Legal Perspectives on Ecosystem Services Protection for Water Security in South African Cities

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Abstract

In the last couple of years, South African cities have exhibited extreme water stresses, despite there being a strong regulatory system for the management of said resources. The pressure to meet human demand for freshwater resources, accompanied by a wide array of other challenges, has largely led to a deterioration of ecosystems. Given the ongoing and widespread loss of ecological services, water protection requires a substantial effort to reverse the current decline in both the state of the ecosystems and the services they provide to society, and the country's shared sense of governance of these significant resources. Achieving water security and the sustainable management of water resources will, therefore, require overcoming strategic challenges related to protected areas, water infrastructure, economies, human settlements and water quality, sanitation and health, as well as the protection of ecological infrastructure. This article argues that ecosystem services protection can add value to the protection and management of water resources in attaining water security in South Africa, as ecosystem services and water security are inextricably linked. The article further determines how the legal framework in South Africa makes provision for water security and ecosystem services protection, to assess what role local government can and should take on. The authors conclude the discussion with some observations on ecosystem services protection for water security in policies and by-laws of the eThekwini Metropolitan Municipality.

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Introduction*

Water insecurity is arguably one of the gravest challenges of the twenty-first century.[1] The deteriorating state of water resources inevitably makes attaining water security a considerable challenge. Pressures on water resources, however, are said to continue to grow, partly as a result of population growth, widespread environmental degradation, rising consumption, and climate change.[2] The pressure on water resources is increasingly seen in the alteration of water supply and demand, worsening water quality, and the increasing occurrence of floods and droughts.[3] In South Africa, water challenges are aggravated by economic inequalities, a legacy of state-led racial discrimination depriving many of adequate access to public amenities, and a growing demand for a limited resource.[4]

In addressing the country's water needs, the focus needs to be directed to the protection of ecological infrastructure, which includes:

> wetlands that provide water purification and flood regulation, strategic water source areas that are of strategic importance for water security, healthy river tributaries that help to improve and maintain water quality and quantity, estuaries that provide important nursery areas for marine fish and invertebrates including commercially harvested ones, and coastal and inshore marine ecosystems that help to buffer the impacts of climate change.[5]

Ecological infrastructure refers to the naturally functioning ecosystems that deliver valuable services (ecosystem services) to people, such as water and climate regulation,

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1 UNDP, *Human Development Report* (Oxford University Press 1994) 29.

2 Peter Gleick and Charles Iceland, *Water, Security and Conflict* (Water Resources Institute 2018) 3.

3 ibid.

4 Mariëtte Swart and Nigel Adams, 'Water Services Provision and the Protection of Water Resources', in Anél du Plessis (ed), *Environmental Law and Local Government in South Africa* (Juta 2015) 445; John Enqvist and Gina Ziervogel, 'Water Governance and Justice in Cape Town: An Overview' (2019) 6(4) Wiley Interdisciplinary Reviews: Water 2.

5 Department of Environmental Affairs, 'National Biodiversity Strategy and Action Plan 2015-2025' (environment 2016) 19 <https://www.environment.gov.za/sites/default/files/docs/publications/SAsnationalbiodiversity_strategyandactionplan2015_2025.pdf> accessed on 4 April 2020 (hereafter NBSAP).

and disaster risk reduction.[6] These ecosystems are functional units linked by the complex series of interactions and processes that impact on the status of both living (plants, animals, microorganisms) and non-living (water, soil, minerals) components.[7] Considering the pressure on the government to provide access to safe, affordable and sufficient water, it often happens that the natural environment is degraded and over-exploited in making these services available to human beings. It is argued that the increasing reliance on natural resources and the ecosystem services they provide results in significant stress and pressure on the ecosystems, which points to an increasing need for assuring ecological sustainability.[8] It is for this reason that the protection of ecosystems in cities has become crucial for both environmental conservation and improving the overall management of water resources.[9]

The challenges in the water sector can be grouped into those related to water resources (water in rivers and dams) and those related to water services (water and wastewater in pipes).[10] In South Africa many localities experience some difficulties in either category or both. Since 2015, many areas in South Africa have been declared as disaster risk areas due to severe droughts.[11] The Western Cape, Northern Cape, Eastern Cape and parts of Gauteng have all faced the risk of the complete interruption of their water supply. The severity of the state of water resources in the cities in these provinces signals a need for immediate and innovative action in South Africa.[12]

South Africa boasts an extensive legal framework that firmly entrenches issues of access to safe water and the protection of water resources. This framework includes the constitutional environmental right,[13] environmental framework law,[14] and sectoral laws

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6 SANBI, 'A Framework for Investing in Ecological Infrastructure in South Africa' (*SANBI*, 2014) 3 <https://www.sanbi.org/wp-content/uploads/2018/04/framework-ieimarch2014sanbi_0.pdf> accessed on 4 April 2020.

7 UNEP, *Water Security and Ecosystem Services: The Critical Connection* (UNEP 2009) 7.

8 Stephen Woodley, James Kay and George Francis, *Ecological Integrity and the Management of Ecosystems* (CRC Press 1993) vii.

9 SACN, *State of Cities Report 2016* (SACN 2016) 186; Timon McPhearson and others, 'Resilience of and through Urban Ecosystem Services' (2015) 12 Ecosystem Services 153; Marié du Toit and Sarel Cilliers, 'Urban Ecology' in Anél du Plessis (ed), *Environmental Law and Local Government in South Africa* (Juta 2015) 753; Gretchen Daily, 'Management Objectives for the Protection of Ecosystem Services' (2000) 3 Environmental Science & Policy 333.

10 Mike Muller and others, 'Water Security in South Africa' (*DBSA*, 2009) 7 <https://www.dbsa.org/EN/About-Us/Publications/Documents/DPD%20No12.%20Water%20security%20in%20South%20Africa.pdf> accessed 4 April 2020.

11 GN 243 (4 March 2020) GG 43066; PN 301 (4 March 2020) PG 4336 x; PN 157 (21 August 2017) PG 7811; PN 149 (18 October 2017) PG 2143.

12 In this article all references to cities bear the meaning of urban areas, including medium-sized cities and towns as governed by municipalities. At times, the concepts of city and municipality are used interchangeably.

13 Section 24 of the Constitution of the Republic of South Africa, 1996 (the Constitution).

14 National Environmental Management Act 107 of 1999 (NEMA).

giving effect to this right.[15] Adding to these environmental laws is South African water law and policy, which are based upon the constitutional recognition of the right of access to sufficient water.[16] The National Water Act 36 of 1998 (NWA) and the Water Services Act 108 of 1997 (WSA) respectively address the protection, use, development, quality, conservation, management, control, supply and provision[17] of water resources in ways which take into account meeting the basic human needs of present and future generations; promoting equitable access to water; redressing the results of past racial and gender discrimination; promoting the efficient, sustainable and beneficial use of water in the public interest, meeting international obligations, promoting dam safety, and managing floods and droughts.[18]

In light of the aforementioned, the authors argue that local government has a role to play in strengthening the regulation of ecosystems services for water security. While this role and its accompanying duties is not made abundantly clear in law, there is a strong possibility of it being taken forward at a local government level. This, therefore, warrants an investigation into whether the legal framework is first, sufficient to address water security and the protection of ecosystem services, and second, whether the practical measures implemented by eThekwini Municipality as a case study, are sufficient and sustainable to address the aforementioned. Part two of this article commences by interrogating the notions of ecosystem services and water security with the aim of establishing the nexus between the two concepts. Part three addresses the constitutional and legislative basis for the protection of ecosystem services and water security. Furthermore, it seeks to determine how the law and policy framework in South Africa makes provision for water security and the protection of ecosystem services, and to assess what role local government can and should play in ensuring water security through the protection of ecosystem services. Part four analyses the research question by way of a desktop review of some legal instruments of eThekwini Municipality touching on the protection of ecosystem services and water security. This article argues that the protection of ecosystem services can add value to the protection and management of water resources in attaining water security in South African cities.

The Role of the Protection of Ecosystem Services in Achieving and Maintaining Water Security in Cities

Despite their global acknowledgment and use across academic and policy discourse, there is no universal acknowledgment or agreed upon definitions of the terms *water*

15 These are often referred to as the Sectoral Environmental Management Acts (SEMAs) and include the National Environmental Management: Biodiversity Act 10 of 2004 (NEMBA); and the National Environmental Management: Protected Areas Act 57 of 2003 (NEMPAA).

16 Section 27(1)(b) of the Bill of Rights.

17 The WSA effectively provides for the rights of access to basic water supply and basic sanitation necessary to secure sufficient water and an environment not harmful to human health or well-being—See section 2(a) of the WSA.

18 Section 2(a)–(d), (i)–(k) of the NWA.

security and *ecosystem services*. Accordingly, different meanings are also attributed to these concepts in scholarly discourse.[19] Aboelnga and colleagues indicate that 'the concept of urban water security is multifaceted and interrelated with the broader frameworks and concepts of … ecological security, integrated urban water management … risk management, resilient and adaptive water management, and water-sensitive cities.'[20] A clearer understanding of the synergies and trade-offs between these frameworks will arguably provide clarity on what urban water security entails and will assist in systematically operationalising the concept of water security, especially at the urban level. Although there are several definitions and understandings applicable to water security, the definition of water security adopted in this article considers the challenges associated with water in the context of South Africa. As such, water security is defined as 'the capacity of a population to safeguard sustainable access to adequate quantities of acceptable quality water for sustaining livelihoods, human well-being, and socio-economic development, for ensuring protection against water-borne pollution and water-related disasters, and for preserving ecosystems in a climate of peace and political stability.'[21] UN-Water states that water security 'encapsulates complex and interconnected challenges and highlights water's centrality for achieving a larger sense of security, sustainability, development and well-being.'[22]

Furthermore, it is averred that the key to achieving urban water security is to have a balance between the exploitation of water resources and sustaining and protecting urban ecosystem services as 'natural infrastructure' that is critical to people's well-being and livelihoods (pollution and contamination, level of water stress, good ambient water quality, exploiting green roofs and green areas).[23] Ecosystem services are defined as the benefits that people can obtain and use, either directly or indirectly, that are provided by nature through its naturally occurring processes and functions.[24] The system

19 Christina Cook and Karen Bakker, 'Water Security: Debating an Emerging Paradigm' (2012) 22 Global Environmental Change 97; Hasan Aboelnga and others, 'Urban Water Security: Definition and Assessment Framework' (2019) 178(8) Resources 2; UN-Water, *Water Security and the Global Water Agenda: A UN Water Analytical Brief* (United Nations University 2013) vi; Erik Nelson and others, 'Modeling Multiple Ecosystem Services, Biodiversity Conservation, Commodity Production, and Trade-offs at Landscape Scales' (2009) 7(1) Frontiers in Ecology and the Environment 4; Gretchen Daily, 'Introduction: What are Ecosystem Services?' in Gretchen Daily (ed), *Nature's Services: Societal Dependence on Natural Ecosystems* (Island Press 1997) 3.

20 ibid Aboelnga (n 19); RR Brown, N Keath and TH Wong, 'Urban Water Management in Cities: Historical, Current and Future Regimes' (2009) 59(5) Water Science and Technology 847–855.

21 UN-Water (n 19) 1.; Department of Water and Sanitation, 'National Water and Sanitation Master Plan, 2018' (*DWS*, 2018) 1 <https://www.gov.za/sites/default/files/gcis_document/201911/national-water-and-sanitation-master-plandf.pdf> accessed 4 April 2020.

22 UN-Water (n 19) vi.

23 Aboelnga (n 19) 8.

24 Daily (n 19) 3; Kate Brauman and Gretchen Daily, 'Ecosystem Services', *Encyclopedia of Ecology* (Elsevier 2008) 1148–1149); Robert Costanza and others, 'The Value of the World's Ecosystem Services and Natural Capital' (1997) 387 Nature 253; James Boyd and Spencer Banzhaf, 'What are Ecosystem Services? The Need for Standardized Environmental Accounting Units' (2007) 63(2–3) Ecological Economics 619.

dynamics of ecosystem services can accordingly be summarised as the interaction of the three processes of 'production' (of beneficial goods or services on the ecosystem side), 'use' (uptake by beneficiary groups in societies) and 'flow' (the transmission of benefits from nature to people).[25] Consequently, ecosystem services can be provisioning,[26] supporting,[27] cultural,[28] or regulating[29] ecosystem services, depending on the function they serve or the output they deliver.[30] It is important to note that, despite the focus on benefits in the majority of definitions, ecosystem services also provide disservices that may be to the detriment of humankind, man-made infrastructure and economies.[31] There are, furthermore, many debates concerning ecosystem services in the realm of conservation theory, especially with regard to valuation of ecosystem services.[32] The protection of ecosystem services is often argued to be dependent on the value that people link to them. It is argued that ascribing value to ecosystem services

25 Ferdinando Villa, Brian Voigt and Jon Erickson, 'New Perspectives in Ecosystem Services Science as Instruments to Understand Environmental Securities' (2014) 369 Philosophical Transactions of the Royal Society 3.

26 Provisioning services are also referred to as ecosystem goods and are physical goods such as food, water, plants, and fibres produced by and obtained directly from nature for human consumption—Millennium Ecosystem Assessment, *Ecosystems and Human Well-being: A Framework for Assessment* (Island Press 2003) 56; Millennium Ecosystem Assessment, *Ecosystems and Human Well-being: Synthesis* (Island Press 2005) 40.

27 Supporting services contain, for example, services such as pollination, photosynthesis, soil formation, habitat formation and nutrient cycling—David Hodas, 'Law, the Laws of Nature and Ecosystem Energy Services: A Case of Wilful Blindness' (2013) 16(2) Potchefstroom Electronic LJ 75; Millennium Ecosystem Assessment, *Ecosystems and Human Well-being: Synthesis* (n 26).

28 Cultural services that are provided include, for example, serving as spaces for recreation and spiritual experiences or spaces that are aesthetically pleasing, such as parks, gardens, forests, rivers, mountains, waterfalls, etc—The URBES Project, 'Cultural Ecosystem Services – A Gateway to Raising Awareness for the Importance of Nature for Urban Life' (*IUCN,* 2015) <https://www.iucn.org/sites/dev/files/import/downloads/urbes_factsheet_08_web.pdf> accessed 8 April 2020; Hodas (n 27).

29 Regulating/regulation when used in conjunction with the words 'ecosystem services' does not carry the meaning it has in law (regulate: 'to control or supervise by means of rules or regulations' or regulation: 'a rule or directive made and maintained by an authority in accordance with regulations') see the definitions of 'regulate' and 'regulation' in Angus Stevenson and Maurice Waite, *Concise Oxford English Dictionary* (12 edn, Oxford University Press 2011) 1212.

30 Millennium Ecosystem Assessment, *Ecosystems and Human Well-being: Synthesis* (n 26); TEEB, 'Ecosystem Services' (*TEEB*, date unknown) <http://www.teebweb.org/resources/ecosystem-services/> accessed 18 November 2019.

31 Erik Gómez-Baggethun and others, 'Urban Ecosystem Services' Thomas Elmqvist and others (eds), *Urbanization, Biodiversity and Ecosystem Services: Challenges and Opportunities a Global Assessment* (Springer 2013) 186–189.

32 Daniel Suarez and Jessica Dempsey, 'Ecosystem Services' in Noel Castree, Mike Hulme and James Proctor, *Companion to Environmental Studies* (Routledge Oxon 2018) 174.

may contribute to their protection as they are then 'considered worth protecting';[33] however, this view is highly criticised.[34]

Thus, one of the core elements necessary in maintaining water security is the human right to water as it pertains to access to safe and sufficient drinking water at an affordable cost.[35] Another important element is the preservation and protection of ecosystems[36] in water allocation and management systems in order to maintain their ability to deliver and sustain the functioning of essential ecosystem services.[37] As UN-Water states, ensuring that ecosystems are protected and conserved is central to achieving water security—both for people and nature.[38] This means that water security and ecosystems have a reciprocal relationship necessary for the enhancement of both. The provision of clean water is dependent on provisioning and regulating ecosystem services. Water purification, as a regulating ecosystem service, helps improve the quality of water.[39] Ecosystems that naturally capture, filter, store, and release water, such as rivers, wetlands and mountain catchments, need to be protected, used and maintained in a sustainable manner to ensure a sustainable water supply of good quality for use on land, in recreation, tourism, and various cultural and religious activities.[40] If this condition is not maintained, they may deteriorate to a level at which they cannot deliver these services.[41] Furthermore, both natural and human activities can affect ecosystems in and

33 ibid 175. In South Africa, the valuation of ecosystem services is not wholly based on economic value but is also partly based on assessments, monitoring and evaluation of the levels of threat that certain ecosystems face and the dangers this holds for the provision of ecosystem services that the livelihoods of communities depend on—see for example SANBI, *National Biodiversity Assessment 2018: The Status of South Africa's Ecosystems and Biodiversity* (SANBI 2019); Department of Environmental Affairs (DEA), *South Africa's National Biodiversity Strategy and Action Plan 2015-2025* (*DEA* 2016) (NBSAP). However, ecosystem services are to some extent valuated in a socio-economic sense as some services are contained in the Constitution as human rights.

34 Suarez and Dempsey (n 32) 175. It is argued that the value may not adequately capture the value of these services and perpetuates the subordination of conservation in relation to socio-political and economic challenges which are considered some of the main causes of environmental degradation.

35 UN Water (n 19) 2. This arguably attaches a value to water provisioning and cleaning ecosystem services.

36 Stevenson and Waite (n 29) 454.

37 Boyd and Banzhaf (n 24) 620; Brauman and Daily, *Ecology* (n 24) 1148–1149; TEEB, 'The TEEB Manual for Cities: Ecosystem Services in Urban Management' (*TEEB*, 2011) 1 <http://doc.teebweb.org/wp-content/uploads/Study%20and%20Reports/Additional%20Reports/Manual%20for%20Cities/TEEB%20Manual%20for%20Cities_English.pdf> accessed on 4 April 2020.

38 UN-Water, (n 19) 17.

39 Boyd and Banzhaf (n 24) 616–626.

40 Boyd and Banzhaf (n 24); Brauman and Daily (n 24); TEEB (n 30); Hubert Thompson, *Water Law: A Practical Approach to Resource Management and the Provision of Services* (Juta 2006) 291.

41 Thompson (n 40) 292.

of water resources (water-related ecosystems).[42] These activities can destroy the self-cleaning ability of water resources, which plays a major role in accommodating the impacts of such activities on water resources and ensuring the ability of the ecosystems to deliver the necessary services.[43] A 'healthy, viable aquatic ecosystem' is therefore a prerequisite for the water resource to retain its self-cleaning ability,[44] and for the resources to maintain their overall integrity.

According to the United Nations World Water Assessment Programme (WWAP), water is the most important resource for sustaining ecosystems and the services they provide for human health and well-being.[45] UN-Water[46] accordingly provides that where sufficient, good quality fresh water is available to support the functioning of ecosystems, the ecosystems will be healthy and capable of providing the water needed for the benefit of both human and natural communities. It adds that ensuring ecosystem protection and conservation is central to achieving water security.[47] It argues that water security cannot be guaranteed by nature alone, but instead that the contributions of both human innovation and nature-based solutions are needed.[48] This refers to a need for both built and natural infrastructure for the efficient and effective management of water resources.[49] UN-Water adds that there are several benefits to be derived from investing in ecosystems and ecological infrastructure.[50] These include, amongst others, an increase in the supply of drinking water, drought management, increased food security, resilience to climate change, the restoration of rivers, and improved sanitation and wastewater management.[51] Additionally, it is held that water management translates into the management of ecosystem services, meaning that water is fundamental to sustainable ecosystem services. With this in mind, it is notable that 'water security cannot be achieved without sustainability[52] as a core principle which informs the use

42 Water-related ecosystems include freshwater ecosystems which are, for instance, rivers, wetlands, estuaries, lakes and groundwater: Victor Wepener, Wynand Malherbe and Nico Smit, 'Water Resources in South Africa' in Nicholas King, Hennie Strydom and Francois Retief (eds), *Fuggle & Rabie's Environmental Management in South Africa* (Juta 2018) 352.

43 Thompson (n 40); Marcio Salla and others, 'Self-Cleaning Ability of the Middle and Lower Courses of the Uberaba River, UPGRH-GD8' (2014) 8(1) Journal of Urban and Environmental Engineering 119.

44 Thompson (n 40).

45 UNEP (n 7) 13.

46 UN-Water (n 19) 17.

47 ibid.

48 ibid.

49 ibid 17.

50 ibid.

51 ibid 19.

52 The term sustainability is often used interchangeably with 'sustainable development' as used in the Brundtland report and is considered by many to mean that natural resources may be used to 'meet the

and protection of water.'[53] This means, therefore, that 'sustainable development thinking' should be applied to 'water resources with the focus on the quantity and quality of water supply for societal and ecological needs.'[54]

This discussion suggests that the protection of ecosystems is integral to attaining water security. However, the element of anthropocentrism[55] inherent in many environmental notions often obfuscates the attempt to address ecological considerations in law and policy on the protection of water resources. The question that arises is how the protection of ecosystem services, through legislative and other measures, could potentially enhance water security in demarcated areas such as cities.

The Law, Water Security and the Protection of Ecosystem Services in Cities

Various provisions in South African law and policy speak to the protection of ecosystem services and water security. The discussion below evaluates how cities can protect their ecosystems and the services they provide. It further assesses the extent to which this protection can assist in the achievement of water security, through an analysis of the legal and policy framework in South Africa.

Constitutional Provisions

The Constitution provides the overarching legal framework within which water security and ecosystem-related concerns should be addressed. Section 24 provides for an environmental right that prioritises human health and well-being,[56] which requires measures to prevent pollution and ecological degradation, and promotes conservation and secure ecologically sustainable development.[57] Du Plessis and Du Plessis aver that a balance needs to be struck 'between securing economic growth and stability, providing for the socio-economic needs and social welfare of all people in South Africa, and protecting vulnerable ecosystems and natural resources, while also respecting the cultural values and practices of a diverse array of communities.'[58] They point out,

needs [social or economic] of the present without compromising the ability of future generations to meet their needs' or compromising life support systems (i.e. the environment) and their capacity: National Academy of Sciences, *Our Common Journey: A Transition Toward Sustainability* (National Academy Press 1999) 21, World Commission on Environment and Development (WCED), *Our Common Future* (1987) (the Brundtland Report) para 27.

53 Caiphus Soyapi, 'Water Security and the Right to Water in Southern Africa: An Overview' (2017) 20 Potchefstroom Electronic LJ 4.

54 ibid.

55 Christina Cook and Karen Bakker, 'Water Security: Debating an Emerging Paradigm' (2012) 22 Global Environmental Change 97.

56 Section 24(a) of the Constitution.

57 Section 24(b) of the Constitution.

58 Willemien du Plessis and Anél du Plessis, 'Striking the Sustainability Balance in South Africa' in Michael Faure and Willemien du Plessis (eds), *The Balancing of Interests in Environmental Law in Africa* (PULP 2011) 416.

however, that this balancing might be more complex because authorities need to balance natural resource conservation on the one hand and the provision of access to environmental services provided by the very same resource base on the other hand.[59]

In addition, section 27(1)(b) of the Constitution guarantees everyone the right to access to sufficient water,[60] thereby addressing the human-related water need captured in the concept of water security, as described above. The right to access to water refers to physical access to water as a basic need as well as to economic access to the resource,[61] but regrettably does not speak to the ecological aspects of water beyond the protection of public health. Kotzé and Bates[62] state that water forms part of the environment and therefore falls under the scope of section 24.[63] This inclusion means that in addition to everyone having the right to access to water, they also have the right to access to an environmental resource (water) that must not be harmful to their health or well-being.[64] People therefore have the right to have this water resource[65] protected.

The Constitution places the duty on all spheres of government to 'respect, protect, promote, and fulfil' the rights set out in the Bill of Rights,[66] which include the provisions in sections 24 and 27. This mandate is founded on the premise that a sustainable and equitable supply of water must be accessible to meet the country's social, economic and environmental water needs for current and future generations. In addition to this general mandate, the Constitution specifically defines functional areas of competence for each sphere of government. Municipalities may typically exercise both legislative and executive authority in regard to matters listed in Schedules 4B and 5B of the

59 ibid.

60 'Sufficient water' has been described as a quantity of water that is of such quality as to meet the basic needs of a person. See *Mazibuko v City of Johannesburg* 2010 3 BCLR 239 (CC), and further, Resolution II(a) of the United Nations, *Report of the United Nations Water Conference, Mar del Plata* (1977) E/CONF.70/29. The prescribed or recommended amount of water considered to be appropriate to meet the basic needs of a person is deemed to be fifty litres per person per day according to Peter Gleick, 'The Human Right to Water' (1998) 1 Water Policy 496. However, in South Africa the basic water supply is considered to be a minimum amount of '25 litres of potable water per person per day or 6 kilolitres per household per month', Reg 3(b) in GN R509 (8 June 2001) GG 22355.

61 Wepener (n 33) 378.

62 Louis Kotzé and Rebecca Bates, 'Similar but Different: Comparative Perspectives on Access to Water in Australia and South Africa' (2012) 15(2) University of Denver Water LR 238.

63 This is also prevalent in the definition of the 'environment' as included in s 1(xi) in the NEMA.

64 Kotzé and Bates (n 62).

65 In the context of this article, water resources bear the meaning of 'water that can be used to contribute to economic activity, including a water course, surface water, estuary and ground water in an aquifer. As a result, the protection in relation to a water resource, refers to the maintenance of the quality of the water resource to the extent that the water resource may be used in an ecologically sustainable way; prevention of the degradation of the water resource; and rehabilitation of the water resource'—see 'National Water and Sanitation Master Plan, 2018' (n 21) 4.

66 Section 7(2) of the Constitution.

Constitution.[67] These matters include, amongst others, municipal planning, municipal health services, storm-water management systems in built-up areas, water, and sanitation services limited to potable water supply systems, and domestic waste-water and sewage disposal systems.[68] As a result, municipalities have a duty to protect water resources in terms of quality, quantity and the ecosystem services that may be derived from these resources.

National Law and Policy

Environmental Legislation

In terms of the overarching framework of the National Environmental Management Act 107 of 1998 (NEMA), principles of environmental management[69] should be taken into consideration when addressing the protection of ecosystems in municipalities.[70] Municipalities must also consider all factors that can potentially be harmful to or impact on these ecosystems,[71] this includes managing activities in the management and planning procedures that may impact on stressed, sensitive and vulnerable ecosystems such as wetlands or aquifers.[72] One of the tools intended to prevent human activities from impacting on ecosystem services is environmental impact assessment (EIA), where both listed and specified activities which may affect the environment need to be assessed and considered before their commencement, and reported to the relevant

67 Section 11 of the Local Government: Municipal Systems Act 32 of 2000 (the Systems Act). A municipality further has the constitutionally guaranteed right to make and administer by-laws for the administration of the matters it has a right to administer—section 156(2) of the Constitution. This equates to the capacity to create and enforce laws, policies and other instruments in relation to the matters listed in Schedules 4B and 5B of the Constitution, including the capacity to make decisions in regard thereto.

68 Schedules 4B and 5B of the Constitution. These matters exclude additional areas of competence that may in terms of national or provincial law be delegated or assigned to municipalities.

69 See ss 2(3) and (4)(a)(i, ii, iv, v, vi, vii and viii) of NEMA, also ss 2(4)(i), 2(4)(o), 2(4)(p), and 2(4)(r) of NEMA.

70 Section 2(2) of NEMA.

71 Section 2(4)(a) of NEMA, which provides for factors such as the 'avoidance, minimization and remediation of the disturbance of the ecosystems and loss of biodiversity, pollution and degradation of the environment, waste, negative impacts on the environment and people's environmental rights, and that the development, use and exploitation of non-renewable resources and the ecosystems of which they are a part do not exceed their capacity or integrity'; also see s 2(3) of NEMA, which provides that 'development must be socially, economically, and environmentally sustainable.'

72 Section 2(4)(r) of NEMA; see Sergi Sabater and others, 'Effects of Human-driven Water Stress on River Ecosystems: A Meta-analysis' (2018) 8 Scientific Reports 1; William Cosgrove and Daniel Loucks, 'Water Management: Current and Future Challenges and Research Directions' (2015) 51 Water Resource Research 4823–4825. The management and planning procedures mentioned here include such planning and management procedures as provided for in SPLUMA and are directly relevant to cities, as municipal planning is a competence of local government in terms of Schedule 4B of the Constitution.

authority.[73] Some of these activities, as set out by the regulations, pertain to the release of effluent, emissions or pollution,[74] the transfer of water between catchments, treatment works or impoundments,[75] developments of dams,[76] and developments in the sea or estuaries.[77] The regulations also set out activities which require authorisation in different geographical areas with specific attributes.[78] In some cases, authorisations are excluded for urban areas,[79] but authorisations are needed if developments in urban areas are proposed in: (a) 'areas zoned for use as public open space'; (b) 'areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority, or zoned for a conservation purpose'; or (c) 'areas within urban protected areas'.[80] In light of the above, it is arguable that these principles are essential for the protection of water resources, seeing that they promote sustainability, which is inclusive of conservation and the protection of ecosystems.[81]

Furthermore, the National Environmental Management: Biodiversity Act 10 of 2004 (NEMBA); provides for the protection, management and conservation of the country's biodiversity,[82] which includes the protection of species and ecosystems that warrant national protection.[83] The protective measures offered under the NEMBA also apply to ecosystems from which water is sourced for human consumption and which contribute to human health and well-being.[84] Municipalities do not have explicit duties to conserve ecosystems under the NEMBA. However, the National Biodiversity Strategic Action

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73 Sections 2(4)(i) and 24 of NEMA; GNR 984 (7 April 2017) GG 40772; GNR 985 (13 July 2018) GG 41766.

74 Regulation 6 in GNR 984 (7 April 2017) GG 40772.

75 ibid Reg 11.

76 ibid Reg 16.

77 ibid Reg 26.

78 GNR 984 (7 April 2017) GG 40772.

79 For example, Regs 1, 9, and 27 in GNR 984 (7 April 2017) GG 40772.

80 GNR 985 (13 July 2018) GG 41766; In some instances, the regs in GNR 985 (13 July 2018) GG 41766 provides that authorisations are required for developments in 'sites identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs)', 'sites identified within threatened ecosystems listed in terms of the NEMBA', sensitive areas, protected areas, critically endangered or endangered ecosystems, critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans, core areas in biosphere reserves.

81 Section 2(4)(a) of NEMA.

82 Preamble and s 2(a)(i) of NEMBA.

83 Akunga Momanyi, 'Re-thinking Estuarine Ecosystem Governance in the WIO Region' in Salif Diop, Peter Scheren and John Machiwa (eds), *Estuaries: A Lifeline of Ecosystem Services in the Western Indian Ocean* (Springer 2016) 254; Long title of NEMBA.

84 See ss 1 and 2(a)(ii) of NEMBA. Furthermore, some ecosystems and the processes that occur to keep ecosystems functioning are extremely water dependent and will not survive without water, warranting further protection of water resources—Malin Falkenmark, *Water Management and Ecosystems: Living with Change* (Global Water Partnership 2003) 8. WHO, 'Climate Change and Human Health: Biodiversity' (*WHO*, 2019) <https://www.who.int/globalchange/ecosystems/biodiversity/en/> accessed 15 November 2019; Millennium Ecosystem Assessment, *Ecosystems and Human Well-being: Biodiversity Synthesis* (World Resources Institute 2005) 5.

Plan 2015-2025[85] and the National Biodiversity Framework[86] acknowledge that local government has an increasingly important role to play in biodiversity management. The need to integrate considerations of biodiversity in policy development, budgeting and planning processes in the department responsible for local government affairs are specifically mentioned in the NBSAP.[87] The NBSAP also highlights the need to integrate such considerations and spatial biodiversity priority areas, which include sensitive and vulnerable ecosystems, into spatial-planning frameworks (such as integrated development plans (IDPs) and spatial development plans (SDFs)), land-use management systems and land development decisions.[88] The responsibilities in this regard include prescribing, adopting and implementing spatial planning frameworks and land-use management systems; regulating land-use change and development applications; and regulating municipal land in alignment with the national biodiversity framework, bioregional plans, and biodiversity management plans.[89]

Adding to this conservation, the National Environmental Management: Protected Areas Act 57 of 2003 (NEMPAA) provides for the management and declaration of protected areas,[90] as well as the protection and conservation of 'ecologically viable areas representative of South Africa's biological diversity'[91] and other natural resources.[92] It further promotes the 'utilisation of protected areas for the benefit of people to preserve the ecological character of protected areas.'[93] The aims of these declarations are to protect ecologically viable areas and to preserve their ecological integrity, to protect areas representative of all ecosystems, to protect vulnerable and ecologically sensitive areas, to assist in ensuring a sustained supply of environmental goods and services, to provide for the sustainable use of these resources, and to manage the interrelationship between the natural environment, human settlement and economic development.[94] Declaring water-related ecosystems as protected areas in terms of this Act as envisioned

85 Department of Environmental Affairs, 'NBSAP' (n 5).

86 Department of Environmental Affairs and Tourism, 'National Biodiversity Framework, 2008' (2009) 22–23 (published in GN 813 (3 August 2009) GG 32474).

87 NBSAP (n 5) 37.

88 NBSAP (n 5) 38, 43 and 79.

89 Section 48 of the NEMBA.

90 Section 2(a) of NEMPAA.

91 Long title of the NEMPAA. These ecologically viable areas can occur in or stretch into the territory of cities and provide certain ecosystem services in such urban areas. Water resources are ecologically viable or could occur in ecologically viable areas and their integrity should be protected to ensure water quality of such a standard that it can meet the basic needs of its users—see the preamble of the NWA.

92 Section 1 of NEMPAA.

93 Section 2(e) of NEMPAA.

94 Section 17 of NEMPAA. Protected areas include nature reserves, special nature reserves, or protected environments for the purposes of protecting such areas if they are sensitive to development and to ensure the sustainable use of such natural resources such as ecosystems and water resources occurring in such areas—section 9 of NEMPAA; and further, s 28(2) of NEMPAA.

in section 9 may therefore aid in providing protection to ecosystems, their services and accordingly improving water security.

Water Law and Policy

National government is endowed with the responsibility for water resources management, and local government is specifically given the duty to ensure the provision of water services, with support from provincial and national government.[95] Through the provisions of the NWA, the nation's water resources are to be protected, used, developed, conserved, managed and controlled in ways which take into account several important factors including, inter alia, meeting the basic human needs of the present and future generations, promoting equitable access to water, promoting the efficient, sustainable and beneficial use of water in the public interest, and protecting aquatic and associated ecosystems and their biological diversity.[96] In addition, the NWA requires the Minister to determine the Reserve for each water resource.[97] The purpose of this determination is two-pronged: it seeks to ensure access to sufficient water by setting aside a certain amount of water to meet basic human needs, whilst also setting aside water that is necessary to protect the water ecosystems of the water resource.[98] The latter, also referred to as the ecological Reserve, specifies both the quantity and quality of the water that must remain in the national water resource.[99] While this determination draws the conceptual link between the ecological and human value of water resources, it is a significant challenge to the government tasked with protecting water resources on the one hand and the need to utilise water for social and economic development on the other hand.[100]

The NWA requires water conservation by way of maintaining the quality of water for ecological sustainability, preventing the degradation of the water resource and rehabilitating water resources, amongst other aims.[101] To achieve these aims, the NWA extensively provides for the protection of the quality and quantity of our water resources

95 Schedules 4A-B and 5A-B of the Constitution respectively allocate the duties of national, provincial and local government.

96 Section 2(a)–(d), as well as (i)–(k) of the NWA.

97 Section 16 of the NWA. 'Reserve' refers to the quantity and quality of water to satisfy basic human needs by securing a basic water supply, as prescribed under the WSA, for people who are now or who will, in the reasonably near future, be i) relying upon; ii) taking water from; or iii) being supplied from, the relevant water resource; and b) to protect aquatic ecosystems in order to secure ecologically sustainable development and use of the relevant water resource.

98 Section 1(xviii) (a)–(b) of the NWA.

99 Department Water Affairs and Forestry, 'Guide to the National Water Act' (date unknown) 25 <http://www.ngkerkvrystaat.co.za/documents/wat-doen-ons/ebb/dokumente/Waterkonferensie%20April%202016%20-%207B%20Waterwet%20NWA-guide.pdf> accessed 4 April 2020.

100 Nathan Cooper, 'The South African Constitution - Standards for Environmental Protection' in Stephen Turner and others (eds), *Environmental Rights: The Development of Standards* (Cambridge University Press 2019) 293.

101 Section 1(xvii) of the NWA.

in order to meet the basic needs of people, now and in the future.[102] The National Water Resources Strategy (NWRS)[103] is the legal instrument for implementing or operationalising the NWA, and it is binding on all authorities and institutions charged with the duty of implementing the Act. The NWRS has the protection of water resources and the management of water resources as its strategic theme, and aims for the sustainable and equitable protection, use, development, conservation, management, and control of water resources.[104]

The WSA, on the other hand, provides for the rights to access to a basic water supply and the basic sanitation necessary to secure an environment not harmful to human health or well-being.[105] One of the select few policies that explicitly refers to water security is South Africa's National Water and Sanitation Master Plan (2018),[106] which recognises that achieving water security in South Africa will require a significant paradigm shift that acknowledges the limitations of water availability; addresses the real value of water; ensures equitable access to limited water resources; delivers reliable water and sanitation services to all; focusses on demand management and alternative sources of water; considers the impacts of climate change; and addresses the declining quality of raw water.[107] The Plan further indicates that the loss and degradation of ecological infrastructure increases both water-related risks and the vulnerability of people and built infrastructure to floods, whilst also increasing the maintenance and repair costs of built infrastructure.[108] To give effect to the provisions of these laws and policies, municipalities must ensure that they address the protection of their ecosystems and water resources through their IDPs, by-laws, projects, policies and public awareness.[109]

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102 ibid*;* also see s 1(xviii), which defines 'reserve'; and ss 2(a), 2(b), 2(d), 2(f), 2(g), and 2(h), 5(3), 6(1)(a) and (h), as well as ch 3 of the NWA.

103 Section 5 of the NWA makes provision for the establishment of a National Water Resources Strategy (NWRS), which was established in the GN 65 (28 January 2005) GG 27199.

104 NWRS (n 103) 1, 13, 37–44, 75–79.

105 Section 2(a) of the WSA.

106 The other is the Water Supply and Sanitation Policy White Paper - Department of Water Affairs and Forestry, 'Water Supply and Sanitation Policy White Paper' (*DWAF*, 1994) 15, 26, 32 <https://www.gov.za/sites/default/files/gcis_document/201409/wssp.pdf> accessed 3 July 2020.

107 Department of Water and Sanitation, 'National Water and Sanitation Master Plan, 2018' (*DWS*, 2018) 19, 72–78 <https://www.gov.za/sites/default/files/gcis_document/201911/national-water-and-sanitation-master-plandf.pdf> accessed 4 April 2020.

108 ibid 19, 72–78.

109 'IDPs are strategic city planning instruments and must be taken into account in the decision-making processes of other organs of state'—*City of Johannesburg Metropolitan Municipality v Gauteng Development Tribunal* 2010 9 BCLR 859 (CC) para 92; Anél du Plessis, 'The Judiciary's Role in Shaping Urban Space in South Africa as per the Sustainable Development Goals' (2018) 24(1) SAJELP 19.

The Attendant Responsibilities and Duties of Local Government

Cliquet states that new legal instruments that are improperly implemented can do nothing for degraded ecosystems.[110] Accordingly, existing instruments can rather be put to best use, especially when used in conjunction with others. As previously indicated, all spheres of government are responsible for and mandated to protect and conserve water resources in their entirety,[111] including municipalities in their designated jurisdictions.[112] Nel, Du Plessis and Du Plessis affirm that municipalities must demonstrate compliance with the total body of applicable (environmental) law and must establish mechanisms and structures to sustain and report on compliance.[113] This can be achieved through the making, implementation, enforcement and revision of by-laws[114] and the 'measures adopted by the municipal executive such as local environmental policies, strategic guidelines and others.'[115]

The duties of local government in relation to the protection of the environment are further set out in the White Paper on Local Government, 1998 (the White Paper), the Local Government: Municipal Structures Act 117 of 1998, and the Systems Act. The White Paper reinforces local government's responsibility to promote a safe and healthy environment and that services must be delivered in a sustainable way, which includes ecological sustainability.[116] The White Paper also requires municipalities to include environmental issues in their planning policies, development frameworks, long-term strategic action plans, integrated development plans, and decisions.[117] The Systems Act reinforces the provision that municipalities have the right to govern the affairs of their communities on their own initiative, to exercise their legislative and executive authority without improper interference,[118] and have the power to exercise all functions allocated to them in the Constitution. Furthermore, the Systems Act provides that municipalities

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110 A Cliquet, 'Ecological Restoration as a Legal Duty in the Anthropocene' in Michelle Lim (ed) *Charting Environmental Law Futures in the Anthropocene* (Springer 2019) 67.

111 The basis for this argument is an inclusive reading of ss 24 and 27 with s 7(2) of the Constitution, as well as the provisions of law and policy provided above.

112 See Chapter 7 of the Constitution; Johan Nel, Willemien du Plessis and Anél du Plessis, 'Key Elements for Municipal Action' in Anél du Plessis (ed) *Environmental Law and Local Government in South Africa* (Juta 2015) 44.

113 Johan Nel, Willemien du Plessis and Anél du Plessis, 'Instrumentation for Local Environmental Governance' in Anél du Plessis (ed), *Environmental Law and Local Government in South Africa* (Juta 2015) 43, 45.

114 As per s 5 of the Systems Act and s 156(2) of the Constitution read with Schedules 4B and 5B.

115 Johan Nel, Willemien du Plessis and Anél du Plessis, 'Key Elements for Municipal Action' (n 112); s 11(3) of the Systems Act; Anél du Plessis, 'Local Environmental Governance and the Role of Local Government in Realising Section 24 of the South African Constitution' (2010) 21(2) Stellenbosch LR 274–275; Oliver Fuo, 'Local Government's Role in the Pursuit of Transformative Constitutional Mandate' (LLD thesis, North-West University 2014) 302–334; Johan Nel, Willemien du Plessis and Anél du Plessis, 'Key Elements for Municipal Action' (n 112) 97–110.

116 GN 423 (13 March 1998) GG 18739.

117 ibid.

118 Section 4(1)(a)–(b) of the Systems Act.

should 'strive to ensure that municipal services are provided to the local community in a financially and environmentally sustainable manner' when executing their functions.[119] In terms of sustainable municipal services provision, specifically water provision, the inadequate protection of ecosystems and their services invariably affects the availability and quality of water resources and therefore results in the provision of water resources that are not of sufficient quality or quantity. Insufficient water quality and quantity subsequently influence the rights-based duties of municipalities towards local communities in relation to the environment and access to water as per sections 24 and 27 of the Constitution.[120] The Systems Act also requires municipalities to promote a safe and healthy environment[121] and to give effect to this duty by passing by-laws and taking decisions in relation thereto.[122]

The Systems Act further obliges every municipality to include a SDF in its IDP.[123] The IDP emanates from the municipal planning function as per the Constitution. The duty to include an SDF in the IDP is also required in terms of the Spatial Planning and Land Use Management Act 16 of 2013 (SPLUMA).[124] SPLUMA places a duty on the state to protect and promote the constitutional environmental right[125] as well as the right to access to sufficient water and to take reasonable legislative and other measures to ensure these rights.[126] SPLUMA emphasises the need for the sustainable use of natural resources[127] and requires municipalities to comply with the wide range of environmental legislation discussed above.[128] Notably, municipalities can use their land-use schemes for the purposes of protecting a piece of land, natural resources, or certain characteristics thereof.[129] SPLUMA enables municipalities to pass by-laws to enforce their respective land-use schemes.[130] In this respect, these planning tools can be used to deliver quality environments contributing to sustainability with an emphasis on environmental issues, infrastructural capacities and may contribute to ameliorating the impact of development on the environment.

Evidently, local governments are responsible for the protection and conservation of the environment, ecosystems and the ecosystem services that they provide, and the

119 Section 4(2)(d) of the Systems Act; see s 1 of the Systems Act for the definition of 'environmentally sustainable' as it relates to the provision of a municipal service.
120 Sections 24(a) and 27 of the Constitution.
121 Section 4(2)(i) of the Systems Act.
122 Section 11(3)(l) and (m) of the Systems Act.
123 Section 26(e) of the Systems Act. An SDF aims to provide guidance on the spatial distribution of current land use and the desired use of land within a municipality.
124 Sections 20(1) and (2) of the SPLUMA.
125 Section 24 of the Constitution.
126 Preamble of SPLUMA.
127 Section 25(1)(d) of SPLUMA.
128 Section 42(2) of SPLUMA.
129 Schedule 2 of the SPLUMA; also see s 1 of SPLUMA for a definition of 'conservation purposes'.
130 Section 32 of the SPLUMA.

realisation of the rights set out in sections 24 and 27 of the Constitution.[131] It seems, therefore, that local government instruments need to acknowledge the need to promote sustainability in the execution of municipal functions, including in so far as they intersect with water security and the protection of ecosystem services.

The Protection of Ecosystem Services for Water Security: Observations from eThekwini Municipality

South Africa possesses a relatively comprehensive legislative framework for environmental protection, under which water security and ecosystem protection can be included. However, it merits to question whether these national goals, guidelines and provisions have been incorporated and addressed in municipal by-laws, policies and other instruments. For this purpose, we look at a few examples in order to ascertain how and to what extent the protection of ecosystem services and water security feature in a select few governance instruments of the eThekwini Municipality.

Located in the middle of the Maputaland-Pondoland-Albany biodiversity hotspot, Durban contains both terrestrial ecosystems (such as grasslands and forests) and aquatic ecosystems (such as rivers, oceans and estuaries).[132] Notably, the eThekwini Municipal Area contains '… 98 km of coastline, 18 major river catchments and 16 estuaries, 4000 km of river, and nearly 80 000 hectares of land identified as part of the Durban Metropolitan Open Space System.'[133]

Critical ecosystem services, such as the storing and filtering of water, coastal protection and the cooling of urban areas, may be compromised as a result of the projected negative impacts of climate change on the city's ecosystems.[134] In response to these negative impacts, the City seeks to adopt integrated planning approaches and development controls that protect the integrity and enhance the functionality and resilience of Durban's biodiversity and natural capital.[135] The main guiding document for the eThekwini Municipality and its residents in responding to these issues is the IDP.[136] The IDP acknowledges that the ecosystem goods and services are critical to meeting the

131 Section 4(2)(i) read with s 4(2)(j) of the Systems Act.

132 eThekwini Municipality, 'Our Biodiverse City' (*eThekwini Municipality,* 2009) 9 <http://www.durban.gov.za/City_Services/development_planning_management/environmental_planning_climate_protection/Publications/Documents/Our%20Biodiverse%20City.pdf> accessed 4 April 2020.

133 eThekwini Municipality, 'Integrated Development Plan 2019/2020' (*eThekwini Municipality*, 2011) 91 <http://www.durban.gov.za/City_Government/City_Vision/IDP/Pages/default.aspx> accessed 4 April 2020 ('IDP').

134 eThekwini Municipality, 'Durban Climate Change Strategy' (*eThekwini Municipality,* 2014) 6 <http://www.durban.gov.za/City_Services/energyoffice/Pages/DurbanClimateChangeStrategy> accessed 4 April 2020.

135 ibid 17.

136 eThekwini Municipality, 'IDP' (n 133) 99–105 and 354–355.

growth and development needs of the municipality and all its residents and visitors.[137] The IDP indicates that available data suggests that many of the local-level thresholds for the natural ecosystems in Durban have already or soon will be exceeded.[138] Likewise, despite various interventions to increase water supply, reduce losses and encourage water conservation, the municipality maintains that the demand for water is expected to outstrip the supply within the next ten years, placing more stress on water quality and the ecosystems.[139] Accordingly, eThekwini Municipality recognises that the ecosystem services provided by its natural areas may offer significant buffering opportunities for local communities and infrastructure against the negative impacts of climate change. The management and protection of healthy ecosystems also help to deliver on the Strategic Priorities articulated in the IDP.[140]

The Durban Metropolitan Open Space System (D-MOSS) aims to protect the city's biodiversity assets and core ecological infrastructure and to achieve such optimal ecosystem functionality and biodiversity conservation.[141] D-MOSS is a spatial layer of interconnecting open spaces in public, private and traditional authority ownership that seeks to protect the biodiversity and associated ecosystem services of Durban for future generations.[142] In its infancy, D-MOSS existed purely as a municipal council policy directive, following its formal adoption by the municipal council on 9 December 2010. The D-MOSS has since been integrated into all eThekwini Municipality planning schemes as a control area or overlay.[143] In the *Le Sueur*-case, the promulgation of the D-MOSS and the executive authority it granted to local government was legally challenged.[144] The court importantly held, however, that municipalities may use their constitutionally granted planning authority to serve environmental interests.[145]

In addressing the loss, depletion and degradation of its natural resources, eThekwini Municipality aims to ensure the effective management of environmental goods and ecosystem services through its eight separate but related plans. The first objective is to develop and sustain the spatial, natural and built environment through which it aims to ensure sustainable and integrated growth and development in the city.[146] This objective

137 eThekwini Municipality, 'IDP' (n 133) 354–355.

138 ibid 283.

139 ibid 183.

140 ibid 91.

141 ibid 91.

142 eThekwini Municipality, 'What is the Durban Metropolitan Open Space System' (*eThekwini Municipality*, 2011) <http://www.durban.gov.za/City_Services/development_planning_management/environmental_planning_climate_protection/Durban_Open_Space/Pages/-What-is-the-Durban-Metropolitan-Open-Space-System.aspx> accessed 4 April 2020.

143 ibid.

144 *Le Sueur v eThekwini Municipality* 2013 JDR 0178 (KZP) (*Le Sueur* case); Tracy Humby, 'Localising Environmental Governance: The *Le Sueur* Case' (2014) 17(4) Potchefstroom Electronic LJ 1661.

145 *Le Sueur* case (n 144) paras 39–40; Du Plessis (n 109) 28.

146 eThekwini Municipality, 'IDP' (n 133) 26.

aligns itself with the national legislation discussed above, in terms of which the municipality must strive to balance social, ecological and economic priorities in its attempt to achieve sustainable development.[147] The municipality addresses this objective through its Municipal Spatial Development Framework (MSDF),[148] an integral component of the IDP, in line with the requirements of the Systems Act, SPLUMA and the eThekwini Municipal Planning and Land Use By-Law, 2016.[149] The MSDF spatially represents the long-term development intentions of the municipality. Notably, specific zoning provisions in these local land use schemes allow the municipality to reserve or protect land related to environmental functions such as ecosystem services.

In addition, objectives four to six in the IDP speak to promoting and creating a safe, healthy and secure environment by ensuring the effective management of environmental goods and ecosystem services,[150] as well as the appropriate management of environmentally significant areas and open space corridors through the development and review of the management and master plans for conservation sites.[151] As is apparent from the IDP, the municipality recognises the natural environment, especially ecosystems and water resources, in terms of its municipal planning mandate. From the outset, the municipality recognises that ecosystems, including ecological infrastructure such as dams, rivers and wetlands (water resources), are worthy of protection and conservation. The municipality goes further in providing concrete plans, goals, outcomes and programmes to enable this protection and conservation.[152]

The eThekwini by-law provides for plans to inform social, economic, environmental and infrastructural development in the municipality.[153] Further, it specifically provides that the municipality must have a MSDF that takes cognisance of any environmental management instrument adopted by the relevant environmental management

147 ibid 352.

148 eThekwini Municipality, 'Municipal Spatial Development Framework' (*eThekwini Municipality*, 2011) <http://www.durban.gov.za/City_Services/development_planning_management/Documents/FINAL%20SDF%202017-2018%20May%202017.pdf.> accessed 4 April 2020.

149 Section 26 of the Systems Act and SPLUMA; as well as s 11 of the eThekwini by-law, 2016—eThekwini Municipality, 'Planning and Land Use Management By-law, 2016' (*eThekwini Municipality,* 2011) <http://www.durban.gov.za/Resource_Centre/Bylaws/Planning%20and%20Land%20Use%20Management%20By-law.pdf> accessed 4 April 2020 ('eThekwini By-law').

150 As a means to prioritise this work, the municipality has established a number of dedicated poverty alleviation programmes such as the Working for Ecosystems Programme.

151 eThekwini Municipality, 'IDP' (n 133) 352–360.

152 The Municipality has made some progress in reversing the loss of natural areas and improving management through the use of various instruments such as controlled development areas, environmental special rating areas and land acquisition, and by including environmental considerations in preparing the municipal valuation roll.

153 Section 2(a) of the eThekwini By-Law (n 149).

authority,[154] identifies areas not suitable for development or areas where impacts must be managed, and provides guidance in terms of decision-making on environmental resource protection.[155] The by-law goes further in providing that the municipality must have a land use scheme in line with the MSDF and that land use and development in the municipal area must have minimal impact on the environment and natural resources.[156] Even though the by-law provides for measures that in some way address the environment and the protection of natural resources, it does not contain any immediately enforceable measures aimed at the conservation and protection of natural resources and ecosystems or the services they provide. Such protection thus depends on the development and implementation of additional governance instruments such as the SDF and the land use scheme.

The eThekwini case shows that the municipality is committed to a sustainable development path that strives to balance social, ecological and economic priorities, in line with national legislation. As far as possible, the municipality aims to ensure that development must function in harmony with the natural resource base upon which human well-being and the economy depends. Through the use of its constitutionally mandated planning function, the municipality outlines its important role in managing biodiversity and natural resources by way of spatial planning, land-use decision-making, and the management of municipal protected areas. Planning tools such as the IDP, SDF and land-use schemes and planning by-laws are required to address environmental challenges, together with social and economic challenges, in an integrated manner, thereby making them incredibly useful tools to protect ecosystem services in cities.

Conclusion

Notwithstanding the critical connection between water security and ecosystem services, most of the South African laws and policies discussed in this article barely make explicit mention of these particular concepts, let alone expressly provide for their protection. Arguably, the role of these laws is to protect and serve human interests, with little regard being paid to the intrinsic value of the environment. Despite the fact that the law does not explicitly make provision for the protection of ecosystem services or water security *per se*, it makes provision for the protection of the environment and the provision of access to sufficient water in general. The legislative framework described above places an obligation on government, inclusive of local government, to protect the environment and its related ecosystem services, especially in relation to the provision and purification of water. This article does not argue for a complete reimagining of environmental law to accommodate the inclusion of the protection of ecosystem services and water security explicitly; instead, it argues that where national legal frameworks fall short,

154 ibid s 9(m).
155 ibid ss 11(5)(e) and (f).
156 ibid s 15(1)(d).

municipalities can step up and include these concepts at local level planning and in their laws and policies. Through the use of their wide array of powers and instruments, municipalities can make good whatever is lacking by becoming sensitive to the diversity of their water resources and water infrastructure, making optimal use of storm-water and urban waterways for flood control, recharging aquifers and reusing water, basing their decisions on sound ecological principles, and being more sensitive to their ecosystems and the array of services they offer.

It is apparent that when making decisions, operating, and planning, the contribution (and associated value) of ecological infrastructure and ecosystem goods and services should be recognised, protected and, where possible, proactively restored. The eThekwini IDP with its sector plans serves as an example of how a municipality can execute its powers through planning tools in order to manage and protect ecosystems to further incidental objectives such as water security. Cities would be well advised to also explore the potential of other instruments such as by-laws, and local management plans dedicated to ecosystem services, despite their lack of immediate enforceability.

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