Legal and public trust considerations for the Ndumo Game Reserve and South Africa-Mozambique border, following the migration of the Usuthu River*

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Abstract

The Usuthu River forms part of the international boundary between South Africa and Mozambique. In 2002, this River breached its south bank within the Ndumo Game Reserve and established a new channel within the protected area. In response to the breach, Mozambique proposed the excavation of the floodplain and the establishment of berms to force the flow of the river back into its original alignment. Analysis of the origin and associated history of this portion of the international boundary indicates that it is unlikely that the international boundary has moved with the breech. Furthermore, customary international law pertaining to avulsion or *mutation alvei* of rivers supports the notion that the international boundary remained in the original channel of the Usuthu River. Finally, case history of a similar circumstance in Africa affirms that this boundary is unlikely to have shifted with the avulsion of the Usuthu River. The Mozambican proposal brings to the fore an array of public trust considerations which are founded in South Africa's Constitution, and environmental and biodiversity conservation legislation. These considerations prohibit the excavation of the Ndumo Game Reserve. The concept of the state acting as a trustee for, *inter alia*, biodiversity and protected areas, is reinforced by various water and biodiversity-orientated multilateral agreements to which South Africa is a signatory. Within these, the ones adopted by the Southern African Development

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*The legal instruments cited and discussed in this paper are current as of 13 March 2016. This paper is one of a series of papers forming a PhD which is focussed on exploring the significance and scope of the public trust doctrine in the conservation of biodiversity, and the management of protected areas in South Africa.

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Community are the most profound in that they, and specifically the Protocol on Wildlife Conservation and Law Enforcement, enjoin state parties from taking decisions that may cause damage to the trust entity beyond the limits of their sovereignty.

1 Introduction

The international boundary that separates Mozambique from the KwaZulu-Natal province of South Africa is defined by the Usuthu River[1] until its confluence with the Pongola River – where it follows the parallel to the Coast. The northern boundary of the Ndumo Game Reserve is the Usuthu River, and the nature reserve includes the confluence of this river with the Pongola River and the floodplains of the two (Figure 1). The origins of the Usuthu River are within eastern South Africa and Swaziland, and exit the latter via the Lebombo Mountain Range, onto the Makhathini flats and coastal plain – before draining into the south section of Maputo Bay. As the river approaches and enters Ndumo Game Reserve, it enters its alluvial floodplain system where the river naturally meanders, leaving in its wake a series of oxbow lakes and bowed wetlands. The meandering is caused by continued deposition within the river channel and concomitant erosion of the banks, whereas the lakes are a result of avulsion and the creation of new river channel within the floodplain.[2]

In 2002, the Usuthu River breached its southern bank within the Ndumo Game Reserve, and began flowing southwards into the middle of the protected area, before making its way back to the main channel upstream to its confluence with the Pongola River (Figure 1). The breach and subsequent avulsion of the river southwards, poses a dilemma as to whether the international boundary separating the two countries – and with this the boundary of the Ndumo Game Reserve – has moved.[3] This would allow Mozambique to gain sovereign rights of the Usuthu floodplain within Ndumo Game Reserve. This dilemma includes amongst other things, concerns regarding sovereignty of a portion of game reserve, and, naturally, the security of biodiversity therein. Further, Mozambique has recommended a series of remedial interventions to restore the Usuthu River back to its original alignment, which requires excavation and the location of earth berms within the Usuthu River floodplain. These challenges foreground the role of the public trust doctrine in decisions taken by the South African government – in order to safeguard the integrity of the Ndumo Game Reserve.

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[1] In Mozambique, the river is also known as the River (Rio) Maputo. Originally, the name of this river was spelled as 'Usutu' – which is incorrect spelling in isiZulu. Recent texts use the correct spelling of 'Usuthu'. For convenience and consistency, unless the original name is quoted, the correct spelling is used throughout this document.

[2] Stølum 'River meandering as a self-organization process' (1996) 271 *Science* 1711.

[3] Donaldson 'Paradox of the moving boundary: Legal heredity of river accretion and avulsion' (2011) 4(2) *Water Alternatives* 156 and 158.

The purpose of this article is to consider whether the international boundary between South Africa and Mozambique has moved with the southerly migration of the Usuthu River. The answer to this question lies in the origins and history of the boundary, international common and case law – together with an understanding of the geomorphology of that part of the river occurring within the Ndumo Game Reserve. This paper also evaluates the role the application of the public trust doctrine should play in decision-making that may arise out of South Africa's environmental legislation, and various SADC[4]-based multilateral agreements set in place to normalise management of trans-boundary water courses and the conservation of biodiversity.

2 Background

2.1 The Ndumo Game Reserve

The 'Farm Ndumo A' was originally declared part of the Ndumo Nature Reserve in 1924, for the conservation of hippopotamus.[5] Later it was recognised that the Ndumo Game Reserve's value also lay in its wetlands and associated biodiversity.[6] [7] The northern boundary of the Farm Ndumo A was the Usuthu River. This declaration also included part of the Native Reserve 16 – the northern boundary of which extended along the Usuthu River to a point one mile east of the confluence of the Usuthu and Pongola Rivers.[8] This northern boundary of the Ndumo Game Reserve, as discussed below, corresponds to the international boundary separating South Africa and Mozambique. Since 1924, the protected area has undergone a number of re-declarations that mostly dealt with changes in legislation. Of these, the most significant of the re-declarations was the release of Ndumo Game Reserve, by the Natal Province, to the newly established KwaZulu Government following the establishment of the 'independent homeland

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[4]The 'Southern African Development Community' – which comprises the Republic of Angola, Republic of Botswana, Democratic Republic of Congo, Kingdom of Lesotho, Republic of Malawi, Republic of Mauritius, Republic of Mozambique, Republic of Namibia, Republic of Seychelles, Republic of South Africa, Kingdom of Swaziland, United Republic of Tanzania, Republic of Zambia, and Republic of Zimbabwe.

[5]The Ndumo Game Reserve was administered by the then provincial conservation agency, which, over time, evolved into the present-day Ezemvelo KZN Wildlife.

[6]Declaration of the Ndumo Game Reserve was in accordance with the provisions of s 17(1) of the Game Ordinance 2 of 1912.

[7]Ndumo Game Reserve: Management Plan, compiled in accordance with s 39 of the National Environmental Management: Protected Areas Act 57 of 2003, available at: http://www.kznwildlife.com/index.php/conservation/planning/protected-area-managementplanning.html (accessed 2016-02-07); Du Plessis A and Du Plessis W 'Southern African perspectives on the relationship between transfrontier conservation areas and the protection of rights' in Kotze and Marauhn (eds) *Transboundary governance of biodiversity* (2014) 276.

[8]Natal Provincial Notice 96 of 16 April 1924.

of KwaZulu'. In this 1988 declaration,[9] the northern boundary of the protected area was described as the international boundary with Mozambique to the confluence of the Usuthu and Pongola Rivers.[10]

During 1997, the Ndumo Game Reserve was listed as a Ramsar[11] site – particularly as it includes the largest remaining natural portions of the Usuthu and Pongola floodplains. This floodplain system formed the foundation of the Ramsar application due to its uniqueness in South Africa, as it comprises five wetland types including permanent to ephemeral lakes, marshes and pools with riparian and gallery forest. The Ramsar listing also noted the high abundance of internationally important wetland bird species, including many recorded as rare or vulnerable.[12] The Ndumo Game Reserve forms part of the 'mini-Ndumu-Tembi-Futi Transfrontier Area' which came into being with the signing of the protocol (between South Africa, Mozambique and Swaziland) establishing the broader Lubombo Transfrontier Conservation and Resource Area in 2000.[13] From a biodiversity conservation perspective, the Lubombo Transfrontier Conservation and Resource Area was set in place to provide a cooperative platform for these countries to conserve and protect representative samples of, and key corridors within, the Maputaland-Pondoland-Albany Hotspot or Maputaland Centre of Endemism – of which the Ndumo Game Reserve is one of the core areas.[14]

2.2 Origin of the international boundary

In 1545, the Portuguese sailor, Lourenço Marques – with the blessing of King Nhaca – established an elephant-ivory trading post on what was later known as Portuguese Island. This became the trading headquarters throughout the Sixteenth and Seventeenth Centuries, until substituted by Delagoa Bay as the colony's capital in 1898. King Nhaca ruled over a large area around Delagoa Bay,

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[9] In terms of s 29(1) of the KwaZulu Nature Conservation Act 8 of 1975.
[10] KwaZulu Government Notice 132 of 1988.
[11] The Convention on Wetlands (Ramsar, Iran, 1971).
[12] Extracted from 'Ndumo Nature Reserve – The Annotated Ramsar List: South Africa' available at: www.ramsar.org (accessed 2016-02-07).
[13] A copy of the original signed Protocol establishing the Ndumu-Tembi-Futi transfrontier Area, could not be located and links to this document on the SADC website (see: www.sadc.int) appear discontinued. A comprehensive assessment of this TFCA and the founding agreements is, however, provided in Du Plessis and Du Plessis (n 7) 275-290.
[14] See Du Plessis and Du Plessis (n 7) 275; Blackmore 'The interplay between the public trust doctrine and biodiversity and cultural resource legislation in South Africa: The case of the Shembe Church Worship Site in Tembe Elephant Park in KwaZulu-Natal' (2014) 10(1) *Law, Environment and Development Journal* 3; generally, Seligmann *et al* 'Centers for Biodiversity Conservation: Bringing together science, partnerships, and human well-being to scale up conservation outcomes' (2007) *Conservation International*; and Conservation International, Biodiversity Hotspots (2007), available at: www.biodiversityhotspots.org (accessed 2014-07-25).

and his main settlement was west of the bay (now Maputo city) on the Umbeluzi River. In the Eighteenth Century, King Nhaca was defeated by the Tembe who conquered the entire region south of Maputo city between the Lubombo Mountains and the ocean. This expanded Tembe Kingdom was later ruled in two parts. The first covered the area between the Lubombo Mountains and the Maputo River, and the second covered the area east of the Maputo River and extended from Inhaca Island in the north into South Africa. The colonial alignment of the Natal Colony-Mozambique border was thus based on the southern boundary of the Tembe Kingdom. The formalisation of territorial claims in 1752, therefore, resulted in a boundary separating the two countries which is not dissimilar to the present boundary.

The southern boundary was challenged in 1853 by Captain WFW Owen of the Royal Navy, when he discovered that the Portuguese, having suffered extensively from malaria, did not exercise sufficient authority over the lands and the local people[15] to the south of the Lourenço Marques settlement in Delagoa Bay to justify ownership of these areas.[16] Realising the strategic importance of Deleaoa Bay[17] and claiming the area was *terra nullius*,[18] Captain Owen exercised the customary international law principle of effective occupation by concluding treaties of cession with the Tembe[19] and hoisting the British Flag.[20] The following year, Owen proceeded to establish a military presence[21] and administrative control in accordance with the customary international law principles of effective

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[15]Here, Owen reasoned that the Portuguese had apparently advised him that he (Owen) had to negotiate the safety of his boats with the local people, and the Portuguese had not exercised sufficient governance over the territory to claim possession. As a result, Owen further reasoned that the area secured by the Portuguese was limited to the range of their guns at the Portuguese Fort.
[15]See McCall-Theal *History of South Africa: From 1795-1872* vol 1 (2011) 129.
[16]Walker (ed) *The Cambridge history of the British Empire: South Africa, Rhodesia and the protectorates* vol VIII, 2 ed (1969) 453.
[17]Given the then accelerated trade between Cape Town and Zanzibar, Muscat and the western seaboard of India.
[18]Haight *European Powers and South-East Africa: A study of international relations on the East Coast of Africa 1796-1856* (1967) 216-217.
[19]Various texts refer to this treaty being concluded with the Tembe 'Chiefs' (correctly known as the amaKhosi) or directly with the Tembe King. In reality, given that the region was ruled by the Tembe King as two semi-autonomous areas, the treaties would naturally need to be concluded with both amaKhosi and the Tembe King.
[20]Territories which lacked a recognised social or political administration were considered *terra nullius* in international law, and sovereignty over these areas was established by effective occupation by a sovereign state. See Australia *Mabo v Queensland* (1992) 175 CLR I at 21.
[21]Under the pretext of defending the territory from the growing military might of the Zulu Kingdom to the south.

occupation[22] and prescription.[23] This action by Captain Owen effectively appropriated the southern portion of Mozambique from the Portuguese. The Portuguese objected to these actions by claiming Great Britain had illegally taken possession of the territory, and appealed to the international community to intervene.

Following attempts by Portugal to reclaim the territory, Navy Captain Bickford, in 1861 re-declared the area stretching from the present southern border to Inhaca and Elephant islands as British territory. This declaration included the Bay of Maputu. Furthermore, in 1868 the Transvaal President Marthinus Pretorius claimed a substantial corridor of this area for the Transvaal Republic, this boundary being the Lebombo Mountains in the east, to Delagoa Bay. Following objections from Lisbon, the Transvaal President came to an agreement with the Portuguese, in which Portugal's sovereignty over the area that Transvaal had originally claimed was recognised. This resulted in the 29 July 1869 Treaty of Friendship, Commerce and Boundaries, Portugal and Transvaal Republic.[24] [25]

Great Britain, however, continued to occupy the disputed territory. Finally, Portugal declared a dispute with Great Britain and lodged this with French president Adolphe Thiers for arbitration. Thiers failed to consider the application. With this strategic position not effectively controlled by either Portugal or Great Britain, Portugal in 1872 petitioned Field Marshal MacMahon,[26] the then president of the French Republic.[27] MacMahon found that arguments from both parties claiming effective

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[22]This principle was later codified in the General Act of the Berlin Conference (the Berlin Act) in 1885. Article 34 of the Berlin Act stated that colonial powers could acquire rights over colonial lands only if they took possession. Here possession entailed, *inter alia*, concluding treaties with local leaders, hoisting their flag, and actively exercising law enforcement.

[23]The customary international law principle of prescription is rooted in Roman law, wherein the possessor of a property whose original title to that property was defective could nonetheless acquire the title (*usucapio)* – so long as the acquisition of the property was: 1) in good faith, 2) physically possessed (*corpus occupandi*) with the intent of ownership (*animus occupandi*), and 3) possessed without interruption for an extended period of time which is often defined by law. See Johnson 'Acquisitive prescription in international law' (1950) 27 *British Yearbook of International Law* 334-335.

[24]This treaty was later replaced by the Treaty of Friendship, Commerce and Boundaries, South African Republic and Portugal (11 December 1875), which re-confirmed (art XXIII) the portions of the western boundary of Mozambique with South Africa (the then Transvaal State). The southern boundary in this treaty was not defined, as it appeared that clarity on ownership and use rights of the Delagoa Bay Railway (following its confiscation by Portugal in 1889) – which extended from Delagoa Bay (Maputo) through Swaziland to the Transvaal – had already been determined. See Hertslet *Map of Africa by treaty* (1909) 705.

[25]Interestingly, the subsequent convention between Great Britain and the Transvaal state ratified this boundary on 3 August 1881.

[26]In terms of the Protocol signed at Lisbon, 15 September 1887 (no 142). See n 24 at 701.

[27]Walker (n 16) 453.

occupation were weak,[28] but concluded that a temporary loss of control did not necessarily divest Portugal of her sovereignty.[29] MacMahon, however, awarded wholly in favour of the Portuguese in 1875, and re-established the southern limits of the Portuguese territory.[30] In 1884, the Berlin Conference attempted to settle outstanding matters regarding, *inter alia*, the territories in south-eastern Africa. The Conference also provided for the General Act that formalised colonial occupation. In 1895, Britain claimed sovereignty over the Transpongola[31] territories (south of the disputed land), and in so doing providing some degree of stability to the boundary separating the Portuguese and British territories to the south.[32]

2.2.1 Joint Boundary Commission

In 1888, a Joint Boundary Commission[33] investigated and verified the boundary separating the province of KwaZulu-Natal of South Africa from Mozambique.[34] [35] This Commission described the boundary onto which the Ndumo Game Reserve abuts, as:

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[28] *Ibid*.
[29] Roch *The Minquiers and Ecrehos case: An analysis of the decision of the International Court of Justice* (1959) 3.
[30] Hertslet *The map of Africa by treaty* (1894) 695.
[31] International Boundary Study no 133 – 16 April 1973 Mozambique – South Africa Boundary 3.
[32] Protocol of Conference between Great Britain and Portugal, which documents their respective claims to certain territories formerly belonging to the Kings of Tembe and Mapoota, on the Eastern Coast of Africa, including the Islands of Imyack and Elephant, and agreeing to refer the same to arbitration. The Delagoa Bay Arbitration, Lisbon, 25 September 1872. British Foreign and State Papers, Vol. 63 (1872-1873) at 1045-1047, quoted in International Boundary Study no 133, n 31 at 3.
[33] Comprised representatives of the United Kingdom, Portugal, Swaziland, and the South African Republic.
[34] This decision was ratified in art III of an Anglo-Portuguese treaty of 1891, quoted in United States Department of State (1973) International Boundary Study no 133 Mozambique – South Africa Boundary, Washington, DC Office of the Geographer, Bureau of Intelligence and Research 3.
[35] In addition to this précis, there were other events that took place to define the boundary between what is now South Africa and Mozambique. These were minor, or did not involve the boundary in question, and include:

- Treaty of Friendship, Commerce and Boundaries, South African Republic and Portugal (11 December 1875);
- Convention between Great Britain and Transvaal State (3 August 1881 and 27 February 1884);
- Convention between Great Britain and South African Republic (11 and 20 June 1888);
- Exchange of Notes between Great Britain and Portugal (24 September and 5 October 1895);
- Report by the Joint Boundary Commission (2 October 1897);
- Exchange of Notes between Great Britain and Portugal (29 December 1898 and 25 January 1899);
- Exchange of Notes between Union of South Africa and Portugal (6 October 1927); and
- Anglo-Portuguese Exchange of Notes (29 October 1940) to fix boundary 'tripoint' boundary intersection with Zimbabwe.

> The frontier, with the exception of some slight deviations, follows the parallel of the confluence of the Rivers Pongolo and Maputo (Usuthu) to the Indian Ocean, and is situated at latitude south 26° 51'12.96" (twenty-six degrees, fifty-one minutes, twelve decimal ninety-six seconds).

From the point of departure, namely, the confluence of the Rivers Pongolo and Maputo (Usutu), the frontier follows the east channel of the Maputo (Usutu), known amongst the natives as the Pongolo River, as far as a clearing made in the bush at the water's edge on the right bank. From that point, looking across a swamp, Beacon no 1 may be seen erected upon a sloping ground at a distance of about 4 metres to the north large tree.[36]

In the absence of beacons the words 'the frontier follows the east channel of the Maputo (Usuthu)' implies that the international boundary (deriving the northern boundary of the Ndumo Game Reserve) is defined as the Usuthu River.[37] The term 'east channel' further implies that the Boundary Commission must have been aware that the Usuthu River may have multiple channels, and thus the Commission may have known that either the river may assume a different channel from time to time, or the river tended to flow simultaneously though a number of channels. The reference to a particular channel suggests that the Commission intended to provide the necessary clarity by associating the position of the international boundary with an enduring feature in the landscape.

2.3 The Usuthu River breach

During the summer floods of 2002, the Usuthu River breached its southern bank within the protected area, and began flowing southwards before returning to its original alignment via the Bhanzi Pan at the confluence of the Pongola with the Usuthu River and their respective floodplains (Figure 1).

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[36] Hertslet (n 24) vol III at 1066. This boundary description was subsequently accepted by the notes exchanged between the United Kingdom and Portugal on 29 December 1898 and 25 January 1899.
[37] From the confluence eastwards to the coast, the boundary was demarcated by the remainder of the 13 beacons and thus fall outside the scope of this analysis – in that the eastern boundary of the Ndumo Game Reserve is the confluence of the Usuthu and Pongola Rivers. See Hertslet (n 24) vol III at 1066.

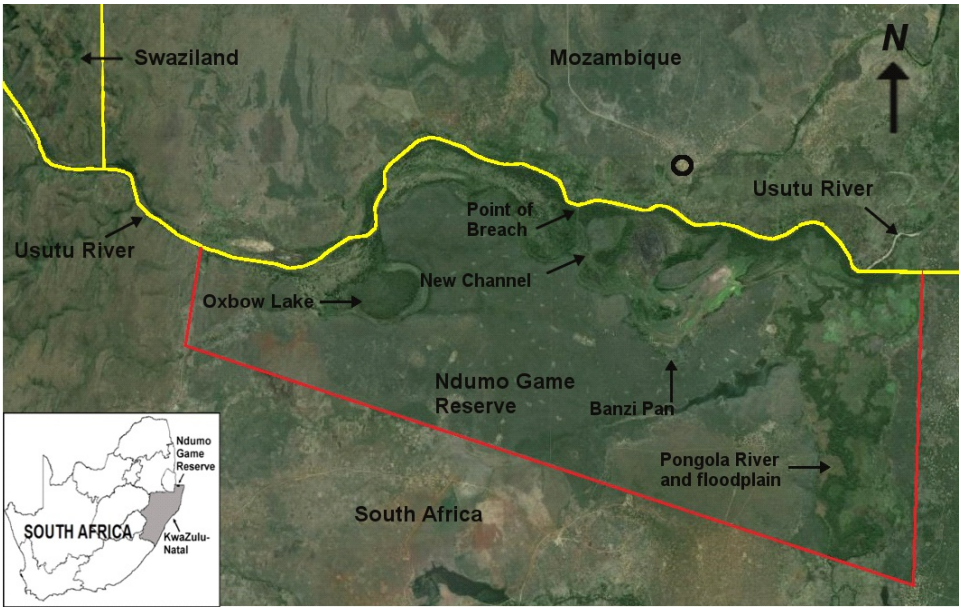

Figure 1: Location of the Ndumo Game Reserve showing the international boundaries (yellow), Usuthu and Pongola Rivers, point of breach and location of the new channel. The Mozambican Hamlet of Catuane is marked with an 'O'.[38]

The question now arises – with the avulsion of the Usuthu River and its migration southwards, had the international boundary and with it the protected area, also moved?

In considering this question and its answer, one must be mindful of the fact that the residents of the Mozambican hamlet, Catuane, which occurs immediately north of the breach, have requested that the river be returned back to its original alignment. This request was centred on these residents having continued access to the Usuthu River and its resources. In response to the concerns, the Mozambican government made diplomatic representations to the South African government in 2005 to close and seal the breach, so forcing the river back to its original alignment. In 2007 the South African Department of Water Affairs, under instruction from the Presidency,[39] placed sand-filled hessian bags in the breach in the river bank, as an emergency measure. This hessian-sandbag plug failed following the spring rains of that year (Figure 2).

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[38]Google Earth Pro 7.1.5.1557. Ndumo Game Reserve 32.265749°S 26.881394°E. http://www.google.com/earth/index.html (accessed 2016-02-07).

[39]Mr James Perkins (personal communication), Regional Director Water Affairs, National Department of Water Affairs and Forestry (KZN).

Figure 2: Sand-filled hessian bags stacked to plug the breech in the river bank (A), and displaced sandbags at the breech point following the first spring rains (B).[40]

The failure of this repair was later reported by Mozambique to the Tripartite Permanent Technical Committee (TPTC)[41] for permanent resolution. The TPTC subsequently requested the Mozambican government to investigate and recommend a desirable solution. The Mozambican government appointed a geophysical specialist to recommend a permanent solution which would cause the river to return back to its original alignment within the Ndumo Game Reserve – in order to secure the necessary relief for the Catuane Hamlet.[42] [43]

2.4 Proposed solution by the Mozambican government

The Mozambican government's proposal involved a series of three earth berms within the Ndumo Game Reserve – angled to redirect the water which had entered onto the floodplain via the breach, back into the Usuthu River. The creation of the berms would necessitate the excavation of those areas of the Usuthu floodplain within the protected area. With the rising of the water levels within each basin, the water flows would 'flood' back into the original channel. Excess flows in the first basin would overtop the first berm only to be redirected

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[40] Salomon 'Draft Inception Report Progressive Realisation of the IncoMaputo Agreement (PRIMA) – Study for the Implementation of the Permanent Solution in the Lower Usuthu Breach' (2010), available at: http://www.preventionweb.net/files/16411_primausuthubreachinceptionreportv02.pdf on 23 September 2014 (accessed 2016-02-07) (hereafter referred to as the 'Mozambican Proposal') Figures1-3 and 1-4 respectively.

[41] The Tripartite Permanent Technical Committee (TPTC) is a formal collaboration between South Africa, Mozambique and Swaziland. It is the objective of the TPTC to direct the management of, *inter alia*, the Usutu/Maputo River and the provision of water resources. The TPTC is the Water Resources Technical Committee contemplated in art 5(1)(a) of the Revised Protocol on Shared Watercourse Systems.

[42] See generally Salomon (n 40).

[43] *Id* s 8.1.

to the river by the second and thereafter the third berms. Water that had gone over the third berm would be considered to have gone past the Catuane Hamlet and hence would be left to flow across the remainder of the floodplain into either the Usuthu or the Pongola River. The net result of this engineered solution would be that water flowing into the artificial basins would be redirected into the original channel of the Usuthu River for use by the Catuane Hamlet. From a protected area perspective, the Mozambican proposal would require substantial earth works in order to create the berms. This activity would involve the removal of a significant proportion of the natural vegetation and associated wetland habitats that currently comprise the floodplain. It would also result in a significant change in the functioning of the floodplain. The net result would be to alienate and transform a portion of the Ndumo Game Reserve into an artificial water-supply area for the Catuane community.

Being hydrologically focussed, the Mozambican proposal is silent on the significance of the environmental impacts on the protected area, its Ramsar status and other biodiversity importance – other than an acknowledgement through reference to another study,[44] and the mention of possible 'flaws that hinder progress'.[45] These flaws include the flooding of numerous potentially rare and endangered fauna, accelerated sedimentation of the floodplain, and accelerated erosion of the outlet of Bhanzi Pan – an oxbow lake considered to be of significant biodiversity importance.[46] Furthermore, the Mozambican Report suggests that these may be addressed though discussions between the state parties.[47]

The Mozambican proposal naturally raises two key questions. The first is whether the proposed intervention is in keeping with the international law, including the obligations pertaining to biodiversity conservation and shared water resources. The second is whether the solution proposed by Mozambique may be accommodated within South Africa's domestic legislation that regulates the use and protection of biodiversity, and safeguarding the integrity of protected areas.

Within this context, this paper investigates: (a) the potential consequence of the avulsion of the Usuthu River from its current course for the international boundary separating South Africa and Mozambique, and (b) the provisions of both domestic and international law that may be drawn on to protect the Ndumo Game Reserve, and (c) the role of the public trust doctrine in the decision-making process.

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[44]Wadeson 'Lower Usuthu River – Diversion Channel Scoping Report. Report prepared for the Department of Water Affairs and Forestry of South Africa' (2006), Unpublished Report Commissioned by the Department of Water Affairs, quoted in Salomon s 4.1.1 n 40.
[45]Salomon (n 40) s 11.1.
[46]*Id* s 8.1.
[47]*Id* s 11.1.

3 Analysis and discussion

3.1 International boundary

3.1.1 Legal principles with respect to river migration

When a river (functioning as a legal boundary between two properties or in particular between two states), changes course, three legal principles apply to determine the location of the boundary: accretion, *thalweg*[48] and avulsion. These principles, and in particular accretion and avulsion have their origins in resolving boundary disputes in the Roman property law and have subsequently been accepted into public international law.[49]

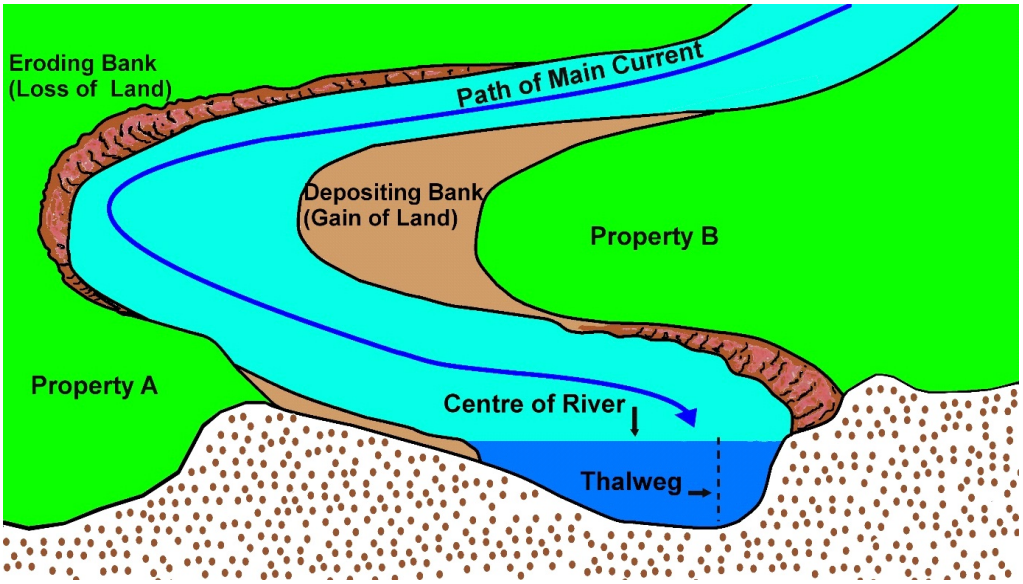

Figure 3: Schematic representation of accretion (A), and avulsion (B) arising from a meandering river.

The accretive principle (alluvio or avulsio)[50] regulates the results of a gradual shifting of a water course over an extended period of time. In this case, the

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[48] *Thalweg* is a German term used to describe the location of the deepest part of the river channel used for navigation purposes. The location of the *thalweg* is not to be the centre of the river, and hence this term is often used in multilateral agreements particularly in the case of navigable rivers.
[48] See Caponera *Principles of water law and administration: National and international* (2007) 202.
[49] Donaldson (n 3) 157.
[50] Generally known as the increase of a parcel of land as the result of the deposition of soil on the shoreline through the action of the river, ocean or bay.

changes in the river course are as a result of slow or imperceptible addition of land through the deposition of water-borne sediment and the concomitant erosion of land on the opposite side of the river. While instantaneous observation (or observation over a short period of time) may render the shifting channel imperceptible, monitoring over an extended period of time may show that changes in the position of the river have occurred through slow ongoing natural deposition and erosion (Figure1). The resultant and fundamental consideration is that the movement of the river (irrespective of the time interval) fails to create a new channel which can be reasonably distinguished from the old.[51] Thus, where there is no discernible new channel, and the acquisition of ownership (and the related loss of ownership) is granted by way of *ipso iure*, foregoing the need to actively take possession of the land gained through this natural process.[52] While the international boundary remains the centre, or *ad medium filum*, of the river,[53] this may not necessarily be the deepest or navigable section of the river. The deepest section of a river is predominantly created and maintained by that part of it that has the highest velocity of fluvial flow. Thus, when the deepest section of the river is caused to shift away from its centre (the *Thalweg* - Figure 3), the international boundary would generally shift with this change.

The principle of avulsion or *mutation alvei* occurs when there is a sudden change in the course of the river, or a sudden loss or addition of land through the action of water[54] and the creation of a new channel. Avulsion occurs in both instances where the old channel is completely or partially abandoned (Figure 4). For the latter, the river may continue to flow in both channels creating an island (*circumluvio*) or may flow predominantly in the new channel – depending on the amount and velocity of flow. In either instance, therefore, *mutation alvei* occurs when a sudden new channel is formed and irrespective of whether the original channel is abandoned or not. Further, it is conceivable, although in the extreme, that a river may cease to flow entirely, or a significant portion of land occurs between the old and the 'new' channel.[55] It is also implausible that the disappearance of the river (as in 'river capture' through encroachment by another river) would result in disappearance of a portion of an international boundary. In this case the international boundary would remain at the centre of the abandoned

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[51]Kańska and Mańko 'Shifts in international boundary rivers' (2002-2003) 26 *Polish Yearbook of International Law* 141.

[52]Kańska and Mańko (n 51) 141; Glazewski *Environmental law in South Africa* (2005) 350; *The Body Corporate of Dolphin Cove v Kwadukuza Municipality* High Court Judgment of 20 February 2012, ZAKZDHC 13, 8513/10, at para 22.

[53]See, eg, *Nebraska v Iowa* 143 US 359-370 (1892).

[54]A parallel example would be the migration of the high-water mark in either pro- or regrading beaches along a sandy coastline. See, generally, *The Body Corporate of Dolphin Cove v Kwadukuza Municipality* (n 52).

[55]For example, in periods of extended and profound drought or in a sudden river capture event.

river bed. In support of this argument, it is inconceivable that the citizenship of people would change as a result of such an event. It is also inconceivable, in the absence of a transboundary agreement,[56] that land and infrastructure would be precipitously forfeited to the neighbouring state.[57] It thus stands to reason that either the principle law surrounding international boundaries or common sense would prevail – in that the boundary between two neighbouring states would not change as a result of avulsion or *mutation alvei.* The position of the boundary in such circumstances would remain firmly at the position of the old channel – to ensure that no state party is disadvantaged unfairly by a sudden change in the course of the river.[58] [59]

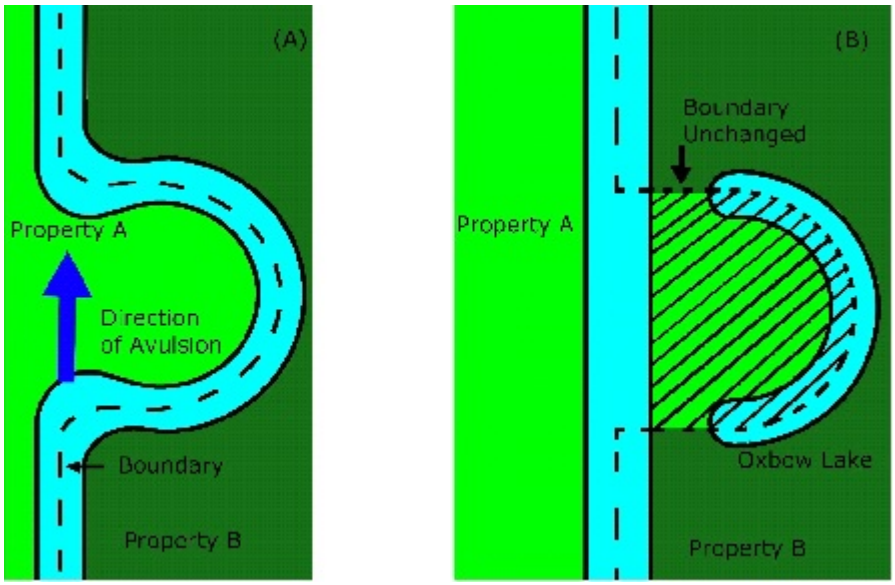

Figure 4: Schematic representation of a meandering river prior to (A) and following (B) an avulsion or *mutation alvei* event (own schematic representation).

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[56] In the circumstance where both state parties have come to an agreement that defines the boundary when there is a shift in the alignment of the river, this agreement would supersede international customary international law discussed herein. See Green, Haywood and Hackworth *Digest of international law* (1940), vol 1 at 409, quoted in Kańska and Mańko (n 51) 146.

[57] Donaldson (n 3) 157.

[58] Hackworth *ibid;* Kańska and Mańko (n 51) 141.

[59] There are, however, circumstances where the international boundary may change due to the newly created or new principal channel following an avulsion event. These circumstances occur when there are existing navigation rights and these rights may be potentially lost. Since navigation is not central to the questions surrounding the avulsion of the Usuthu River, this dimension of determining the position of an international boundary will not be pursued.

Thus, in the case of the migration of the Usuthu River, the principle of avulsion would apply and thus the boundary separating South Africa from Mozambique remains unchanged, irrespective of the location of the Usuthu River – being the abandoned channel of the Usuthu River.

3.1.2 Sedudu/Kasikili Island judgment

Although there are several cases in Africa concerning disputed boundaries involving water courses, there are surprisingly few where the dispute has arisen from the movement of a river separating two countries. Notwithstanding when the principles of accretion and avulsion do not apply, the judgment by the International Court of Justice in the Hague in the Netherlands (ICJ) on the Kasikili/Sedudu Island dispute between Botswana and Namibia – is case law which may assist the resolution of any boundary dispute that may arise from the avulsion of the Usuthu River. The Kasikili/Sedudu Island is located within the Chobe River, and ownership was disputed by Botswana and Namibia.

The origin of the dispute is rooted in the Anglo-German Treaty of 1890, which defined the boundary terms as 'the middle of the main channel' or '*thalweg*' of the Chobe River,[60] but it is silent on the criteria required to identify the 'main channel'. In the Court's opinion, the meaning of the term '*thalweg*' was the *corpus* of the dispute between the two countries.[61] The Court was also of the opinion that the Vienna Convention on the Law of Treaties of 23 May 1969, in particular Article 31 thereto, was applicable – inasmuch as it reflected customary international law.[62] Here the ICJ interpreted the 1890 Treaty by applying the rules of the 1969 Vienna Convention:

> a treaty must be interpreted in good faith, in accordance with the ordinary meaning to be given to its terms in their context and in the light of its object and purpose. Interpretation must be based above all upon the text of the treaty. As a supplementary measure recourse may be had to means of interpretation such as the preparatory work of the treaty.[63]

The Court reasoned that the 'centre of the main channel' had the same meaning as the words '*thalweg des Hauptlaufes*' ('*thalweg*' of the main run of the channel) and thus the 'centre' was synonymous with the navigation term

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[60]Article III, para 2 of the German version uses the term '*thalweg*' of that channel (*Thalweg des Hauptlaufes*)
[61]Paras 29-42 of the ICJ judgment.
[62]*Id* paras 18-20.
[63]Drawing on the text quoted in the Territorial Dispute (Libyan Arab Jamahiriya/Chad), Judgment, ICJ Reports 1994 pp 21-22, para 41.

'*thalweg*'.[64] In addition, the Court understood that the hydrological situation of the Chobe around Kasikili/Sedudu Island was essentially similar to the situation which existed when the 1890 Treaty was concluded. The ICJ therefore concluded that 'navigation' was a principle objective of the provisions of article III, paragraph 2, of the Treaty – in that both parties sought to secure navigational rights along the Chobe River.[65] This reasoning assisted the ICJ to conclude on which channel constituted the boundary between the two parties.[66]

Thus it would be likely that a similar conclusion could be drawn for the Usuthu River, in that in periods of high water flows, the original channel would be most navigable given that the new channel is spread out over a significant surface area of minimal depth as the waters enter the floodplain. Here, in keeping with the Kasikili/Sedudu Island case, the border would be likely to remain the original channel of the Usuthu River – and not the new shallow channel derived from the avulsion event.

In considering the role and significance of current and in particular historical maps, the ICJ in the Kasikili/Sedudu Island case recalled the position of the Court with respect to the evidentiary value of maps in the 'Frontier Dispute' between Burkina Faso and the Republic of Mali:

> maps merely constitute information which varies in accuracy from case to case; of themselves, and by virtue solely of their existence, they cannot constitute a territorial title, that is, a document endowed by international law with intrinsic legal force for the purpose of establishing territorial rights. Of course, in some cases maps may acquire such legal force, but where this is so the legal force does not arise solely from their intrinsic merits: it is because such maps fall into the category of physical expressions of the will of the State or States concerned. This is the case, for example, when maps are annexed to an official text of which they form an integral part. Except in this clearly defined case, maps are only extrinsic evidence of varying reliability or unreliability which may be used, along with other evidence of a circumstantial kind, to establish or reconstitute the real facts.[67]

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[64]Vice-President Weeramantry, in his dissenting opinion, stated that 'main channel' and '*Thalweg des Hauptlaufes*' in the 1890 Treaty implied more than one interpretation – and undue weight was given to the main channel equating it to the *thalweg* in the judgment.

[65]Judge Oda, *inter alia*, affirmed that the court was amiss for not taking into consideration scientific knowledge on channels in the system and for not calling on advice of experts in this regard.

[65]Furthermore, Judge Kooijmans, *inter alia*, concurred that the Vienna Convention was too limiting in application and that the court should be guided by other multilateral agreements, such as the 1997 Convention on the Non-Navigational Uses of International Watercourses – and therein the rule of equitable utilisation of transboundary watercourses.

[66]ICJ judgment, paras 88-89 inclusive.

[67]ICJ Reports 1986 para 54.

In the Usuthu matter, unlike that observed in Sedudu/Kasikili Island, maps associated with positions of colonial and present state parties, consistently and with sufficient detail display the boundary as being the Usuthu River. Furthermore, the Mozambique government reinforced this position of the international boundary by requesting that the flow of water be returned to its original channel as depicted in the maps included in their consultant's report. It is further argued that this action would constitute evidence of a 'subsequent agreement' or 'subsequent practice' within the meaning of the Vienna Convention, and in so doing would strengthen the notion that the international boundary separating South Africa and Mozambique remains the original channel of the Usuthu River.

The final consideration by the ICJ – relevant to the Usuthu matter – was whether the occupation of the Sedudu/Kasikili Island constitutes 'subsequent practice in the application of the [1890] treaty which establishes the agreement of the parties regarding its interpretation'.[68] [69] The ICJ was of the opinion that mere occupation of land by rural people did not accord the application of the 1890 Treaty, and as such the principle of *uti possidetis*[70] cannot be applied.[71] In contrast, and in addition to any national security activities that have been undertaken along the border, KwaZulu-Natal's conservation agency continued to enforce various conservation laws in the area of the Ndumo Game Reserve, and in particular in the area of land immediately south of the Usuthu River's main channel downstream of the point of avulsion. In so doing the South African government, through the actions of the conservation agency, continued to carry out, in practice, the principles of effective occupation and prescription in compliance with the Berlin Convention and the customary international law principle of *uti possidetis*. This occupation also fulfilled the requirements that the ICJ ruled paramount for creating certainty about where the international boundary was located.[72]

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[68] 1969 Vienna Convention on the Law of Treaties, art 31, para 3(b)).

[69] See ICJ judgment paras 71-75 inclusive.

[70] From the Latin phrase '*uti possidetis, ita possideatis*', or 'as you possess, so may you possess'.

[71] Weeramantry held a contrary opinion to the Court, in that the presence of people from one of the states on the island did infer an 'agreement' with respect to art 31, para 3 (b), of the Vienna Convention on the Law of Treaties – as their presence indicated, by action or inaction, affirmation or silence, a common understanding between both states of ownership through prescription. In addition, Judge Oda was dissenting on the weight given by the judgment to the Vienna Convention on the Law of Treaties – particularly in relation to any 'subsequent agreement' or 'subsequent practice'.

[72] Vice-President Weeramantry also affirmed that the decision based on navigation inappropriately involved dividing or dismantling what was clearly an integrated ecological unit, in which the channels occurred. Weeramantry further stated, as expressed in the opinion, that the island should be safeguarded in the environment's interest.

In many respects, the Sedudu/Kasikili Island case – although it does not involve avulsion of the Chobe River – is germane to resolving uncertainties that may arise following the avulsion of the Usuthu River. In this, the arguments posed in the judgment, together with the opposing opinions by the individual judges, strongly suggest that the avulsion of Usuthu River did not result in a change in the position of the international boundary separating Mozambique and South Africa.

3.2 Protected area management

Following the conclusions made above, consideration shifts towards the river and its surrounds and South Africa's obligations to manage the Ndumo Game Reserve as an integrated ecological unit – as well as to those obligations nested within both African and global multilateral agreements.

The management of the Ndumo Game Reserve would be in accordance with the provisions of the National Environmental Management: Protected Areas Act.[73] Section 3 of this Act obligates the state to 'act as a trustee of protected areas' within the country, or alternatively states that a protected area is held in trust on behalf of the public – the beneficiaries.[74] The *crux* of this obligation is that the state has a fiduciary duty to act prudently and in accordance with the objectives for establishing protected areas. These fiduciary obligations are tied to a hierarchy of imperatives and concrete performance standards, and these are specified in the Act.

The overarching imperative specified in the Act directs the state towards achieving the environmental right in section 24 of the Bill of Rights in the Constitution of the Republic of South Africa, 1996.[75] This right, *inter alia*, grants all the right to have the 'environment protected for the benefit of present and future' and by 'preventing pollution and ecological degradation, promoting conservation'. This right imposes a responsibility on the state to take necessary steps to ensure environmentally protective management principles are applied to decision-making.[76] The second and subordinate imperative imposed on the state is that the establishment and subsequent management of protected areas must contribute to achieving the objectives of the NEMPA, and, in particular, the protected area must form part of a 'diverse and representative network of protected areas'.[77] Given the Ramsar status, being the protected area giving protection to the last remaining natural portion of the Usuthu River, it is inconceivable that Ndumo Game Reserve would be considered a duplication or

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[73]South Africa, Act 57 of 2003. Hereafter referred to as NEMPA.
[74]Section 3 of the NEMPA.
[75]Hereafter referred to as 'the Constitution'.
[76]Kidd *Environmental law* (2011) 21-26.
[77]Section 2 of the NEMPA.

redundant within South Africa's protected area network. It stands to reason, therefore, that the potential loss of the flood plain within the Ndumo Game Reserve, as a consequence of the proposed interventions by Mozambique, is highly likely to result in a depreciation in the diversity and representativeness of South Africa's protected area network. The performance standards specified in the NEMPA are largely housed in the protected area management plan – which must be submitted to the relevant political head within one year of assignment of the management authority.[78] In this, it is the 'object of a management plan is to ensure the protection, conservation and management of the protected area concerned in a manner which is consistent with the objectives of this Act and [*exclusively*] for the purpose it was declared'.[79] This purpose ultimately is directed at conserving and protecting that crucial component of the public trust entity.[80]

The Act specifies a finite hierarchy of purposes which underpin its declaration. This array of purposes does, however, include: 'to assist in ensuring the sustained supply of environmental goods and services'.[81] It is unlikely, if not inarguable, that (a) the artificial return of the Usuthu River would meet the intent of this purpose, particularly given that the avulsion of the river is a natural process within a floodplain, from which the latter provides various *in situ* and downstream users natural products and services; and (b) the need to return the Usuthu River to the original channel under the auspices of 'environmental goods and services' would supersede other preceding purposes such as protecting representative ecosystems and associated ecological integrity, rare and threatened species, and the like. Consequently, the NEMPA provides little scope for the management authority (in this case, the state) to undertake any activity that is not in line with the purpose of the protected area, its management plan – or which may lead to potential damage to the protected area and the biodiversity therein. Furthermore, the management authority (the state in the case of the Ndumo Game Reserve) must monitor and report on its performance in achieving the standards specified and included in the management plan. Finally, should the relevant political head deem that there is underperformance with regard to the management of the area or the biodiversity of the area, the tenure of the management authority may be terminated and another organ of state assigned. The provisions of NEMPA,

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[78]Section 39 of the NEMPA.
[79]Section 40 of the NEMPA [own emphasis].
[80]Justices Nyamu, Ibrahim and Emukule – in the consideration of the importance of upholding the fiduciary duties of the state and that the public trust entity must be managed and used for this purpose. This being for the benefit of current (intragenerational equity) and future (intergenerational equity) generations. Nyamu, Ibrahim and Emukule draw on the reasoning of Brown Weiss *On fairness to future generations* (1989) 36-37, and stress that the public trust cannot be used to maximise the welfare and well-being of a few at the expense of others. See chapter entitled 'Summary of remedies' in *Kenya, Waweru v Republic* AHRLR 149 (KeHC 2006).
[81]Section 17(g) of the NEMPA.

therefore, constrain if not preclude the state from either causing or sanctioning the construction of berms within Ndumo Game Reserve, that would lead to the near permanent flooding of the floodplain and an associated loss of biodiversity.

3.3 The public trust doctrine and environmental governance

The National Environmental Management Act[82] serves as framework legislation aimed at, *inter alia,* defining overarching and generic principles that must be considered by the state for management decisions that concern the environment[83] – including actions that may arise out of other South African legislation concerning the protection or management of the environment.[84] In many respects, as mentioned above, these principles set the foundation of the fiduciary duties to be exercised by the state in safeguarding the Ndumo Game Reserve and its biodiversity. Included in these, the NEMA explicitly brings into South African jurisprudence the common law principle of the public trust doctrine which is stated in this Act as the 'environment is held in public trust for the people, the beneficial use of environmental resources must serve the public interest and the environment must be protected as the people's common heritage'.[85] Simply worded, natural 'resources should be held in trust by the state, which must manage their consumptive use and protection on behalf of present and future citizens'[86] or 'the State, as trustee, is under a fiduciary duty to deal with the trust property, being the common natural resources, in a manner that is in the interests of the general public'.[87]

While other countries have effectively relied solely on the courts to develop the nuances of the doctrine that apply to the natural environment, including the biodiversity therein,[88] the NEMA augments the doctrine with an array of principles

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[82] 107 of 1998. Hereafter referred to as 'NEMA'.

[83] Section 2 of the NEMA defines the environment as the 'surroundings within which humans exist and that are made up of – (i) the land, water and atmosphere of the earth; (ii) micro-organisms, plant and animal life; (iii) any part or combination of (i) and (ii) and the interrelationships among and between them; and (iv) the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being'.

[84] Section 2(1).

[85] Section 2(2)(o).

[86] Sagarin and Turnipseed 'The public trust doctrine: Where ecology meets natural resources management' (2012) *Ann Rev Environ Resources* 37 at 473.

[87] *Kenya, Waweru v Republic* AHRLR 149 (KeHC 2006) para 20.

[88] For example, the relocation of the Beas River in the Kullu Valley (*India, MC Mehta v Kamal Nath* (SCC 1997); Pollution of the Kiserian River (*Waweru v Republic* (n 80)) and diversion of the Owens river in the Mono Lake case (*California, National Audubon Society v Superior Court*, 658 P 2d 709). These judgments are particularly relevant in the Usuthu River matter, in that they provide insights into the fundamental role the public trust doctrine may play in protecting ecosystems, and the weight that must be given to the interests of broader society over the needs of a subset thereof. See, generally, Redmond 'The public trust in wildlife: Two steps forward, two steps back' (2009) 49

that guide the state to act in the public interest. For instance, the first principle provides that environmental management 'must place people and their needs at the forefront of its concern and serve their physical, psychological, developmental, cultural and social interests equitably'.[89] This provision guides the state away from applying a myopic approach to decision-making in favour of a select few people, and requires a broader consideration of the interests of all people (current and future), and these interests need to be considered with an impartial and unfettered mind. The needs of the Catuane Hamlet in Mozambique, therefore, cannot be seen in the absence of a broader evaluation, as being paramount and overriding of other needs of a broader community and intra- and inter-generational equity. Furthermore, this framework entails the state to ensure that any decision affecting the environment '*must* be socially, environmentally and economically sustainable'.[90] It stands to reason, therefore, in applying the principles to decisions affecting the environment, that the state would be amiss in giving weight to one of these 'environmental pillars' at the expense of another. To do so risks rendering the outcome of the decision unsustainable and therein brings into question whether such a decision was taken in the broader public interest or if it was made in favour of a select few.

The subsequent environmental principles speak directly to those factors or components of the environment that underpin the notion of sustainable use. These include, *inter alia*, the safeguarding of ecosystems and biological diversity,[91] prevention of pollution and degradation of the environment,[92] and disturbance of landscapes and sites that constitute South Africa's cultural heritage.[93] In considering these, the state is required to consider and primarily avoid negative impacts on the protected area and the biodiversity therein. In circumstances where negative impacts cannot be altogether avoided, the impacts are to be minimised and the residual loss remedied.[94] Further nested in this principle the state, in striving for sustainable use of the environment, is to apply 'a risk-averse and cautious approach'. This takes into account the limits of current knowledge about the consequences of decisions and actions.[95] These sets of 'sustainable use' principles form the foundation of the fiduciary duties of the state acting, in particular, as trustee of the Ndumo Game Reserve. The purpose of this

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Natural Resources Journal 249, 250 on wildlife cases within the United States of America.

[89]Section 2(2).

[90]Section 2(3) [own emphasis].

[91]Section 2(4)(a)(i).

[92]Section 2(4)(a)(ii).

[93]Section 2(4)(a)(iii).

[94]Section 2(4)(a)(i) and(ii).

[95]Section 2(4)(a)(vii). The risk averse approach to decisions pertaining to the environment is South Africa's interpretation of the 1992 Rio Declaration on Environment and Development. See n 129 (below).

collection of principles is to ensure that the trust entity (in this case the protected area and the biodiversity therein) remains uncompromised and is not exposed to significant and irreversible risk.

The subsequent environmental principles embrace a people-centric approach to environmental decision-making that could be used in the argument that the needs of the Catuane Hamlet are paramount, and therein the necessity for the return of the Usuthu River to its original alignment. For instance, the NEMA provides for the state to consider maintaining 'equitable access to environmental resources, benefits and services to meet basic human needs and ensure human well-being must be pursued […]'.[96] Whilst this and the other people-centric principles would hold for people within the country, it is questionable whether the NEMA and therein the fiduciary duties imposed by the trust could be applied outside the sovereignty of the state. Here it may be argued that the consideration of the needs of the Catuane Hamlet may only be considered by way of various multilateral agreements that apply in this circumstance. The NEMA, however, provides the principle that global and international responsibilities are to be discharged in the national interest.[97] Within the context of the avulsion of the Usuthu River, this principle guides the state not to favour or give weight to global, African, or SADC multilateral agreements that risk an action being taken that is not in South Africa's national interest. This principle, therefore, requires the state to consider whether there is an overriding South African national interest – before any decision to accede to the construction of the various berms within the Ndumo Game Reserve is made.

Finally, the NEMA concludes with the principle that the state must apply specific attention when considering management and planning procedures, to 'sensitive, vulnerable, highly dynamic or stressed ecosystems, such as […], wetlands, and similar systems', especially in those circumstances where these natural assets are 'subject to significant human resource usage and development pressure'.[98] Given that the floodplains within the Ndumo Game Reserve are the last remaining natural areas of the Usuthu River system, as a direct consequence of human-induced transformation of the broader landscape, the state would be hard pressed to grant permission for the construction of the proposed berms and therein permit the loss of these remaining sensitive areas.[99]

Finally, the NEMA entrenches the application of its principles in environmental decision-making by enabling the South African public (the

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[96]Section 2(4)(d).
[97]Section 2(4)(n).
[98]Section 2(4)(o).
[99]An explicit analysis of the public trust doctrine in relation to the NEMA Principles is given in Blackmore 'The relationship between the NEMA and the public trust doctrine: The importance of the NEMA Principles in safeguarding South Africa's biodiversity' (2015) *SAJELP* forthcoming.

beneficiaries of the trust) to hold the trustees (relevant authorities in the South African government functioning as the public trustee) accountable for decisions taken, or failure to take a decision[100] – that may compromise the environment. Here any person may, *inter alia*, seek judicial relief for any breach, or, importantly, 'threatened breach' of the principles and any provision of this Act or any other statutory provision concerned with the protection of the environment. Further, this relief may be sought in the public interest or in the interest of protecting the environment.[101] [102] In seeking this relief, the NEMA provides for the court not to award costs where the relief was sought for this purpose.[103]

Thus, the Mozambican Proposal, given its potential impacts on the Ndumo Game Reserve, cannot be granted. To do so would *ultra vires* the NEMA and the public trust principles therein, and expose the state's decision to the likelihood of being overturned by way of judicial review.

3.4 Specific multilateral agreements directly applicable to the Usuthu River and the Ndumo Game Reserve[104]

3.4.1 Maputo Convention (2003)[105]

Underscoring the public trust duties, the (revised) African Convention on Conservation of Nature and Natural Resources – signed in Maputo in 2003 (the Maputo Convention) in accordance with the Convention on Biological Diversity[106] – places specific obligations on state parties to take measures, *inter alia*, for the conservation, sustainable use and rehabilitation of vegetation,[107] and to avoid or

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[100]Section 1 of South Africa's Promotion of Administrative Justice Act 3 of 2000 ('PAJA') defines administration action, *inter alia*, as 'any decision taken, or any failure to take a decision, by an organ of state, when exercising a public power or performing a public function in terms of any legislation …'.

[101]Section 32(1) of the NEMA.

[102]Furthermore, s 3 of the PAJA considers any decision (or indecision) which materially and adversely affects the rights (eg, the Environmental Right, see n 70 and 71) or legitimate expectations of any person (the expectation that a protected area must be protected and managed for the purpose for which it was declared a protected area). Section 6 of the Act defines an extensive array of criteria which render a decision unjust, which forms the basis for any person seeking judicial relief.

[103]Section 32(2).

[104]A general discussion of the application of the public trust doctrine within global multilateral agreements, is given in Sand 'The concept of public trusteeship in the transboundary governance of biodiversity' in Kotzé and Marauhn (eds) *Transboundary governance of biodiversity* (2014) 45-63.

[105]The Maputo Convention is yet to come into force and thus adherence to its provisions is not yet binding on the signatories. The wording of this Convention, however, does represent a clear statement of intent by both South Africa and Mozambique. It is for this reason that this Convention is considered in this paper.

[106]See art 10 of the Convention on Biological Diversity.

[107]Article VIII.

eliminate risks to biodiversity that manifest at species[108] and habitat levels.[109] Furthermore, the Maputo Convention requires signatories to establish and expand existing protected areas, and stresses that these areas are to be managed for the purpose for which they were established. Article XIII(1) of Convention requires the signatories 'individually or jointly ... to take appropriate measures to prevent, mitigate and eliminate detrimental impacts on the environment'. Interestingly, this Article refers primarily to 'radioactive, toxic, and other hazardous substances and wastes', but subsequently addresses general harm to the environment. Here the signatories are required to:

> provide for economic incentives and disincentives, with a view to preventing or abating harm to the environment, restoring or enhancing environmental quality,[110] and ensuring that they, *inter alia*, to the maximum extent possible, take all necessary measures to ensure that development activities and projects are based on sound environmental policies and do not have adverse effects on natural resources and the environment in general.[111]

This Convention also recognises that *force majeure* circumstances may arise that may necessitate a compromise of the integrity of the natural environment.[112] Even though it may be argued that the avulsion of the Usuthu River is *force majeure*, given the delays that have transpired since the avulsion event, it is unlikely to be considered an emergency and the proposed solution necessary for 'defence in human life'.[113] [114] The principle of retaining the Ndumo Game Reserve and the Usuthu River floodplain therein, in trust, thus remains paramount.

Finally, article VII of the Maputo Convention requires signatories to take measures to ensure that their water resources are managed at the 'highest possible quantitative and qualitative levels'. To this end, the signatories are required to, *inter alia*, maintain water-based essential ecological processes.[115] This article further requires, in addition to surface water, that the signatories establish and implement policies for the planning, conservation, management, utilisation and development of underground and rainwater to ensure supply of sufficient suitable water for people's needs.[116] By underscoring underground and

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[108] Article X.
[109] Article XII(2) – with instruction of the need to identify and conserve critically important areas.
[110] Article XIII(2).
[111] Article XIV.
[112] As contemplated in art XXV.
[113] *Ibid*.
[114] At the time of writing, the only action taken (discussed above) was the attempt to temporarily plug the breach with sandbags.
[115] Article V(1).
[116] Article V(2).

rainwater resources, the Convention appropriately requires its signatories to consider all sources of water and to exploit primarily those resources that are likely to have the least impact on biodiversity. Thus, from a Mozambican and public-trust perspective, it is argued that it would be inappropriate for Mozambique to require South Africa to damage a protected area and the biodiversity therein, in order for the Catuane Hamlet to be able to abstract water from the Usuthu River within its original alignment. This observation is particularly relevant given that alternative sources of water (eg, boreholes, a pumping line from the new alignment of the river, or rainwater collection) appear not to have been considered. Furthermore, it would be inappropriate for the South African government to consider, within the context of this Convention, to cede to the Mozambican proposal and to allow the Ndumo Game Reserve and its biodiversity to be irrevocably damaged.

3.4.2 Revised Protocol on Shared Watercourse Systems (2000)

South Africa shares four rivers with its six neighbours – the Incomati, Orange, Limpopo, and Usuthu. South Africa ratified the United Nations (UN) Convention on the Law of the Non-Navigational Uses of International Watercourses on 26 October 1998,[117] which brings with it various political and practical responsibilities that include the exchange of data and information, the protection and preservation of water bodies, the creation of joint management mechanisms, and the early settlement of disputes.[118] The Convention codifies at least three common law obligations: equitable and reasonable utilisation,[119] prevention of significant harm, and prior notification of planned measures. These obligations form the cornerstones of the Convention and transboundary co-operation, in that the use of a transboundary watercourse by one state must be reasonable and in a manner that is equitable with the other states which are using it. The Convention further requires that the states collaborate and 'participate in the use, development and protection of an international watercourse in an equitable and reasonable manner'.[120] Article 7 (the 'Obligation not to cause significant harm') requires upstream signatories to 'take all appropriate measures to prevent the causing of significant harm' to downstream user countries. Should a signatory believe it has sustained significant harm due to an upstream or co-riparian signatory's use of an international watercourse the former is entitled to raise the issue of harm with the latter. Articles 5 to 7, inclusively, provide a platform for both states to reach a solution that is equitable and reasonable and that addresses the

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[117]This Convention is not yet brought into force, but does form a point of reference with respect to transboundary waters, particularly in the drafting of regional specific multilateral agreements as is indicated below.
[118]UNEP (2002).
[119]Article 5.
[120]*Ibid*.

downstream harm and the consequences thereto. This solution may naturally include the payment of compensation to achieve the desired balance of equitable use. While Part III of the Convention provides for prior notification of any planned measures that may have an adverse impact on downstream states, importantly, from this article's perspective, Part IV of the Convention creates the foundation for the protection, conservation and appropriate management of the watercourse ecosystems and the watercourses themselves – particularly where they support human life and important biodiversity.

Drawing from this Convention, on 7 August 2000, the SADC adopted the Revised Protocol on Shared Watercourses of the Southern African Development Community[121] – which not only recognises the UN Watercourses Convention, but strengthens principles that, *inter alia*, provide for integrated management of shared basins.[122] Here, specific emphasis is placed on equitable utilisation of water, and notification of planned measures of use that may impact downstream user states. This Protocol also places specific emphasis on the principle of no significant harm to shared watercourses, and notification of and cooperation during emergency situations. The focus of the Protocol was to create a platform for establishing close cooperation for sustainable and equitable use of ecological and hydrological resources of southern Africa's shared watercourses. Furthermore, the Revised Protocol promotes transboundary harmonisation of legislation, uses policies to achieve these *foci*,[123] and reinforces the importance of creating and maintaining a balance between the use of the resources within the waterway and the requirements to sustain the natural environment.[124] In terms of 'sustaining' the natural environment, the Revised Protocol further requires state parties either individually or, where appropriate, collectively, to 'protect and preserve the ecosystems of the shared watercourse'.[125] Thereafter, this Protocol requires state parties to individually or jointly prevent, reduce and control pollution of the watercourse that may arise from its use[126]

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[121]The Revised Protocol on Shared Watercourses entered force in 2003 and replaced the original Protocol of 1995. This revision was necessitated to bring the Protocol in-line with the 1997 UN Watercourses Convention. The revision also recognises, although obliquely, the Helsinki Rules and Agenda 21 of the United Nations Conference on Environment and Development. See Salman 'Legal regime for use and protection of international watercourses in the Southern African region: Evolution and context' (2001) *Natural Resources Journal* 41 at 1004.

[122]Integrated Water Resource Management (IWRM) and the Regional Strategic Action Plan for Integrated Water Resources Development and Management (RSAP-IWRM).

[123]Article 2.

[124]This is referred to and is characterised as the environmental reserve in s 2 of the South African National Water Act 36 of 1998. This being the amount of water required 'to protect aquatic ecosystems in order to secure ecologically sustainable development and use of the relevant water resource'.

[125]Article 3(2)(a).

[126]Sub-clause (b).

Finally, the Revised Protocol provides for a series of institutional mechanisms responsible for its implementation.[127] These mechanisms[128] include a reference to responsible 'personnel' – political heads and government officials, whose primary concern or expertise is water. The incorporation of expertise or political responsibilities that would provide for a joint approach to the protection and preservation of relevant ecosystems is absent. Given the predominant focus on water, these committees, and particularly the TPTC, are unlikely to attribute appropriate weight to biodiversity concerns when contemplating the provision of water to the Catuane Hamlet. Furthermore, the Revised Protocol is silent on requiring its committees to liaise with other sectors accommodated within the SADC multilateral agreements. As such, the TPTC and other committees are not bound to consult with the institutional entities provided for by, in particular, the Protocol on Wildlife Conservation and Law Enforcement. Consequently, sole reliance on this Protocol as the multilateral mechanism – to give effect to the protection of the integrity of the Ndumo Game Reserve – would be precarious and inadvisable.

3.4.3 SADC Protocol on Wildlife Conservation and Law Enforcement (2002)

The SADC Protocol on Wildlife Conservation and Law Enforcement[129] was set in place to establish a common framework for conservation and sustainable use of wildlife in the region. Taking its lead from the wildlife objective of the SADC Treaty,[130] this protocol provides the foundation for trusteeship of biodiversity by requiring each state party to apply the principle to ensure that its wildlife resources are conserved and used sustainably.[131] Within this cooperative framework, the Protocol uniquely binds each state to apply this principle outside of their jurisdiction, by enjoining SADC countries from 'causing damage to the wildlife resources of other states or in areas beyond the limits of national jurisdiction'.[132] In formulating a decision, each SADC country must consider the potential impacts that may manifest outside its borders. Where such impacts may be considered significant or non-trivial, an alternative consideration would naturally be warranted.[133] This Protocol therefore embraces the concept of a

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[127]Article 5.
[128]The Committee of Water Ministers, Committee of Water Senior Officials, Water Sector Co-ordinating Unit and the Water Resources Technical Committee and sub-Committees.
[129]Brought into force on 30 November 2003.
[130]Article 5(1)(g).
[131]Article 3.
[132]*Ibid*.
[133]This provision is in keeping with the Precautionary Principle adopted by the Rio Declaration on Environment and Development in 1992. This being: 'In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used

'multinational environmental law' using the public trust responsibilities to pierce the veil of state sovereignty to safeguard transboundary habitats and ecosystems, and the wildlife therein. It also requires, in accordance with Principle 16 of the Rio Declaration,[134] the internalisation of environmental costs – particularly those that may traverse an international boundary

The decision by the Mozambican government to require the construction of the various berms within the Ndumo Game Reserve is likely to lead to damage to the protected area and floodplain – and its biodiversity. This decision by the Mozambican government to call on the South African government – via the TPTC – to implement the proposed solution of the berms, could be considered a statement of intent to cause damage to wildlife resources in another state. This decision is likely, therefore, to be seen to be acting in a manner contrary to the provisions and spirit of the Protocol, and, as a consequence, to the SADC Treaty.

From the South African perspective, the Protocol requires the country to, *inter alia*, take an array of measures to ensure the conservation and sustainable use of wildlife and effectively enforce its national legislation.[135] South Africa is thus required to apply its environmental, biodiversity and protected area-related legislation to ensure that the integrity of its wildlife resources (the Ndumo Game Reserve) is safeguarded. Finally, the Protocol requires both states to cooperate in managing shared resources – as well as any 'transfrontier effects of activities within their jurisdiction or control'.[136] In this, South Africa may need to cooperate with Mozambique in order to supply the Catuane Hamlet with a sustainable supply of water, should this resource be unobtainable within Mozambique.[137]

The Protocol provides for an array of institutional mechanisms[138] responsible for its implementation.[139] These mechanisms comprise political heads and

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as a reason for postponing cost-effective measures to prevent environmental degradation.'

[134] 'National authorities should endeavour to promote the internalization of environmental costs and the use of economic instruments, taking into account the application that the polluter should in principle bear the cost of pollution with due regard to the public interest and without distorting international trade and investment'.

[135] Article 4(2)(a) and (b).

[136] Article 4(2)(c).

[137] The Ndumo Game Reserve is integral to the Ndumu-Tembe-Futi Transfrontier Conservation Area, and forms one of five protocols forming the broader Lubombo Transfrontier Conservation and Resource Area between Mozambique and South Africa. The latter was set in place to form a platform to protect and conserve what is known as the Maputaland Centre of Endemism. Du Plessis and Du Plessis (n 7 at 275); Blackmore 'The interplay between the public trust doctrine and biodiversity and cultural resource legislation in South Africa: The case of the Shembe Church Worship Site in Tembe Elephant Park in KwaZulu-Natal' (2014) 10(1) *Law, Environment and Development Journal* 3.

[138] These mechanisms comprise the Wildlife Sector Technical Coordinating Unit, Committee of Food, Agriculture and Natural Resources (FANR) Ministers, Committee of Senior Officials, and the Wildlife Sector Technical Committee.

[139] Article 6.

government officials that govern matters relating to wildlife resources and food production. Within these it would be the prime function of the Wildlife Sector Technical Committee[140] to implement the Protocol.[141] It is required of this committee to, *inter alia*, liaise with other SADC sectors to promote inter-sectoral cooperation in wildlife management.[142] It would therefore be the duty of this committee to ensure that the TPTC was informed of the potential negative impacts the Mozambican proposal would have on the integrity of the Ndumo Game Reserve and its biodiversity. Given that the Revised Protocol on Shared Watercourse Systems is silent on an equivalent provision, it would be unlikely that a reciprocal action would be undertaken by the TPTC – this being to proactively liaise with the Wildlife Sector Technical Committee on matters potentially concerning the impacts their decisions may have on biodiversity. It therefore stands to reason that liaison between these two sectors would be dependent on South Africa simultaneously raising its biodiversity and protected area-related concerns with both the Wildlife Sector Technical Committee[143] and the TPTC. Finally, any disputes that arise from the Wildlife Sector Technical Committee, or as a result of the liaison with the TPTC, may be raised by South Africa (or Mozambique) with the SADC Treaty Tribunal, for the necessary relief.[144] Here the decision of the Tribunal, having considered the merits of the matter, will be final and binding on both countries.[145]

3.4.4 Ramsar Convention

Notwithstanding the domestic and SADC obligations imposed on the state, as the trustee, to protect integrity of the Ndumo Game Reserve and its biodiversity, the state has also assumed a similar obligation to the global community as, *inter alia*, a consequence of listing the Ndumo Game Reserve as a wetland of international importance in terms of the Ramsar Convention.[146] Pursuant to this obligation, Article 3.2 of the Convention requires the state party to notify the Bureau to the Convention when the Ramsar site is under threat,[147] for discussion at the next

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[140]Comprising the administrative heads for the organs of state that are responsible for the protection and use of wildlife.
[141]Article 6(7).
[142]Article 6(8)(h).
[143]At the time of writing, I could not confirm whether the biodiversity concerns relating to the proposal of redirecting the Usuthu River back into its original channel, was considered at any of the Protocol's institutional committees.
[144]Article 14.
[145]Article 17 of the SADC Treaty.
[146]Ndumo Game Reserve was listed as Ramsar Site 887 on 21 January 1997, available at: https://rsis.ramsar.org/ris/887 (accessed 28 May 2015).
[147]Worded in the article as the site 'is changing or is likely to change as the result of technological developments, pollution or other human interference'.

Convergence of parties. Furthermore, the state is obliged to consider, if not implement, general or specific recommendations made by the Conference of Parties – as a means to remedy the threat.[148] This enables a broader international public's interest to be considered in decisions taken that may affect the integrity of the Ramsar site.[149] These provisions ensure that the contracting parties to the Convention take into consideration the global public's interest when exercising management, as the trustee, over the management of their Ramsar-listed sites. In this, and in accordance with the state's sovereignty of the Ramsar site, this convention recognises that the state party may exercise discretion to allow the Ramsar site to be significantly impacted upon in circumstances of 'urgent national interest'.[150]] In such circumstances the state, as the trustee, would be required as far as possible to:

> compensate for any loss of wetland resources, and in particular it should create additional nature reserves for waterfowl and for the protection, either in the same area or elsewhere, of an adequate portion of the original habitat.[151]

Noting that the Usuthu River breached its southern bank during the summer of 2002, the plugging of the breach took place in 2005, and the remedy recommended by Mozambique was completed in 2010, it is highly unlikely that Ramsar or the Conference of Parties would consider this intervention as being 'urgent'. Whilst it is conceivably 'in the national interest' to cooperate with Mozambique to ensure that the Catuane Hamlet has access to water, and noting the extensive land transformation of the areas surrounding the Ndumo Game Reserve, the state may be hard pressed to find a reasonable alternative area (at least in South Africa) that would offset the loss of the last remaining natural portion of the Usuthu River floodplain. Here it is surmised that the state would be amiss not to consider alternative remedies, other than diverting a major river in its floodplain, in order to provide the Catuane community with a reasonable supply of water. These remedies would conceivably include pumping water – as is practiced elsewhere. Finally, the Ramsar 'in the national interest' provision, not only ensures that there is a 'no nett loss' in the area and quality of wetlands listed by the Convention (the trust entity), but also provides for a continued maintenance of the core of the public trust entity on behalf of the beneficiaries – the country and the global community.

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[148]Article 6.
[149]At the time of writing, a submission of this nature was considered to be premature – in that the TPTC had not considered, let alone adopted, Mozambique's recommended intervention.
[150]Article 4.2 records this damage occurring as a result of activities giving effect to deleting or restricting the boundaries of the listed site.
[151]Article 4.2.

4 Conclusion

There are several key factors that lead to the conclusion that the international boundary separating South Africa and Mozambique remains unchanged, despite the Usuthu River breaching its southern bank and creating a new river channel through the Ndumo Game Reserve. Of these, historical derivation of the original boundary, Western and traditional customary international law pertaining to land ownership, treaties, bi- and multilateral agreements, resolution of disputes, and relevant African case history, are all paramount. The Sedudu/Kasikili Island case indicated clearly that compliance with (a) the principles of effective occupation and prescription as described in the Berlin Convention, and (b) the Vienna Convention on the Law of Treaties through the application of the customary international law principle of *uti possidetis* – are fundamental considerations should the location of this border be referred to an international court for resolution. Interestingly, dissenting arguments to the Sedudu/Kasikili Island judgment highlighted the importance of including the geographical setting and natural dynamics of the river within a floodplain – in considering disputes regarding international boundaries.

Given understanding, the provision of water or allowing the Mozambican hamlet reasonable access to water, is thus technical in nature. The solution proposed by Mozambique is likely to result in significant damage to the integrity of the last remaining natural portion of the Usuthu floodplain. This portion of the floodplain occurs within South Africa's Ndumo Game Reserve and forms a key component of the motivation that led to the reserve being listed as a Ramsar site. One of the key considerations for South Africa is that the proposed solution will likely result in the irreversible loss of the last remaining natural flood plain of the Usuthu River and therein represents a significant loss of a component of South Africa's biodiversity. As such, the mooted proposal stands to irreversibly damage the public trust entity that the South African government set up, for which it is to act as a trustee. Notwithstanding the common law provisions of the public trust doctrine, this fiduciary duty is directed by the very legislation that regulated protected area management, biodiversity conservation, and environmental decision-making. South Africa, therefore, would be hard pressed if not prohibited from considering the implementation of the Mozambican solution within the protected area.

South Africa would also be hard pressed to consider the Mozambican solution, as this would be contrary to the provisions of the SADC Treaty and its Protocol on Wildlife Conservation and Law Enforcement. Furthermore, the decision of Mozambique to request South Africa to consider a solution that has significant potential to destroy or at least irreversibly change the last remaining pristine component of the Usuthu River floodplain, and its biodiversity, would be in contravention of the Wildlife Conservation and Law Enforcement Protocol. This

conclusion is particularly significant from a public trust perspective – in that this Protocol explicitly extends the fiduciary duties

From a global perspective, South Africa would be required, should this be considered an exceptional circumstance, to offset the loss with an equivalent area that would ensure a 'no nett loss' to the Ramsar Site. In the absence of alternative pristine areas that may be included into the Ndumo Game Reserve, identification of an offset of this nature is considered to be unlikely – if not impossible. South Africa, under this circumstance, would risk being in breach of the Ramsar Convention should it accept and implement the Mozambican solution.

Being primarily about water provision, it was correct of the Mozambican government to raise the matter with the Tripartite Permanent Technical Committee formed under the Revised Protocol on Shared Watercourse Systems. While this Committee has an obligation to consider the impact of the Mozambican proposal on biodiversity, the focus and expertise of the Committee (and the Protocol) – is primarily water quality and quantity, for use by downstream communities. This Protocol is insular in its approach to water conservation, in that it lacks the provision to refer matters of concern that are best considered by other multilateral structures. In order for the biodiversity and protected area-related concerns to be appropriately debated at an international level, it is paramount that South Africa raise the biodiversity concerns emanating from the Mozambican solution with the appropriate institutional mechanisms set in place to service the SADC Protocol on Wildlife Conservation and Law Enforcement.

Finally, it is concluded that South Africa has discrete domestic and multilateral legal and public trust fiduciary duties to safeguard both its protected areas, and its biodiversity. These duties obligate the South African government to resist any activity that may result in a significant loss in biodiversity or threaten the integrity of the Ndumo Game Reserve. Furthermore, these public trust duties, from a SADC perspective, are similarly binding on Mozambique – precluding it from requiring South Africa to accept significant damage to a protected area and Ramsar site, in order provide water to the Catuane Hamlet. This conclusion is particularly relevant given that other sustainable sources of water have not been investigated.