;</i> • <i>Petroleum Product Act 129 of 1977,</i> • <i>Development Facilitation Act 67 of 1995;</i> • <i>National Building Regulations and Building Standards Act 103 of 1977;</i> • <i>Environmental Impact Assessment Regulations, 2010;</i> • <i>Water Services Act 108 of 1997;</i> • <i>Nuclear Energy Act 46 of 1999,</i> • <i>National Nuclear Regulator Act 47 of 1999,</i> • <i>Local Government: Municipal Systems Act 32 of 2000;</i> • <i>Local Government: Municipal Structures Act 117 of 1998;</i> • <i>Mineral and Petroleum Resources Development Act 28 of 2002; and</i> • <i>Petroleum Pipeline Act 61 of 2003</i>

Sustainable coastal development, interconnectivity of coastal ecosystems, land/sea interdependency, quality of life, protection of water quality, quantity and reliability, equity regarding water access and use, optimum resources use and protection, sustainable use, beneficial use, vertical and horizontal integration, fairness, respect for the recovery capacity of the environmental media, unity of the water cycle, public participation, scientific integrity, integrated coastal management, practicality, pro-active and co-operative governance, social equity, holism, integration, risk aversion, participatory and incentive-based approach, adaptive management, media-base approach, accountability, environmental justice, participation, full cost-benefits accounting, informed and transparent decision making, precautionary principle, subsidiary principle, cross-sectoral approach, environmental effectiveness, precautionary and polluter-pays principles.

What is regulated?

Mainly point sources of pollution, activities, substances, emissions/discharges, installations and other factors which might pollute or contribute to the pollution and/or degradation of the environment and water resources (NEMA, NEM:WA and NWA). Mainly coastal activities and the discharge of effluent in the coastal zone in terms of the NEM ICMA.

Where does the regulatory regime apply?

- **Manne side (protection):** only estuaries and coastal wetlands in terms of the NWA. Coastal waters (encompassing the seashore, the territorial waters or the internal waters of the Republic and generally estuaries) and to some extent manne waters (including EEZ) in terms of the NEM ICMA. Unclear for NEMA and NEM:WA, but most probably coastal waters.
- **Land side (control of sources):** The territory of the Republic in terms of the NEMA, NEM:WA and NWA. Mainly restricted to the coastal zone in terms of the NEM ICMA.

- Prevent pollution and ecological degradation;
- Promote conservation;
- Secure ecologically sustainable development and the use of natural resources while promoting justifiable economic and social development;
- Integration of good environmental management into all development activities;
- Implement "integrated management" of all aspects of water resources, meaning water- and land-related aspects (biological, chemical, and physical);
- Manage the protection, use, development, conservation, management and control of water resources;
- Ensure that the nation's water resources are protected, used, developed, conserved, managed and controlled in ways which take into account various factors;
- The reduction and prevention of pollution and the degradation of water resource;
- Integrated coastal and estuarine management;
- The conservation of the coastal environment, and the maintenance of the natural attributes of coastal landscapes and seascapes;
- Ensure that development and the use of natural resources within the coastal zone is socially and economically justifiable and ecologically sustainable;
- Manage pollution in the coastal zone, the inappropriate development of the coastal environment, and other adverse effects on the coastal environment;
- Preserve, protect, extend and enhance the status of coastal public property as being held in trust by the state on behalf of all South Africans, including future generations;
- Secure equitable access to the opportunities and benefits of coastal public property;
- Regulate waste management in South Africa in order to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development;
- Minimisation of pollution and the use of natural resources through vigorous control, cleaner technologies, cleaner production and consumption practices, and waste minimisation; and
- Protect the environment by providing reasonable measures for avoiding and minimising the generation of waste; reducing, re-using, recycling and recovering waste; treating and safely disposing of waste as a last resort; preventing pollution and ecological degradation; securing ecologically sustainable development while promoting justifiable economic and social development; and remediating land where contamination presents, or may present, significant risk of harm to health or the environment.

- The classification system (but relevant only for estuaries and coastal wetlands);
 - The reserve (but relevant only for estuaries and coastal wetlands);
 - Water users quality requirements (but relevant only for estuaries and coastal wetlands) but not ecosystem-based water resource quality objectives; and
 - Currently only the following water quality guidelines (and not standards) apply: *The South African Water Quality Guidelines, Second Edition, 1996 Volume 1: Domestic Use, Volume 2: Recreational Water Use; Volume 3: Industrial Water Use; Volume 4: Agricultural Water Use: Irrigation; Volume 5: Agricultural Water Use: Livestock Watering; Volume 6: Agricultural Water Use: Aquaculture; Volume 7: Aquatic Ecosystems; and Volume 8: Field Guide and South African Water Quality, Guidelines for Coastal Marine Waters. Volume 1: Natural Environment; Volume 2: Recreational Use; Volume 3: Industrial Use; and Volume 4: Mariculture.*
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- Duty of care and NEMA: "reasonable measures;"
 - NEM:ICMA: new "degree" of duty of care for the coastal environment;
 - NWA: a special duty of care for in terms of water resource pollution;
 - Duty of care in terms of waste management;
 - Best practicable environmental option (BPEO);
 - Best available techniques (BAT);
 - "Best Available Technology Not Entailing Excessive Cost" (BATNEEC);
 - The most suitable available technology;
 - Best available affordable cleaner technology;
 - The most environmentally and economically feasible option;
 - Cleaner production measures;
 - Environmentally sound management;
 - Water use authorisation/licence and emissions control (general and specific conditions);
 - Operational policy for the disposal of land-derived water containing waste to the marine environment of South Africa, 2004;
 - Specific emissions control and mining-related activities;
 - NEM:ICMA: source-directed measures and the discharge of effluent in the coastal zone (authorisation or permit with general and/or specific conditions);
 - Registration of water uses;
 - Minimum requirements, best practices, guidelines, strategies and operational policies;
 - Norms and standards for waste management (not yet established);
 - Declaration of priority wastes and waste management measures;
 - Source-directed measures contained in environmental authorisation/permits/licence;
 - Specific source-directed measures in terms of agriculture-related activities: control measures, prohibition of activities, rendering of services, registration, financial assistance;
 - Specific source-directed measures in terms of water services and sanitation-related activities: requirements, standards, water services bylaws, control of services providers, and
 - Specific source-directed measures in terms of products and substances: duty of care, declaration, licences, standards of composition, identification of prohibited substances and processes, regulation of the import, manufacture, sale or import, extended producer responsibility, waste management requirements for products, specific requirements for specific substances (nuclear, lead, asbestos, hazardous biological agents and hazardous chemical substances), prohibition of acquisition.

	• NEMA and the general framework for EIA; • Land development applications and impact assessments; • EIA for coastal activities; • NEM ICMA and coastal protection notice; • NEM ICMA and repair and removal notice; • NWA and controlled activities; • Water services development plan; • Waste management licences; • Control of nuclear installations (certificate of registration); • Erection of buildings (authorisation, requirements, prohibition and restrictions); • Control of transport, loading and storage of petroleum (licence); • Major hazard installations (requirements); • Regulations of activities to protect marine and coastal biodiversity (authorisation (EIA), permits, prohibition and/or requirements); • Regulation of activities involving alien and invasive plants (permits and requirements); • Regulation of activities in marine and other protected areas; • NWA and the management of the uses of water (licence and authorisation); • Coastal set-back lines; • Coastal zoning schemes; • Catchment areas management; • Integrated coastal zone management; • Integrated development plans and the spatial development framework; • Instruments regarding land development; • Environmental management framework; and • The determination of sensitive zones.
INDIRECT Instruments in support of direct instruments, facilitating the regulation of LBMP	GENERAL • Ecological assessment: the National state of the Environment Report, environmental indicators, "the state of river systems" and "the state of our coast". No comprehensive emissions/pollutions release register; • Monitoring, data management, reporting and notification: NWA national monitoring systems and national information systems, registration of water uses and environmental authorisations, national waste information system and sectoral ecological status assessment, monitoring and information management; • Performance assessment of measures: limited and sectoral; • Public participation: comprehensive provisions and lately specific focus in terms of coastal management, • Capacity building <i>ad-hoc</i> initiatives but lately focus on capacity building in terms of integrated coastal management; and • Financial management: limited and no coherent approach, water services norms and standards and water users charges.

Environmental Management Framework Environmental Management Framework	Environmental Management Framework	• The public trust doctrine and "duty of care for the state" (environment, coastal public property and water resources); • The National Water Resources Strategy; • Catchment management strategies; • Coastal management programmes; • The National Waste Management Strategy; • Integrated waste management plan; • Industry waste management plans; and • A <i>National Programme of Action for South Africa</i> in terms of LBMP.
		• Fragmented environmental institutional structure in South Africa, vertical and horizontal; • Creation of DWEA is a positive change and should assist integrated environmental management, pollution management and especially LBMP regulation; • Limited delegation and decentralisation; • Challenges at provincial and local levels; • Capacity issues; and • Issues regarding environmental co-operative governance.
		SUBSTANCES Climate change, municipal waste-water, industrial waste-water, urban storm-water, solid waste disposal, atmospheric deposition, alien vegetation.
		ACTIVITIES Varied range of activities of specific importance, mining, coastal infrastructure development, fresh-water abstraction and flow modification, waste-water-related activities, waste management, port and harbour operations, agricultural practices, control of the use of off-road vehicles, control over the introduction of alien vegetation, the harvesting of living resources, and aquaculture.
	AREAS	Wet-lands, estuaries and other sensitive zones.

Table 15. Overview of the South African regulatory framework relevant to LBMP regulation.