

Political-ecological and political-economic conflicts over water management in Durban, South Africa

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Abstract

The water management record of Durban, South Africa, is lauded as amongst Africa's – and the Third World's – finest. But there are paradoxes: while introducing South Africa's first Free Basic Water access pilot from 1996, nevertheless lowest-income Durban water customers suffered dramatic overall price increases and lower consumption, and then with expansion of the supply in 2008, water-rights universality was dropped as municipal policy (in favour of a means-test); while rolling out water to poor people, nevertheless disconnections and flow delimitation were rife; while providing cutting-edge technical solutions (e.g. to water recycling), nevertheless serious management breakdowns and maintenance crises threatened Durban's hydrological integrity and its beach tourism industry; and while innovating Focus Groups and community education, nevertheless persistent social protest and popular critique of Durban's water management continued throughout the post-apartheid era. Both the possibilities and limits of municipal water services are evident in Durban, if we keep in mind the overall neoliberal context in which public policy commodifies water and restricts its availability to an ever more desperate low-income majority, as fiscal constraints cause far-reaching ecological crises when maintenance fails, and as civil society resists, in uneven and generally inadequate ways.

1. Introduction

South Africa's second largest metropolitan area, Durban (or 'eThekweni')¹ has an exceptional reputation for water and sanitation delivery. Amongst academic proponents of Durban water management, Zoe Wilson (2006, p.14) noted the city water department's:

- national and international acclaim
- professional acclaim for the head of eThekweni Water and Sanitation
- financial solvency and well-maintained infrastructure
- overall customer satisfaction
- strong rural service track record
- emphasis on sustainability and alternative technologies
- emphasis on job creation
- inter-departmental umbrage

¹ A city of 3.5 million people (with a racial division of 63 percent African, 22 percent Indian, 11 percent white, 3 percent 'coloured') living within 2 297 square kilometers, Durban's formal metropolitan identification, eThekweni, is regularly used in official discourse but hardly in public, and the name Durban is far better known. (Indeed the name eThekweni was publicly rejected even by the three-term post-apartheid mayor, Obed Mlaba, as it is the isiZulu language meaning of a bull's testicles, a phrase associated with the geographic appearance of Durban's Bluff and port from a prominent ridge where King Shaka trained his army. See De Boer 2007.)

One of the world's most prestigious periodicals, *Science* magazine, featured eThekweni Water and Sanitation head Neil Macleod in a 2008 article:

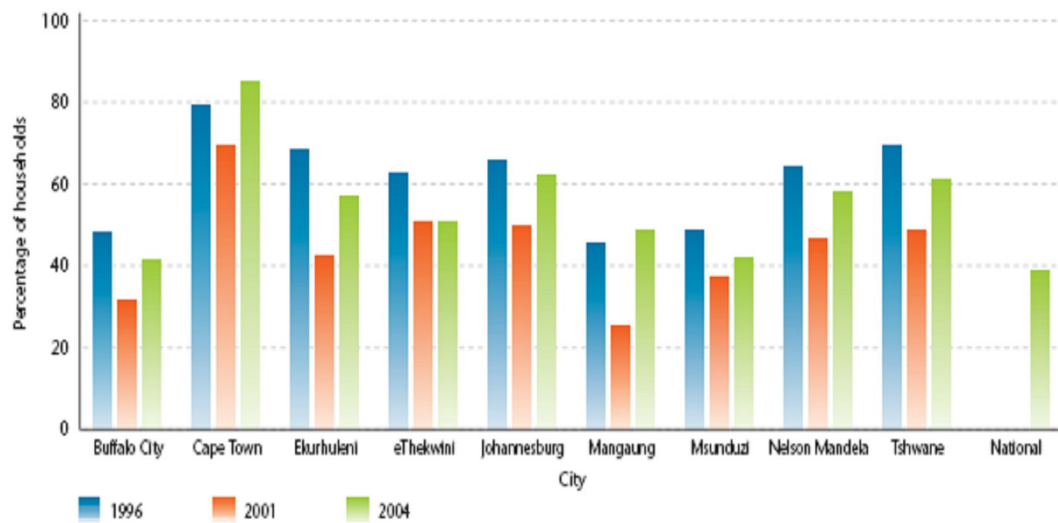
Macleod's department confronted the challenge of rapidly expanding water and sanitation services in 'township' settlements while keeping its budget afloat. At the time, a quarter of a million households in the Durban area had no access to clean water or sanitation. To jump-start improvements, Macleod got permission from the city in 1996 to provide a daily 200-liter water ration – a policy that became a national goal (Koenig 2008, p.744).

The impression soon emerged that Durban hosted one of Africa's finest water services departments, with Macleod winning recognition such as a 2002 *National Geographic* award for sanitation, a 2003 Dubai International Award for Best Practices (for sewage disposal education), the 2003 South African national 'Excellence in Innovation' award, the Ford Foundation's 2003 Impumelelo Award, and 'best municipal delivery' awards in the last half of the 2000s. As a result, this article considers several paradoxes associated with Durban's water/sanitation leadership. Because of the claims of success, Durban deserves more careful scrutiny in professional and academic work than it has so far been given, especially if the municipality continues to serve as the country's pilot for national water policy, and if the bulk water infrastructure, distribution, retail supply, and disposal practices allegedly set the standard for South African and African cities.

If on the contrary, as the Durban press and concerned citizens have been recording, the city's water system is breaking down, then a systematic analysis of the causes is crucial, especially if they relate to broader neoliberal policies and practices, including the malpricing of water and fiscal austerity. These shortcomings will, after all, be amplified as climate change affects Durban, when yet more stress is placed on decaying infrastructure through extreme flooding and rising seawater, and as other exogenous factors become important, such as high levels of pollutants (from mercury to E.Coli) in the water catchment system from increased coal-burning and inadequate upstream sanitation.

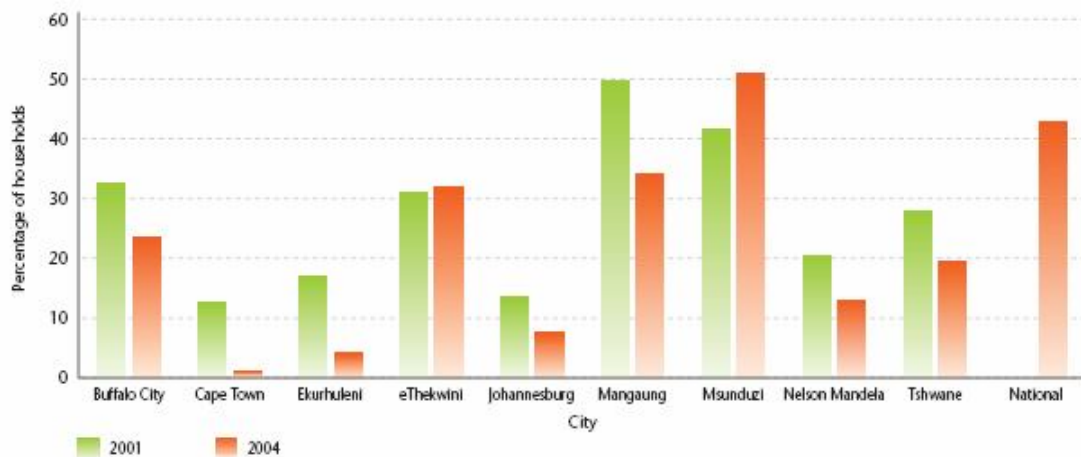
Likewise on the household retail side, Macleod promised that by 2010 'everyone' in Durban would have basic water and sanitation (Koenig 2008, p.744) and in 2011, it is fair to estimate that hundreds of thousands of residents of shack settlements still do not. Already a decade ago, Durban was posting relatively mediocre statistics for water/sanitation access, in relation to peer cities. Indeed in surveys by the SA Cities Alliance, a network associated with the World Bank, Durban led South Africa's major cities in the *decline* in the supply ratio of (in-house) water to residents during the early 2000s. In 1996, 62 percent of Durban residents had water within their household, but by 2004 the rate was reduced to 50 percent, and the growth in population without adequate sanitation rose from 30 percent in 2001 to 32 percent in 2004 (SA Cities Alliance, 2006, p.3). Even as recently as 2007, municipally-sponsored water customer Focus Groups in three representative working-class and poor areas identified an awareness of unaffordability (at more than 75 percent of those surveyed) and city-society conflict (between 20 and 50 percent of those surveyed) (Wilson, Malakoana and Gounden 2008, pp.142-146).

Figure 1: Share of SA households, water access within dwelling, 1996-2004



Source: SA Cities Alliance, 2005, 3.35.

Figure 2: Share of SA households with less than VIP sanitation, 2001, 2004



Source: SA Cities Alliance, 2005, 3.38.

Table 1: Focus Group consumer revelations about Durban water, 2007

	Agree	Disagree	Don't know	No answer
<i>I am aware of people who cannot afford to pay their water bills or who have been disconnected or restricted in the last year</i>				
uMlazi	77%	15%	8%	0%
KwaMashu	79%	9%	11%	2%
Newlands East	81%	10%	5%	5%
<i>There have been conflicts between municipal staff and people in this area</i>				
uMlazi	35%	40%	25%	0%
KwaMashu	50%	31%	19%	0%
Newlands East	21%	55%	24%	0%

According to the surveyors, "KwaMashu Ward 40 represented a relatively economically deprived area. uMlazi aa/bb represented a comparatively more well-off isiZulu-speaking area. Newlands East, Ward 11 represented a relatively economically deprived Indian area."

Source: Wilson, Malakoana and Gounden 2008, pp.142-146.

The context for municipal water delivery was extremely difficult. In 2001 what had been a diverse set of 840 municipalities were reduced to a 'wall-to-wall' coverage of 284 new local governments, including six metropolitan areas, and Durban's low-income inhabitants without direct water supplies soared simply due to the boundary demarcation. Meanwhile, government's national-local financing flows were proving inadequate in the wake of substantial real budget cuts during the 1990s (Bond 2000) and inadequate 'Equitable Share' funding (which was not in any case earmarked for water) available during the 2000s. Structurally, the society was experiencing a dramatic increase in unemployment during the late 1990s, doubling from 1994 levels of 16 percent, and the Gini coefficient measuring income inequality continued to rise steadily from 1994 throughout the 2000s (Bond 2010). Over the entire post-apartheid period, according to the SA Labour and Development Research Unit, "poverty incidence barely changed in rural areas, while it increased in urban areas" (Leibbrandt et al 2010, p.36).

Instead of making much more substantial investments in water infrastructure (and regulation of water pollution), in 1994 the national government, strongly influenced by the World Bank and neoliberal donor agencies (Bond 2005, 2006), had adopted a 'width not depth' approach to many basic need services, including housing, water/sanitation and electricity, with adverse implications for both the retail-level supply and related bulk infrastructure (Bond 2002, McDonald and Pape 2002, McDonald and Ruiters 2004). The roll-out of water services proceeded with quantity (number of communities connected to collective taps), not quality or sustainability in mind. The percentage of GDP devoted to water, gas and electricity actually declined after 1994, and the number of municipal engineers halved (Bond 2005, 2010b).

Locally, there were controversies as Durban water officials were challenged by civil society over various aspects of water delivery. Concessions were made by Macleod that do provide some optimism for longer-term trends in access, management and water governance. Even if there are flaws in urban social movement engagement with the city, as noted in the Conclusion, Durban remains an extremely politicised site for managing water. Just as the 1973 dockworker strikes in Durban's harbour signalled the beginning of a major trade union movement that became the continent's strongest and a decisive factor in ending apartheid, the 1999 mobilisation of thousands of the city's Chatsworth neighbourhood residents – bringing together poor and working-class people of Indian and Zulu ethnicity in rare combination – heralded not only the new post-apartheid urban social movements, but also an intense set of battles over water access and pricing, leading to widespread illegal reconnection of water once supplies were disconnected.

However, as the Conclusion argues, an excess of participation and cooperation may have, in recent years, contributed to the kinds of problems identified below, as civic and environmental lobby groups were partially coopted through various techniques, including a 'Citizens' Voice' strategy with a local NGO (Mvula Trust) which aimed to raise awareness about poor people's alleged need to lower their water consumption: "A municipality selects the area(s) where a pilot project is to be implemented – usually starting where there are high levels of water losses. This is because 'Citizens' Voice' contributes, through

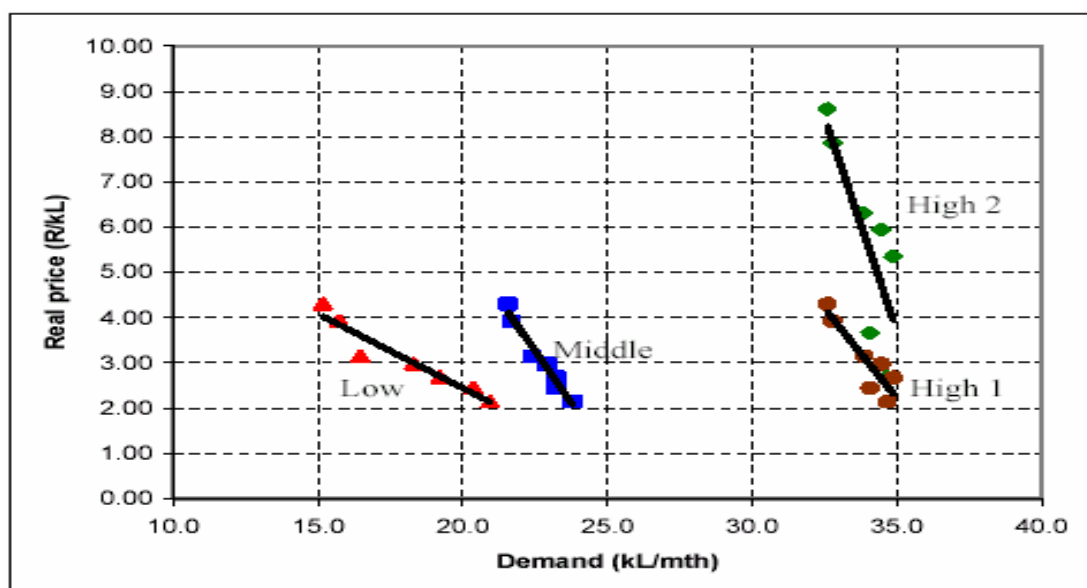
extensive public education, to greater household awareness in conserving water” (Water Information Network South Africa 2009). This objective was made explicit in the city’s Urinary Diversion sanitation strategy. But notwithstanding some concessions, including a higher level of Free Basic Water for low-income residents (Bond and Naidoo 2008), contradictions and social strife remained acute. On the retail side, this was a function of disconnections, pricing debates and service-level controversies relating to household water and sanitation, and on the supply (and disposal) side a result of the city’s failure to adequately invest in and maintain the water services infrastructure, especially bulk supply, sewage piping and stormwater drainage. These demand and supply tensions are considered in the next two sections, while a Concluding section considers parallel shortcomings in social activism.

2. Demand, disconnections, pricing and Urinary Diversion

To date, Alex Loftus’ (2004, 2005, 2006) Oxford University doctoral research about household water (including revelations of 1000 families disconnected from full water supply every day in 2003), and the 2005 study of household water price elasticity by Reg Bailey and Chris Buckley, have offered the main data for critical assessment of Durban water policies and practices. (Loftus 2005 also considers problems associated with the bulk supplier, Umgeni Water, which are outside the realm of the present article.) These studies reflected two of the most important demand-side aspects of post-apartheid water: how much it would cost residents to consume, and whether rising prices were offset by sufficient Free Basic Water. A third issue concerned the character of sanitation services on offer to low-income people by the post-apartheid state.

2.1 The uneven impact of water price rises on consumption

Figure 3: Price impact on Durban water consumption by income: 1997-2003
(1997: lower price, higher volumes – 2003: higher price, lower volumes)

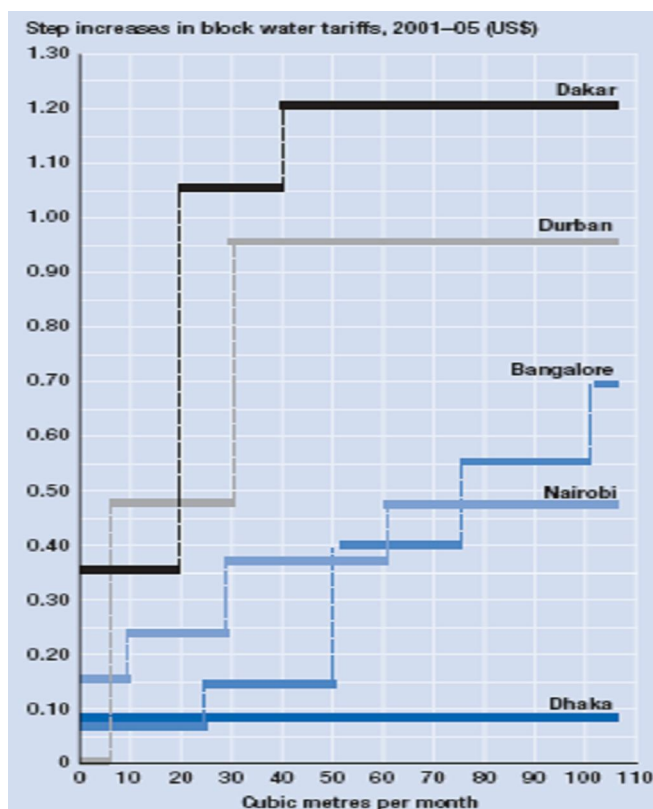


Source: Bailey and Buckley 2005

Bailey and Buckley (2005) identified a doubling in the real price of Durban water to consumers who regularly paid their bills from 1997 to 2003, and using house valuations as a proxy for wealth, assessed the differential impact of the price rises by estimating the price elasticity of water across three bands of approximated wealth (for details see Bond 2010a, pp.456-457). In short, a price elasticity of -0.55 for the third lowest-wealth residents of Durban meant a 32 percent decline in per household monthly consumption (from 22 to 15 kl/hh/month), but for the middle- and highest-wealth two thirds of the city's regular bill-paying water customers, there were much smaller price elasticities (-0.15 and -0.11 respectively). One might reasonably conclude that poor people were, in relation to their ability to pay, overcharged; and wealthier people were undercharged.

In the 6-20 kl/month range of water consumption, the United Nations Development Programme's (UNDP's) 2006 *Human Development Report* showed that Durban's prices were far higher than other Third World cities (UNDP 2006, p.91). Reflecting how little this seemed to matter, however, Macleod testified in a 2007 affidavit to the Johannesburg High Court about the UNDP's analysis of Durban's rising block tariff without apparent acknowledgement of the very high relative price increases in the key consumption range (6-20 kl/hh/month) as a problem. Instead, the increases within the context of a rising block tariff were "an important part of the legislative framework for acting on the *right to water*" (emphasis added) in spite of the evidence provided by Bailey and Buckley (2005) that the price elasticity was so high that low-income residents had cut back their consumption dramatically (Macleod, 2007, p.11).

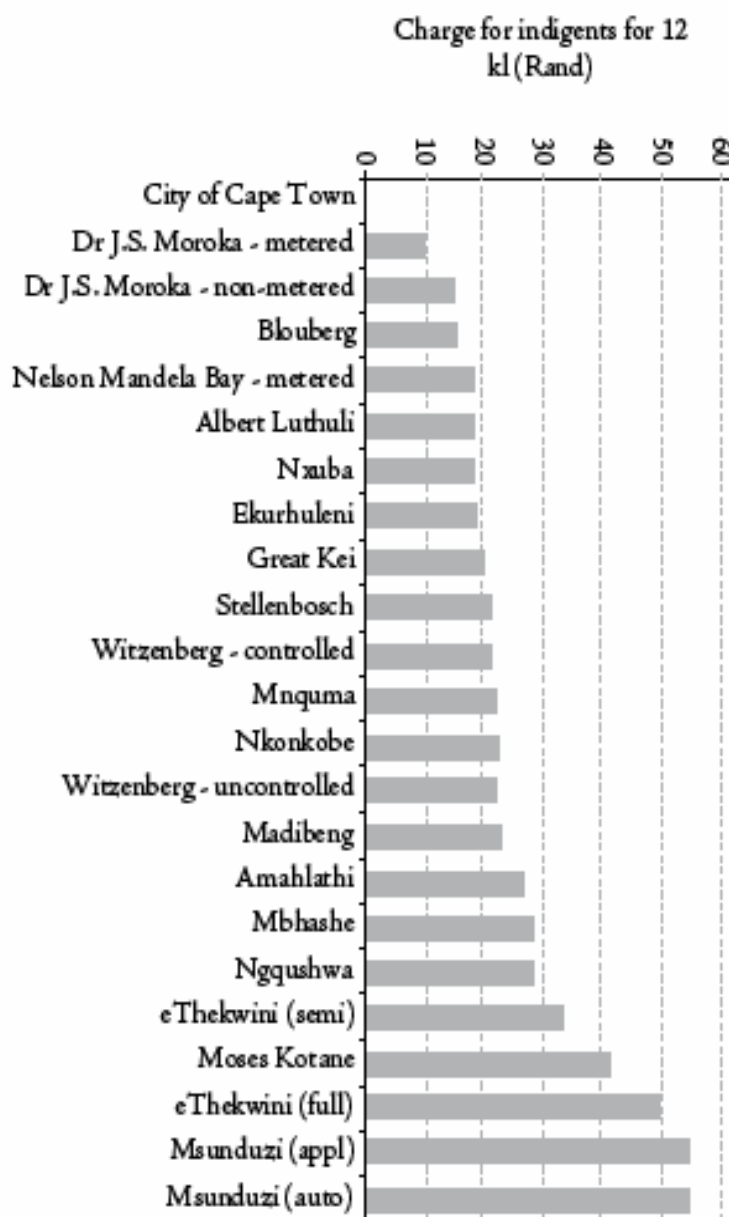
Figure 4: United Nations comparisons of urban water pricing, 2001-05



Source: UNDP 2006

Finally, in a third study, 2008 comparative retail water price data were analysed by the Centre for Applied Legal Studies, Centre on Housing Rights and Evictions and Norwegian Centre for Human Rights (2008), and only Msunduzi (Pietermaritzburg) charged urban South Africans a higher price for a typical low-income consumption level of 12 kl/hh/month at full pressure: R50 (Msunduzi was R55). (At semi-pressure water level, the price was R35.) In contrast, Cape Town's price was only R10 for 12 kl/hh/month. To its credit, the city's reaction to these studies and other factors was to shift pricing such that Free Basic Water was extended, yet mediated by a turn to indigency policy.

Figure 5: Cost of 12 kl/hh/month in SA cities, September 2008 (full pressure unless otherwise indicated)(Durban name is eThekwin)



Source: Centre for Applied Legal Studies, Centre on Housing Rights and Evictions and Norwegian Centre for Human Rights (2008)

2.2 Free Basic Water and disconnections

Given the excessive average price increases beginning in the late 1990s, early 2000s retail water controversies arose over the size of the initial block of free water, and water disconnections. Why was the Free Basic Water amount of 6 kl/hh/month chosen? In testimony to the Johannesburg High Court, Macleod (2007, p.3) explained that Durban's 1997 model, which became the basis for Department of Water Affairs and Forestry's subsequent national policy, was adopted because "approximately 7 litres of water was used per person per day as this was generally the amount that an individual could physically carry and could afford." Rather than human need, the biophysical limits of water transport, typically by women or children, became the baseline.

But administrative cost factors were apparently also important, and in motivating a free supply of (just) 25 litres per person each day, the national water minister at the time, Ronnie Kasrils, couched his justification in the narrowest of terms: "It would save money because local authorities would not be saddled with the problem of administering large numbers of small accounts," he told a media briefing in February 2000 (Bond 2002). To achieve administrative savings in billing, Durban therefore began to provide a 200 liter drum at the front door of each shack, which "could be filled once a day with clean drinking water ... at a minimal charge", according to Macleod (2007, p.3). But when, during 1998, "it became apparent that the amount of money that was collected by the Council for the water supply was in fact equivalent to or less than the costs of administering the collection of the amounts from the relevant communities," Durban switched to a free provision of the basic amount, according to Macleod (2007, p.4).

Nevertheless, for consumption on a billed meter (not the houses with 200 liter drums), this was an era in which the bulk water supplier to Durban, Umgeni Water, was itself facing financial (and managerial) problems, and its price increases to Durban were passed on to consumers (Loftus 2005). Loftus (2003) questioned Macleod regarding low-income Durban residents' difficulties paying their water bills given these price increases:

In an interview with Macleod, what angered me above all was his insensitive arrogance towards such situations. He openly admitted to roughly 1000 disconnections taking place across the municipality daily. This shouldn't be viewed as a problem, he assured me, there is no need to adjust the tariffs or increase the free water allowance, rather the disconnections are (once again) merely a mechanism of financial management. And what about the woman's situation with her "over restricted flow"? She must have a leak. Now, even I'm enough of a water engineer to know that if she had had a leak, her meter would read a higher level than she was actually receiving. Instead, what Macleod wanted me to understand, was that people lie in townships. They lie about not being able to afford to pay for water and lie about how many people live in their houses. They lie to PhD researchers. These terrible lies have even touched the upper echelons of the city council, the Exco, who Macleod's team are busy convincing of the error of their ways (along with "countering the lies of the enemy – those concerned citizen whatever").

That 'enemy,' the Durban Concerned Citizens Forum, was the initial advocacy group that took Macleod to court to try to halt disconnections (Desai 2002). In 2000, the case of Christina Manquele (a single mother of seven) initially resulted in a court-ordered reconnection, after Manquele could not pay her R10 000 water bill and claimed the disconnection was unconstitutional. According to Heinrich Bohmke (2003),

The Council submitted that just as the state had been unwilling to provide medical treatment to Soobramoney, a refusal which cost him his life as a result of financial constraints, the state could not be expected to supply water to all who needed it. Wallis [Durban counsel] said the constitutional provisions depended on the availability of resources, placing no obligations on the state and providing no unqualified guarantees.

Pillemer [Manquele counsel] argued that since everyone in Durban was entitled to at least six free kilolitres of water per month, in disconnecting Manquele's water, the Council was denying a person who most needed access to such a free amount. He said Manquele was prepared to use less than six kilolitres a month.

Judge Niles-Duner interjected from the bench to share her memories of the water restrictions during the 1984 drought. She said consumers then were expected to monitor their consumption, otherwise supply was cut off.

In the Durban Metro Council, Wallis argued, there were not sufficient resources to police the use of the six free kilolitres. It was a difficult choice to be made but the court also had to consider 8000 other households which might want to have their water turned on. For Manquele and her children, it was argued that to deny them access to water because there were no means to ensure that only a basic supply was consumed was but to reinvoké a limitation of rights where the Constitution did not allow limitation in respect of the rights of children.

With more than 10 000 Umlazi township residents in the same situation, having recently been disconnected, the court ultimately ruled against Manquele, finding that by using more than the 6 kl/household/month then available, she had forfeited any right to free water. However, at that point, Macleod announced that instead of outright disconnections, flow limiters would be installed, an important distinction (Loftus 2005, p.193). But the limiters were often removed by local water activists (Desai 2002), and for those on the formal metering system, fast-rising water price continued to compel low-income people to cut consumption, even though AIDS, cholera and diarrhoea were all rife during this period.

Further impetus for market-related pricing and disconnections came from the central government. The Department of Water Affairs and Forestry was initially advised by World Bank water expert John Roome (1995, p.52) to avoid a cross-subsidised water system (especially free water for the first block of consumption) and instead, to disconnect households which were not paying. The first post-apartheid Minister of Water, Kader Asmal, proceeded to authorise disconnections, including in the former Bantustan areas that had received free supplies during apartheid, such as Ngwelezane in rural KwaZulu-Natal, which in

2000 became the epicentre of a major cholera epidemic (Bond 2002). The costs associated with treating epidemic victims were far greater than the benefits in cost-recovery: around \$7/connection was raised from those who could afford to pay, but in Ngwelezane, that left hundreds of families disconnected from formerly free, clean water, to then draw on polluted surface water supplies.

In addition, the Department of Constitutional Development and the national Treasury established 'Project Viability' in 1997, encouraging water and electricity disconnections of residents who were in arrears on payments. The tougher the credit control, the higher the municipality's credit rating (Bond 2000). In 2002-03, according to the SA Cities Network (2006), Durban disconnected 40,000 more of its residents than it connected to electricity, and this alongside a strong reserves fund earned the city an AA rating for municipal bonds. The philosophy of disconnection was important, according to Macleod in December 2004 (cited in Parikh 2006), because "We run exactly like a business except that we're not operating as a profit maker or a loss maker; we have to pass on tariffs to recover our costs... The basic reality is that this is not a socialist state, we're not into free gifts, this is no free lunch."

In 2005, the local Ecopeace party's sole city councillor, Alan Murphy, requested a shift in municipal water policy to write off water-related arrears and redistribute water from industry and high-wealth homeowners to low-income, low-consumption Durban residents. The reply from Macleod (2005) was stark:

In terms of the price of water to industrial customers, we are under extreme pressure as there is a generally held view in the marketplace that the price of water to industrial customers in Durban is very high. Research we have conducted shows that, compared to the other Metropolitan areas this is not generally the case, but if one compares our industrial price to an area such as Richards Bay/Empangeni² then we are indeed far more expensive than they are. *Any increase in the water price to industrial customers (Industrial, Commercial, Institutional) sends a negative signal to potential investors and will further reduce our potential to create jobs...* We were the first city to introduce the concept of free water as a formal policy and have led the way with every step that has been taken in terms of making water services more affordable and more readily available to the poorest citizens in our communities. [emphasis added]

In fact, within three years Macleod would be moved to expand the Free Basic Water supply to 9 kl/hh/month, with a modified means test (property valuation, which regrettably entailed dropping the prior universal entitlement to Free Basic Water). This would entail the refilling of the 200 liter drums, formerly once each day and in future 1.5 times a day. There are various explanations for this laudable policy shift, including the embarrassing findings of Bailey's research; a national 'Water Dialogues' multi-stakeholder process (in which Macleod was a central participant) that more clearly spelt out rationales for increasing water to

² As something of an export-processing zone, Richards Bay is a notorious site for corporate giveaways. The operator of two smelters, BHP Billiton, receives the vast majority of the country's secretive 'Special Pricing Agreement' electricity supply at extreme discounts, dating to the late apartheid era. More than five percent of the country's total power goes to a smelter for imported bauxite, to produce aluminium, at only US\$0.02/kWh, the world's cheapest electricity.

low-income households (Galvin 2009); and a Focus Groups strategy that taught Macleod more about consumer grievances (Wilson, Malakoana and Gounden 2008). Bottom-up articulations of grievances, including protests at City Hall over inadequate water and sanitation as well as the rise of localized 'service delivery protests' (Bond 2010b, 2011b) may also have affected municipal water policy.

Meanwhile, the legal strategies of five Soweto women who fought for a larger water allotment in the Johannesburg courts ultimately failed in September 2009, but by April 2008 this challenge had generated municipal policy changes that were also soon implemented in Durban. The September 2009 decision of South Africa's Constitutional Court in the case *Mazibuko et al v Johannesburg Water* overturned seminal pro-rights findings in lower courts in April 2008 and March 2009, which human rights activists had hoped would substantially expand water access to poor people. The Coalition Against Water Privatization and University of the Witwatersrand Centre for Applied Legal Studies had the women (led by Lindiwe Mazibuko of Phiri) in their demands for a doubling of the free municipal water supply, from an average of 25 to 50 liters per capita per day (the equivalent of four flushes of a typical toilet), as well as the prohibition of pre-payment meter systems which serve as automatic disconnection mechanisms in low-income black neighbourhoods, in contrast to credit-based meters in higher-income, historically white residential areas. These policies were imposed on Soweto in 2001 by the French company Suez, which until 2006 managed Johannesburg Water, on whose board sat Macleod. The women initially won their case, but the municipality appealed to the highest authority where the gains were reversed (Bond 2011a).

In the end, the Constitutional Court refused to become involved in setting policy and implementation guidelines that would give meaning to the following promise made by the ruling African National Congress (ANC) just before the 2000 municipal elections: "The ANC-led local government will provide all residents with a free basic amount of water, electricity and other municipal services so as to help the poor. Those who use more than the basic amounts, will pay for the extra they use" (ANC 2000). Johannesburg Water officials had, in 2001, distorted what could have been a progressive rights-based mandate, by adopting a tokenistic free water allocation (6000 litres per household per month which for a family of eight is 25 per day), refusing to allocate on a per capita basis (hence biasing against large, low-income households), and then raising the second block of consumption to an extremely high level (Bond and Dugard 2008). Activists demanded a different tariff curve, one that would start with a larger lifeline block, followed by higher tariffs rising quickly after a luxury consumption level (typically above 30 kl/hh/month). In early 2008, anticipating defeat in the High Court (where in April a judge ruled the Johannesburg Water policy 'unconstitutional' and 'discriminatory'), municipal officials changed the policy so that only the small proportion of Johannesburg residents declared 'indigent' would qualify (Naidoo 2010), but they in turn were granted a rise in free water to 10 kl/hh/month. The case is an important precedent in setting out a judicial baseline for water rights, and it thus suggests the limits of what a liberal capitalist democracy in a middle-income society will consider minimal (25 litres/capita/day) and by what means water can be delivered (self-disconnection meters). In other words, the case very explicitly set boundaries as to what constitutes the 'right to water', even though these continue to be bitterly

disputed by communities, such as in Soweto, where residents' illegal reconnections are common (Bond and Dugard 2008, Bond 2011a).

Where this left Durban's residents, in the wake of the Phiri judgement, was with a mix of grievances, in which much more high-profile protest activity was registered against other service shortfalls, not water (Bond 2011b). But the relationship of inadequate services for low-income Durban residents to the inadequate maintenance in the system as a whole may provide new insights into nature-society linkages which will have longer term consequences.

2.4 Urinary diversion sanitation

Starting at the level of the household, Macleod (2008a, p.2) acknowledged that with the city's expansion in 2001, there were 200,000 families – roughly a third of the population – without basic sanitation. Many lived beyond 'the sanitation edge', a vast peripheral band of the municipality in which it was deemed fiscally unrealistic to lay sewage lines. Across the city, there were 60,000 pit latrine toilets that had filled and the city was unable to fulfil its commitment to a "free basic sanitation service in the form of one pit emptying every five years," Macleod (2008a, p.7) conceded at the 2008 Africa Sanitation conference in Durban. Indeed many pits were unlined with the "toilets subject to catastrophic collapse", many were "constructed in inaccessible locations," and there was high variability in content, size and cost of emptying. The cost of emptying each pit averaged \$120 per pit, compared to "the cost of constructing new single Ventilated Improved Pit-latrines (VIP) type toilets: \$140 to \$420", making the process "uneconomic" (Macleod 2008, p.7).

By that stage, according to Simphiwe Nojiyeza and Baruti Amisi (2008, p.2), Durban still suffered from "148,688 pit latrines without ventilation as well as 41,880 chemical toilets. Bucket latrines have been reduced to 9270." As for the VIP system, they "are designed for Black, poor and rural dwellers whereas full flush toilets are designed for the White and Black Bourgeoisie. Most communities are resisting construction of VIPs which is another form of a bucket latrine." VIPs were increasingly filled and not being emptied in Durban and across South Africa. As veteran sanitation practitioner Kathy Eales remarked at an AfricaSan conference preparatory meeting in February 2008, "South Africa's household sanitation policy is grossly inadequate. It speaks primarily to dry systems, and does not clarify roles and responsibilities around what to do when pits are full. National government under-estimated the scale of technical support required" (cited in Bond et al 2008).

As a result, Macleod (2008a, p.7) turned to "the use of double pit, urine diversion (UD) toilets, outside the urban edge," to allow transfer of responsibilities away from the state. The simple UD technology entails feces drying separately, away from urine, but preventing contamination of the former by the latter requires consistent hygienic education. In a context of high rates of diarrhea (sometimes associated with AIDS-related opportunistic diseases since Durban has the world's highest level of urban HIV+ prevalence), humid weather, hilly slopes, poor drainage and turbulent rain, this contamination is a frequent problem. Nevertheless, according to Macleod (2008a, p.8), the 63,000 new UD toilets constructed by 2008 were "able to be emptied by households at an affordable cost" and would use "minimum amounts of water, if at all." (Indeed

the UD is designed to *not* use any flushing mechanism, and a 2010 innovation was to begin paying residents for collection/recycling of urine from UDs in view of a coming 'peak phosphate' problem faced in commercial agriculture, for an estimated \$4/month per household.) The capital cost of each UD toilet was an average of \$500, but municipal maintenance costs fell away because "emptying is the responsibility of the household, with entrepreneurs already offering their services at \$4 per chamber emptied." The city would provide "extensive community education" and the "environmental impacts and health benefits" would be researched and explained, with "local labour and local small businesses maximised" (Macleod 2008, pp.8-9).

Macleod (2008a, pp.8-11) claimed that "follow up visits after construction have increased acceptance levels and emphasised the family's responsibilities for maintenance of the toilet. The period needed for follow ups extends to years" because of the need to "evaluate acceptance of the solution and to confirm that the hygiene messages have been internalised." It was this innovation that most impressed a *Science* journalist (Koenig 2008, p.744) who termed UD the 'best solution' to Durban's sanitation challenge.

Yet complaints about the UD system were increasingly common in some sites beyond the sanitation edge, such as Inanda Dam. As community organizer Dudu Khumalo remarked about the Umzinyathi and KwaNgcolosi pilot communities,

UDs have internal buckets and pits that are far too shallow for long term use. No training was given on how to deal with feces, except to dump it in the garden "for fertilising your veggies". These communities are repelled by human excrement as fertiliser, because of the many diseases surrounding them, compared to cow-dung. The burden of cleaning is left to women. Other creative opportunities for bio-gas are also foreclosed by UDs. Many UDs have become mere storerooms or are permanently locked because of the smells. Councilors are useless when the UDs cease functioning (Bond et al 2008).

Journalists at Durban's *Daily News* picked up the story in mid-2010:

Some residents of a rural township west of Durban are crying foul over a government project that forces them to dig out waste from their latrines for use as garden fertiliser... The authorities have blamed some residents with smelly toilets, saying that the system was not being used correctly. The toilets are made up of two concrete boxes designed to completely lock out any moisture. Urine is diverted to a chamber separate from that of faecal material, which falls into the concrete chambers.

Once the first chamber is full, the homeowner must seal it, leaving the faeces to decompose while using the adjoining chamber. Once both chambers are full, the decomposed matter is dug out, with the idea that it eventually gets strewn over a garden as fertiliser. Local residents who complained are aghast, not only at the unbearable stench, but the thought of digging out their own waste and using it on their vegetable patches.

"It is not right. It smells terribly and is very near to our house, so we have to live with that smell," said one resident, Nhlanhla Sokhela. Her

elderly grandmother, Ntombizodwa Sokhela, who lives with 17 others in her home, all sharing the same toilet, added: "I do not understand why the bottom is cemented and why we can't just let it sink as with the toilets we built ourselves. How am I to dig out all that waste when it is full?"

Winnie Mkhize, another resident, claimed there had been no training on how to use the toilets and the only equipment left for them was a rake. "We are 10 living in my house and it takes four months for these toilets to fill up. The smell is not good and it looks very disgusting to have to empty the waste," Mkhize said. "They say that it is supposed to dry up, but it does not." The family admitted they had broken down one of the two toilets built for them as the smell next to the house was unbearable.

Particularly irksome, the residents said, was that most of the community had access to piped water, so they felt there should be no problem installing flushing toilets. This was denied, however, by local councillor, Mbongelwa Phetha, who said only part of the area had running water, while others used water tanks. (Adriaan, Ngcobo and Mngoma 2010).

There is a substantial difference between the UD device chosen in Durban (without water and with maintenance/cleaning responsibility completely devolved to the household) and UN Habitat's recommended low-cost sanitation system. The latter has various advantages over the UD system, and has witnessed more than a million installations in India:

The twin-pit system uses 1.5-2 litres of water per use in a flush toilet that is connected to two pits that allows recharging of the soil and composting, and a close-loop public toilet system attached to a bio-gas digester. In fact, this is the only sanitation technology that meets the seven conditions for a sanitary latrine laid down by the World Health Organisation. These stipulate that a sanitary latrine should not contaminate surface soil, ground water or surface water. Excreta should not be accessible to flies or animals. There should be no handling of fresh excreta, or when this is unavoidable, kept to a bare minimum. There should be no odour or unsightliness and the methods used should be simple and inexpensive in construction and operation (Reddy 2007).

As an aside, the matter of sanitation is not only important for residents at home, but for workers or those in transit across the city, especially in commercial areas. In early 2008, there were only 42 public toilets across Durban's entire metropolitan area (not including sports facilities). As journalist Matthew Savides (2008) reported at that time,

Only four public toilets cater for more than 80 000 people who pass through the Warwick Junction taxi rank, a problem which is replicated at the many taxi ranks across the eThekweni Municipality... The steel structures are shaped like a semi-circle, and the user can be clearly seen while urinating. The urine goes down a drain, but the toilets do not flush, nor do they cater for female users.

According to a city official, blame-the-victim was again in fashion: “Current thinking is to eliminate structures, piping or movable items that can be vandalised, hence the simple ‘French-style’ structures recently constructed at certain taxi ranks. An appeal is made to users of these facilities to do so responsibly, and report vandalism of these facilities” (Savides 2008).

In sum, several missing factors made Durban’s move to UD sanitation controversial and ultimately unsuccessful:

- appropriate health and hygiene awareness and behaviour (especially for policy-makers and municipal officials prone to disconnect poor people from water supplies);
- systems for disposing of human excreta, household waste water and refuse, that are acceptable and affordable to the users, safe, hygienic and easily accessible and that do not have an unacceptable impact on the environment; and
- a toilet facility for each household.

To achieve these objectives would require far more than has been allocated in state funding, as well as policies aiming to provide poor people with appropriate supplies of water and waterborne sanitation. The same underfunding is evident when it comes to the larger process of wastewater management, in the bulk pipes leading to Durban’s beaches.

3. Supply, width and the (mis)management of water infrastructure

Disconnections, pricing, free water allocations and household sanitation were not the only sites of controversy and policy debate. It is revealing to consider aspects of water supply, and in particular decisions to defer maintenance on sewage pipes and expansion of the bulk grid. By the end of the first decade of the 2000s, Durban water supply became unsustainable in logistical terms, as piping and especially sewage and stormwater drain maintenance received inadequate budgeting (the 2010 World Cup’s vast outlays for a new Durban stadium took precedence). Leakage from blocked pipes and breakdown of pumping stations became a notorious problem across South Africa in the 2000s, including in Durban where the results included visible fish kills and high pollutant levels in the sea water. In turn, these degenerated into a debate over the merits of the international ‘Blue Flag’ programme for rating beach water quality, and a decision by City Manager Sutcliffe to terminate the programme in Durban, which his City Council ultimately had to reverse given the damage to the city’s reputation. As in the case of household water and sanitation, a crucial problem was underfunding.

3.1 Water infrastructure investment, wastewater privatisation and demand-side management

Former water director-general Mike Muller pointed to Durban’s failure to invest adequately in bulk water expansion in early 2011:

I really do think in most of our metros, if we don’t panic now, if we don’t take action now, we will be in a crisis by 2020. We’re not going to run out

of water, but there are some hotspots. Durban is actually the most vulnerable metro at the moment... I think we need to panic at the right time and the right time is now (*Sunday Independent* 2011).

Macleod agreed, "We are at a point where our dams are unable to sustain the current demand over an extended period," with water rationing in 2012 likely as a result (Savides, 2011). Macleod had advocated that a new dam to supply Durban (at Spring Grove) be built in 2006, "but construction work has not even started." (Further dam building estimated to cost \$2.5 billion was also proposed, following Spring Grove.) The reason was that after early 2006, decisions on Durban municipal investments were subordinated to the construction of the Moses Mabhida stadium for the World Cup, which subsequently did not attract sufficient crowds to pay for its operating and maintenance costs (Bond and Cottle 2011).

Nevertheless, had Macleod adopted a different strategy, 'demand-side management' of water could potentially have achieved major savings that would *not* in turn have required new supply-side enhancements. These, however, required political will, because dramatic increases in the price of water for high-volume residential and commercial/industrial/agricultural users, as well as direct controls on water use, could certainly lower demand but would have generated opposition from powerful interest groups.

Innovative recycling was one strategy adopted by Durban officials, and an example is the enforced reutilisation of industrial waste water in South Durban. Macleod hired the French firm Veolia (formerly known as Vivendi) to establish a privatised treatment plant for this purpose in 2001. Water Minister Ronnie Kasrils (2001) made these remarks in his speech at the plant's opening ceremony:

Public-private partnerships enable a synergy between the best that Government and the private sector have to offer. Vivendi, the French-based company, is an international partner that brings such experience and knowledge to the South African context. This project is a first not only for Durban, but also for South Africa, and such knowledge and experience is a key part of the success. This project will contribute to the management of industrial effluent in Durban, as well as reducing the demand for water. The environmental benefits to the city and to the stressed Durban South Industrial Basin will be significant. This project will provide a beacon of hope in an area in dire need of rehabilitation. The project will also ease the demand for potable water in the city and reduce the cost of this precious resource to industry...

The result of this project is that Durban Metro can delay capital expansion projects for at least another five years. During this period, capital that would otherwise have been used for this expansion, can be used for other services in the Durban Metro area. At the same time it has freed up potable water for about 300 000 people in the Durban Metro area. This approach has achieved what can only be described as a win-win situation.

This was a typical early 2000s narrative of water commercialisation, but Kasrils did not mention the financial downside. South Africa would pay a steady profit stream to Veolia's French shareholders (in an era in which the country's balance of payments deficit soared to amongst the world's worst). Nor did he acknowledge that fairly sophisticated R&D capacity in the South African engineering sector for water recycling already existed (the Durban treatment involves merely sand and carbon filters, ozone and chlorine). While it is true that municipal capital expenditure was not required for Durban to achieve savings in water use thanks to the French investment, the implicit rates of return and profit/dividend outflows were so substantial that it would have made sense for Macleod to have taken on the project internally, if merely for the sake of expanded municipal capacity and ownership. Indeed by 2014, *Engineering News* reported there will be an estimated \$240 million in South African water and wastewater outsourcing revenues (van der Merwe, 2008). To permit foreign, for-profit suppliers into this market without developing national and local capacity was a misjudgement.

In general, the South African central state and its municipalities should have committed much greater expenditure to treatment improvements, larger bulk supply and drainage systems, given the multiple threats to the integrity of the national and local hydrological systems. In the Johannesburg area, failure to do so led to permanent damage both to groundwater and surface water, as E.Coli and other pollutants severely polluted the main recreational water body next to the capital, Pretoria (Hartbeespoort Dam) and mining houses' failure to clean up toxic mines and slime dams led to Acid Mine Drainage contamination of a vast portion of the water table in the country's Highveld, with damage – including to fish and wildlife – recorded all the way through Mpumalanga Province to the Mozambique border (Lieberlink and van Eeden 2011, Turton 2008). Between May and November 2008, for example, 170 Kruger Park crocodiles – normally very hardy – were killed by pansteatitis which was, according to the Consortium for the Restoration of the Olifants Catchment, "symptomatic of serious and growing environmental problems in the Olifants River system" (Sanpark 2009).

A similar unwillingness to invest in adequate water infrastructure was evident in Durban's cracked sewage and stormwater piping.

3.2 Pipe maintenance and fish kills

Four major rivers flow into the Durban area – and then directly into the sea – from the west: the Umngeni (which supplies the bulk of the city's piped water via the Inanda Dam), Umbilo, Umhlatuzana (into the port) and the Umlazi. The 2010 *State of South Africa's Rivers* report demonstrates that each has 'poor' water quality at the point they course through the vast informal settlements on the outskirts of the city, beyond the 'sanitation belt'. At the end of 2007 it became evident that Durban municipal officials had not prioritized water health, had neglected pipe maintenance and had redirected needed funds away from sewage station infrastructure. The catalyst for widespread civic concern and embarrassing press reports was the sudden appearance of tens of thousands of dead fish in Durban's harbour during the December holidays, but concern reached a crescendo when Durban's Blue Flag beach status was revoked in 2008. According to award-winning environmental journalist Tony Carnie (2008a) of

The Mercury newspaper, nearly two months passed before it was determined that the failure of a city sewage works was responsible for the fish kills, in part because of municipal obstruction of information:

The findings by the Council for Scientific and Industrial Research (CSIR) follow repeated denials by municipal manager Mike Sutcliffe that raw sewage spills were the primary cause of the massive die-off of fish and other marine life just after Christmas Day. The CSIR report, compiled by researchers Steven Weerts and Shamilla Pillay on behalf of the National Ports Authority, contradicts Sutcliffe's assertion that a combination of rainfall, industrial spillages and other factors played a role in the death of thousands of fish in Durban Harbour from December 26 to December 27.

This was not the first such incident that the Umhlatuzana River, feeding the harbour, suffered extreme pollution, but on no prior occasion in living memory was the damage so severe. According to Carnie (2008b), a March-August 2007 sewage spill of 17 million litres into the same river was due to the blockage of a major sewerage pipe near Queensburgh. This was blamed on illegal dumping by a local company (Commercial Waste Services), which resulted in the municipality filing a lawsuit seeking damages of R1.4 million. Macleod testified that because of the blockage, "a section of the sewer main had to be relaid and sewerage discharged to the (Umhlatuzana) river for a period" (the firm's chief executive denied the charges, accusing Macleod of "barking up the wrong tree in an attempt to find a scapegoat for recent fish kills in Durban harbour"). A corroborating report about the fish kills for the city by water quality consultants Tickey Forbes and Nicolette Demetriades (from Marine and Estuarine Research) was requested by Carnie (2008b) but

deputy health head Siva Chetty has refused to release it to *The Mercury*, despite repeated requests. Chetty was appointed by Sutcliffe to deal with all media queries on the fish kill, and his refusal to release the report has fuelled suspicions of a city hall cover-up or a reluctance to acknowledge sewage management problems.

A few weeks later, Carnie (2008g) alleged that in providing only partial reports about the broken pipes to Council,

Sutcliffe appears to have gone out of his way to discredit or suppress much of the evidence... When *The Mercury* asked for a copy of [Durban city official Andrew] Mather's report, Chetty maintained that it was an "internal report" and that some of the contents had been incorporated into the reports submitted to councillors. However, *The Mercury* has obtained a copy of Mather's report, from other sources, which says: "There is no doubt in my mind that the fish kill is directly attributable to the amount of nutrients built up from sewerage inflow that entered the bay, and no other causes." It also pours cold water on several of Sutcliffe's statements on other possible causes of the fish kill such as heavy rainfall washing pollutants into the bay, toxic spills or other waste-water discharges.

Another report on Durban's rivers emerged at the same time, by water quality consultant Mark Graham as part of the national Department of Water Affairs and Environment's *State of South Africa's Rivers Report* on the Umngeni and neighbouring river catchments. Graham "highlighted several cases of broken sewage pipes and overflows and poor treatment at several eThekweni municipal sewage works," according to Carnie (2008f). As Carnie (2008j) reported,

The eThekweni Municipality has been singled out as one of the "most significant" polluters of some rivers because of the failure to repair burst sewer lines and poor management at some waste-water treatment plants... Where the Mlazi River flows into the concrete Umlaas Canal section, he found "geysers" of raw sewage bubbling up from the bottom and test samples showed readings of 280 000 counts of E.coli/100ml of water during his latest 2007 survey. Graham reported similar high readings of E.coli to authorities during the 2006 survey, but it appeared that "little had been done" to fix the problem. In the Isipingo River, E.Coli concentrations of 440 000 counts/100ml were recorded in the latest survey... The South African guideline for acceptable recreational contact was set at 130/100ml.

Macleod confirmed that these were problems associated with irregularity of maintenance, but shifted the blame in a manner that can be read in race/class terms: "We are often called in to unblock the same sewer lines. Then we find anything from sheep heads, rocks, shoes and buckets, rags or newspapers dumped in these pipes. This is a process of education, to get people to realise that sewers are not rubbish dumps" (Carnie 2008j). Yet Graham's report was much more specific about areas where Macleod's own department was most responsible. For example,

the Umbilo municipal waste water treatment works was having a "highly significant and negative impact" on the health of the Umbilo River. It was "probably the biggest single point-source impact on the Umbilo. Little appears to have changed in this system for the last 10 years". Parts of the Umkhumbane (near its confluence with the Umbilo) was home to rat-tailed maggots as well as "sewage/ blood worms". These maggots have special "snorkels" to breathe and survive in the most highly polluted environments. Sewage worms are also specially adapted to surviving in very foul water. The Umhlatuzana, Hammarsdale and Izimbokodweni waste-water works or pump stations were all especially problematic. (Carnie 2008j)

Moreover, according to Graham (South African Department of Water Affairs and Environment 2008),

The following are some recent E.coli results illustrating that the provision of goods and services by these rivers have been compromised by poor management of human activities and infrastructure relating to faecal contamination: Mayville Stream, a small stream between Mayville and

Westridge Tennis Stadium, E.coli up to 290 000 per 100ml of water. (Cause: Informal communities - inadequate sanitation). Bellair Stream, E.coli up to 310 000. (Cause : informal community.) Aller River, New Germany. E.coli:up to 400 000. (Cause: informal community - inadequate sanitation). Umhlangaan River above Kwamashu waste water works. E.coli up to 240 000. (Cause: broken sewers in Kwamashu Township). Isiphingo River above the Isiphingo waste Water Treatment Works, E.coli count up to 10 000 000 and exceeding 100 000, 60% of the time. (Cause: broken sewers in uMlazi Township). uMngeni River at Kennedy Road, E.coli up to 1 080 000. (Cause: Informal Community on the banks of the Palmiet River.) This is an example of the impact that a community on a small river can have on a larger river! uMlazi River below Fongozi Stream, E.coli up to 720 000. (Cause: broken sewers in uMlazi township). The Slangspruit just above Pietermaritzburg and the Baynespruit within the City boundaries, have recently contained E.coli counts of 670 000 and 610 000 per 100 ml respectively.

What the “poor management of ... faecal contamination” explicitly suggests is the failure of Durban authorities to offer adequate sanitation in shack settlements (‘informal communities’), which in turn creates vast public health threats across a very large geographical area. This in turn recalls the austerity-oriented attitude of Macleod towards peri-urban infrastructure discussed above.

At the level of basic pipe maintenance, it transpired that, as Carnie (2008h) reported,

heavily polluted water from a punctured sewage pipe appears to have been flowing into Durban harbour via the Umhlatuzana River for up to nine months – reportedly the result of a bungled repair job by eThekweni council contract workers. A *Mercury* investigation on Tuesday also disclosed evidence of illegal discharges of a resinous waste into council sewers in the Seaview area. Sewage was still gushing into the river on Tuesday morning, despite the fact that municipal manager Mike Sutcliffe said on December 28 he would “leave no stone unturned” to get to the bottom of a massive fish kill in Durban harbour over the Christmas holidays...

According to staff at a nearby shoe factory, the overflow into the Umhlatuzana started in April last year when eThekweni council contract workers cut a hole in the pipe with oxy-acetylene torches to relieve pressure from a blocked sewage pipe near the corner of Umhlatuzana and Harden roads in Seaview. Neil Macleod, head of the eThekweni Water and Waste department, expressed surprise on Tuesday when *The Mercury* alerted him to the problem. Macleod said he had asked staff for a full report on the matter, but he disputed that the pipe had been leaking for nine months. He suggested the problem could be very recent. Nevertheless, correspondence shown to *The Mercury* suggests that the municipal manager's office had been made aware of the blockage – and the possibility of an illegal stormwater to sewer pipe connection – eight months ago.

According to Macleod, “contractors had been employed to fix the problem between March and August [2007, but] sewage had flowed into the Umhlatuzana for approximately five months as there was nowhere else to divert the flow while the blockage was cleared.” As for the leak in early 2008, “This latest overflow into the river appears to be quite recent. It may be a result of vandalism, but I can’t say that categorically until we have investigated further” (Carnie 2008h).

In February 2008, Macleod (2008b) formally replied to the charges of mismanagement of rural sanitation as follows:

A piped sewerage system is not economically justifiable in rural areas, where the densities are too low, and in these areas onsite sanitation is the only viable option available. The rapid densification of the municipality has led to the run-off of untreated sewerage and polluted storm water into a number of rivers. It can be reasonably expected that the housing backlog will be eradicated by 2015 and only then will the problems faced through informal settlement pollution washing into the streams, be finally solved.

The first sentence above is contradicted by the second, because ‘rapid densification’ should be the basis for running subsidised sewage pipes to even informal settlements. The third sentence puts the onus for sanitation on housing construction yet even at that point there were persistent crises in the municipality’s housing department, leading to widespread scandals over improperly-constructed residences by developers with close political connections to the ruling party. In addition to blaming low-income people for not having access to sanitation as well as companies that illegally dumped waste in the sewage system, Macleod (2008b) also blamed Durban’s higher-income citizens:

Residential property owners have surfaced large areas of their property and often find that the run-off during times of heavy rainfall cannot be catered for by their storm water drainage system. This problem is worsening as storm intensities increase. The solution used by residents is to lift sewer manholes and allow the storm water plus the attendant sand and refuse to be carried into the sewers where it is deposited and later causes blockages... In certain communities, children also see the sewerage system as a source of entertainment. Objects such as stones, twigs and glass when dropped into a sewer manhole are carried away by the effluent. What is not realised is that these foreign bodies accumulate at a change in grade and cause a blockage of the sewerage system.

For Macleod (2008b), the solution was not to upgrade storm water drainage capacity but instead to spend more money on citizen education. He concluded by effectively conceding defeat, in denying the possibility of ‘pristine’ river quality (no one would reasonably expect as much – but instead to meet national guidelines for ecologically-healthy rivers), in creating a ‘tension’ between people and aquatic life, and in positing different standards between inland and coastal rivers:

It cannot be expected, however, that the rivers in our fast-growing municipality, at the levels of poverty and abuse of the sewerage system we experience, will return to a pristine condition. There is also a tension between achieving a river quality that is acceptable for humans and one that is acceptable for the aquatic creatures that live in our rivers... The Graham report often refers to nutrient enrichment and nutrient levels that exceed national standards. While these standards may be applicable to certain inland rivers, they are not generally applicable to coastal rivers.

In March 2008, yet another fish kill was recorded: "Hundreds of dead fish are floating in the Joyner Canal in Prospecton, Durban. And nearby, authorities are oxygenating the waters of Isipingo lagoon to try to save fish and crabs from dying... After Tuesday's downpour, the canal had flooded its banks, spilling into some adjoining properties" (Ryan 2008).

Another factor that played a role at the same time was Eskom's periodic 'load-shedding' (a colloquium for brown-outs). According to Macleod (2008b), "There are also sewage spills into the harbour waters from time to time, particularly with the introduction of load shedding, which has contributed to the pollution load in the harbour sediments." Specifically, he continued, Durban has

292 sewage pump stations and 132 water pump stations. Of these, about 40 are equipped with standby generators – these are the stations where electricity supply was not considered sufficiently reliable at the time of installation. Load-shedding has changed the picture completely. We estimate that in any cycle of load-shedding about 20 sewage stations overflow to varying degrees... We monitor the condition of the rivers and have not yet seen a significant impact on the rivers in the municipality as a result of these spills – presumably because most are of short duration and comparatively low sewage volumes are involved (Macleod 2008b).

In these two statements we learn that the harbour was polluted by sewage from load-shedding in early 2008, but that the impact was not 'significant', another case of mixed signalling. After mid-2008, with the crash of metals and minerals prices, demand for electricity in smelters and mines eased so a reserve was built up again and there have been no further reports of sewage spillage for this reason. Energy shortages may or may not continue, what with a vast increase in Eskom's generation capacity through two new coal-fired plants that will be the world's third and fourth largest once on-line beginning in 2012. This in turn will contribute to South Africa's exceptionally high carbon dioxide emissions.

Climate change and extreme weather events can be expected to exacerbate Durban's water management challenges. In March 2008, for example, rainstorms led to the closure of the two major Durban oil refineries, and according to Carnie (2008d),

Municipal staff also had to break open the mouth of the Isipingo River yesterday to prevent a tide of raw sewage from wiping out fish life in the Isipingo estuary after several large sewage lines were torn open. Some sources estimated that up to 30 million litres of untreated sewage had flowed into the river in a day, and it could take several days to plug the

flow... The storm caused severe flooding of homes, businesses and other buildings and several major routes could not be used because of high water levels... One of the immediate consequences for neighbouring residents in Wentworth, Austerville, Merebank and other suburbs were clouds of burning petroleum vapours being emitted from the flaring stacks of both refineries. Desmond D'Sa, of the South Durban Community Environmental Alliance, said residents had been subjected to 16 hours of flaring from the Engen refinery. Flaring is normally an emergency process whereby the build-up of high levels of petrol vapours are burned up rapidly to reduce the danger of explosion during a sudden shut-down. Elsewhere, the floods ruptured a large sewerage pipeline in at least two places in the Umlazi area.

3.3 Blue Flag beach debates

Even before climate change effects are fully felt, the damage already done to Durban because of inadequate maintenance on pipes, stormwater drainage undercapacity and sewage station breakdowns has been severe. Several urban beaches are the core attraction behind the city's leading position in domestic tourism, and they also suffered severe reputational decline. Between 2007 and mid-2008, the international Blue Flag status that six Durban swimming beaches enjoyed was revoked. The initial reasons at the two main beaches (North and Addington) were "poor quality of ablution facilities, litter problems and poor beach sand quality" but according to Carnie (2008e), subsequent

regular tests showed the two beaches had been unable to comply with World Health Organisation and South African standards for recreational water quality... 100 parts of faecal pollution/100ml of water, whereas Durban samples collected on February 12 [2008] showed readings as high as 960/100ml.

These findings were immediately dismissed by Sutcliffe: "We have a more realistic view now of what we want to achieve and I am not overly worried. Some issues are dependent on storm water and unfortunately these systems were designed well before the beaches were there and the outlets now flow on to those same beaches" (DeBoer 2008).

The reaction by those closer to the scene, including the city's project executive for coastal and catchment policy, Andrew Mather, was panic: "We are trying to find out what the problem is as quickly as possible, and then rehabilitate our Blue Flag programme" (Carnie 2008i). Once it was determined how difficult it would be to solve long-standing problems of inadequate maintenance, however, Sutcliffe and Macleod subsequently argued against the Blue Flag criteria on grounds of inconsistent bacterial measurements between different temperature zones. Sutcliffe also claimed (without specific evidence other than hearsay) that Blue Flag South African coordinator Allison Kelly was "involved with some oppositional groups who have their own agendas to portray our city poorly. Kelly thinks the developing world must have different standards applied to our beaches" (Christianson 2008). His attempt to have her fired from the Blue Flag programme (bragged about in Sutcliffe and Macleod 2008) was

rejected by the international Blue Flag headquarters in Copenhagen, which declared her work 'outstanding' (Carnie 2008k).

Writing together (or so it was advertised on the municipal website's byline), Sutcliffe and 'McLeod' (*sic*) made the following hyperbolic claims:

The recent politically-inspired and charged media statements which have surrounded the cleanliness of our beaches require comment. Instead of relying on facts and scientific results, media reports have sensationalised comments made by a self-proclaimed spokesperson Alison Kelly in which she has not only ignored pollution data and our own analyses, but interestingly, she says nothing about the fact that in Europe the so-called Blue Flag status is not as strictly enforced as in our country. Colleagues have shown me photos of Blue Flag beaches in Europe where animals freely roam and defecate on the beaches...

In the past year, only two beaches have exceeded the 2000/100 ml limit that requires immediate withdrawal of blue flag status. The other beaches show generally consistent, good quality water. The blue flag standard permits 20% of samples taken, to be above 100/100ml and Ph and other parameters are also within the limits set. Clearly not happy with such results Kelly now complains that she wants an independent laboratory to undertake the studies (Sutcliffe and Macleod 2008).

Yet as for the admitted problem of stormwater drainage pollution contaminating the city's main beaches, Sutcliffe and Macleod (2008) blamed

the behaviour of formal and informal traders and street dwellers which lead to pollution of these drains. Poor water quality bacteriologically is not always as a result of a failure of the sewerage system per se but of general misuse of the system and poor behaviour in catchments. The likelihood of this being the source of many of the problems seen is supported by the fact that our water quality failures are most often as a result of high Enterococcus levels – an indication that the pollution event is removed either in time or distance from the sample.

Sutcliffe and Macleod (2008) ultimately denied that there was anything to worry about: "Our beaches are packed in spite of Ms. Kelly and others doing their best to portray us in a poor light. We will continue to work to ensure our beaches remain the cleanest and safest compared with anywhere in our country."

There was, in this vitriol, only a hint that the city's own infrastructure lacked the physical investment required to adequately dispose of both sewage and stormwater in ways that didn't threaten public health. The failure to retain Blue Flags designation on the six beaches was one crucial indicator of this threat, even if Sutcliffe and Macleod claimed otherwise. Later that year, Heinz de Boer (2008) reported in *The Daily News* that

the chance of local beaches ever flying another blue flag seem very remote, city manager Michael Sutcliffe said. "We are more advanced than the Blue Flag anyway because their approach has been inconsistent and not developmental in its approach. The main issue was never water

quality, but the exclusion of some of the most beautiful beaches in South Africa simply because they may not have had recycling bins or other facilities available." Water quality, however, remains high on the priority list for Durban, with cash being pumped into joint research projects to scientifically determine what eThekweni's main source of water pollution is.

In early 2010, a city council meeting unanimously agreed to an opposition Democratic Alliance councilor's proposal that Durban again apply for Blue Flag status at the six beaches. This followed a substantial critique of Sutcliffe from within his own party: "Tourism Minister Marthinus van Schalkwyk and then tourism [provincial minister] Weziwe Thusi had urged the eThekweni management to reapply for the status, saying it was important as a tourism drawcard" (Padayachee 2010). But in August 2010, opposition council member Geoff Pullan (2010) wrote, pessimistically, that the city's September 2010 application would not succeed: "Unfortunately, the record will show that eThekweni, which had Blue Flag beaches from 2001 to 2008, has not been able to regain its high level of seawater quality. Not being able to improve the quality of water run-off into the sea, will be the legacy that the present administration will be remembered for."

4. Conclusion: Fiscal expansion and civil society organisation

The analysis above is dire in part because expectations have always been high for Durban as a result of professional hype about water/sanitation management, and the expectation that civic groups would play a strong countervailing role as watchdogs. The hype and awards were, one might conclude, unwarranted. One reason was the failure to budget and spend sufficient funds on low-income Durban residents' water and sanitation needs as well as on bulk infrastructure expansion and infrastructure maintenance, while another was civil society's failure. Consider each in turn.

First, as was becoming clear by the time of the 2010 World Cup soccer tournament, the South African state had vast quantities of funding at its disposal for infrastructure, having spent in excess of \$20 billion on the games, new and revamped stadia, and a new fast train in Johannesburg and airport in Durban (Bond and Cottle 2011). However, in part because the attention given to the World Cup and its associated above-ground infrastructure (e.g. in Durban highway widening and flyover construction in addition to the new airport), municipalities didn't pay enough attention to below-ground infrastructure such as household sanitation, and sewage and stormwater pipe rehabilitation that could have employed many more people and met basic needs. Municipal capital account underspending estimated at \$2.9 billion in 2009-10 "is a worry," the *Financial Mail* (2010) observed, because it implies "neglecting infrastructure maintenance." Indeed, "analysts found there is no budget for repairs and maintenance in most municipalities in 2009/2010. It appears to have been absorbed into the other expenditure line items." This was not just a problem because of the World Cup, for an earlier Treasury (2008) report on municipal capital spending found,

Despite the efforts of various capacity-building programmes, municipalities are still underspending national transfers. Some of this may be attributable to the misalignment of national and municipal financial years and the tendency to plan more for the short-term than the long-term. Municipalities tend to report improved expenditure levels towards the end of their financial year. This is an indication of the lack of planning for the execution of their capital spending programmes.

The same problem was also identified by former Director-General of Water Mike Muller (2007), who addressed the class implications:

... there is an emerging debate about whether decentralisation will achieve the pro-poor benefits claimed for it, since it certainly appears that, with fiscal decentralisation, a greater proportion of transferred funds are being used for 'non-basic' services. This often occurs where municipalities have failed to persuade the better-served communities to pay their bills. In South Africa's sanitation sector, while the rate of spending is increasing, the expansion of services to the unserved is slowing, in part due to these effects. The weak conditionality in the Division of Revenue Act, which regulates the municipal transfers, now has clear incentives for municipalities *not to extend services to the unserved*. (emphasis added)

In short, we can conclude that South Africa requires a much different national and municipal government policy, one that would incentivise spending on water and sanitation infrastructure so to avert the damage done, even in Durban, at both the retail and bulk levels. To achieve that will take sustained pressure from civil society.

Given that the opposition (white-dominated) Democratic Alliance political party, middle-class environmentalists, the print media and the tourism lobby had a degree of success in reversing the municipality's hostility to the Blue Flag programme, it is evident that South Africa has scope for state reform, up to a point. But looking at the first set of access, pricing and service-level quality problems, there are two ways to approach the overall failure of low-income civil society organisations to address Durban's water/sanitation management failures: by deriding urban social movements as ineffectual because they were *uncivilised*,³ or because they were *too* civilised. The most recognised advocate of the latter position, is Ashwin Desai, author of the celebrated *We are the Poors* (Desai 2002). In mid-2010, Desai (2010) backtracked on his own expectations

³ Wilson (2006, p.14), condemned Durban social movements for their:

- highly antagonistic and polemical approach
- outdated and inaccurate research
- reliance on anecdotal and selective evidence
- urban bias
- unwillingness to acknowledge progress
- highly idealistic demands
- poor understanding of the policy environment
- intra-movement strife

for Durban's urban social movements, as a political force that can right the wrongs of water mismanagement and urban exclusion more generally:

... however bright the first spark of a usually violent confrontation with the state, the upsurges were siphoned off into calls for participation, legal challenges, and 'voice'. This trajectory saw a decline in upsurges, the eroding of popular support, the emergence of oligarchies and bureaucracy within movements and the need to police ones area in order to ensure the ability to "speak" for the community...

In order for *de facto* recognition and therefore delivery (one had a constituency to keep happy), in the flat-lands of Chatsworth for example, movement activists had to increasingly join with the city council in various committees. Soon, political work involved technical issues and over-sight over upgrading, liaison with welfare departments and a range of other interventions which pressed less for radical policy change but focused instead on merely getting existing policy implemented. Community became isolated from each other as the intense specificity of the quest for very local delivery over-took the need for broader solidarities based on broader political principle. In the shack-lands in order for de facto recognition from council one had to ensure that no more shacks were built. One had to also ward off competitors. This was especially so if an organisation defined its role as ensuring delivery. Criticism became Janus-faced. Movements took political positions that were severely critical of neoliberal policies on the one hand while negotiating with them for better delivery within those policy frameworks on the other.

Behind the disappointment over cooption of urban social movements, however, Desai (2010) also confessed an over-expectation of what was possible:

The civic as a site of post-apartheid resistance to neo-liberalism has failed dismally to take off. We must consider the reasons for this. Partly it is because of an assumption, seldom made by those actually living in townships, of substantial ground for unity that flows from merely living under the same conditions. The great homogenously marginalised shackland population has failed to congeal as a political force around a common ideology that points to a systemic critique. This is because right now they are not. There sheer sensuality of the township or ghetto, that would make it so ripe for revolution, also makes it so diverse, intersected, fractious and difficult to build a fighting movement once one tries to go beyond the most basic common-denominator demands – such as don't evict us, give us some more toilets.

For most, of course, the toilets did not materialize. Desai (2010) assessed the problem of such narrow 'economism' (criticized by Lenin and Luxemburg), reborn within the 2000s urban social movements as 'constitutionalism' (such as reliance on the Soweto lawsuit for water policy advocacy). Moreover, attempts to 'outmassify' the ruling party would fail, he argued, because "Social movements won't become mass movements. Let us face it." They are "reliant on spin,

spectacle and support to exert the kind of influence one needs to be an agent of even minor reforms, not to speak of radical ones." Moreover, "Social movements have shown themselves to be as prone to bureaucracy, corruption and leadership for life as any trade union. It is sometimes hard to distinguish movements from NGO's."

These are profound critiques, and to some extent they suggest a need to transcend the individualist and consumerist orientation of the 'right to water' narrative, as a result of the disastrous outcome of relying upon a juristic strategy in Soweto (Bond 2011b), and to move to a 'commons' approach. The latter would also permit, as Karen Bakker (2007:436) argues, a tighter integration of the microeconomic consumption battles with the hydro-ecological context in which bulk water is delivered (or not, in times of shortages, underinvestment and climate change) and sanitation/sewage carried away and treated (or not, when maintenance is not performed): 'The biophysical properties of resources, together with local governance frameworks, strongly influence the types of neoliberal reforms which are likely to be introduced'. The point here would be for civic activists to more forcefully campaign against luxury water consumption by rich and corporate customers, and by extension dispute Durban's need for expensive bulk-water enhancements. By linking the environmental and economic in this manner, we may better connect the dots between bulk water collection in the Inanda Dam, the ecological health of Durban's rivers, the various acts of water consumption (and wastage), and the disposal of water into the Indian Ocean. Bakker worries that 'in failing to exercise sufficient analytical precision in analyzing processes of "neoliberalizing nature", we are likely to misinterpret the reasons for, and incorrectly characterize the pathway of specific neoliberal reforms' – and in Durban the evidence has accumulated that the city's finances, including water tariffs, provide the rationale for the various neoliberal policy decisions, but also the potential solution to the multiple water crises if a different regime one day takes power.

Yet notwithstanding the shortcomings of Durban's social movements in addressing these crises during the 2000s, we might argue, nevertheless, that a few real concessions (not reformist cooptation) occurred in the process, including the \$5 million refurbishment and upgrading of infrastructure in Chatsworth in partnership with the Westcliff Flatdwellers' Association (Bond and Naidoo 2008). Also in mid-2008, the move from six to nine kl/household/month of Free Basic Water was approved, and although this was accompanied by a new 'Indigent Policy' (i.e. it was applicable only to households with housing valued under \$25,000, a means-test albeit one less subject to stigmatisation), it did lead to a demonstrable improvement in access for hundreds of thousands reliant upon water through the plastic 200 litre tanks (hence providing a rationale for more studies such as those of Bailey and Buckley, more Water Dialogues processes and more stakeholder studies).

But the challenge in coming years, as we have seen, is much more serious. In Durban, there is no question that during the late 1990s and 2000s, a dramatic water delivery roll-out occurred, thanks to engineering experience, political pragmatism and the water department's fiscal resources. Yet we have also seen how this strategy was often self-sabotaged by an austerity mentality pervading decisions ranging from lowest-cost household sanitation to deferred sewage pipe maintenance, as well as the pricing, disconnections and Free Basic Water

controversies noted above. A review of the core contradictions associated with Durban's management of bulk and retail water/sanitation suggests that in a neoliberal context amidst the highest rate of income inequality in any large country anywhere, South Africans will have to continue with protests characteristic of uncivilised society, in order to achieve more civilised hydropolitical-ecological outcomes.

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