IWA Conferences

Why getting a toilet does not solve the sanitation crisis: Experience from South Africa

--Manuscript Draft--

Manuscript Number:	IWA-12300R1
Full Title:	Why getting a toilet does not solve the sanitation crisis: Experience from South Africa
Article Type:	Full Paper
Keywords:	Basic sanitation; service integration; South Africa; informal settlements
Corresponding Author:	Sophia Pan, Ph.D. Candidate University of Cape Town Rondebosch, Western Cape SOUTH AFRICA
Corresponding Author Secondary Information:	
Corresponding Author's Institution:	University of Cape Town
Corresponding Author's Secondary Institution:	
First Author:	Sophia Pan, Ph.D. Candidate
First Author Secondary Information:	
Order of Authors:	Sophia Pan, Ph.D. Candidate
	Neil Armitage, PhD
Order of Authors Secondary Information:	
Manuscript Region of Origin:	SOUTH AFRICA
Abstract:	The South African government has set an ambitious target to achieve 100% access to at least a "basic" level of service by 2014. The main policy instrument to accomplish universal access is the Free Basic Sanitation policy, which advocates for the provision of free municipally provided sanitation services for poor households. Although great gains have been made over the last twenty years, roughly 26% of the population still lacks access to basic sanitation. The number of people without basic sanitation may actually be higher given the toilet facilities, particularly communal or public facilities in informal settlements, which remain broken for extended periods of time. People may also lack access to sanitation facilities due to either social or physical barriers. Part of the issue with focusing mainly on constructing and counting toilets is that some of the details, such as physical or social barriers to access, may be overlooked. Despite having access to toilet facilities, several issues still need to be addressed, which include: having adequate operations and maintenance plans, improving hygiene behaviours, disposing of night soil if communal and/or public facilities are only accessible during the day, providing regular refuse removal and drainage services. The purpose of this paper is to demonstrate that toilets are only one part of sanitation services, and the need to address remaining gaps in sanitation services. A framework promoting better integration and coordination of sanitation planning and programme implementation between different sanitation-related departments (environmental health, water and sanitation, solid waste, and stormwater), including roles for users and service providers, is proposed. Recommendations are based on experiences in informal settlements in South Africa where toilet facilities are operating, but still fall short of comprehensively addressing sanitation and hygiene needs.

Why getting a toilet does not solve the sanitation crisis: Experience from Cape Town

S. M. Pan*, N. P. Armitage, & M. B. Van Ryneveld

Department of Civil Engineering, University of Cape Town, Private Bag, Rondebosch 7701, Cape Town South Africa (*Email: *sphpan001@myuct.ac.za*)

Abstract

The South African government has set an ambitious target to achieve 100% access to at least a "basic" level of service by 2014. The main policy instrument to accomplish universal access is the Free Basic Sanitation policy, which advocates for the provision of free municipally provided sanitation services for poor households. Although great gains have been made over the last twenty years, roughly 26% of the population still lacks access to basic sanitation. The number of people without basic sanitation may actually be higher given the number of toilet facilities, particularly communal or public facilities in informal settlements that may be dysfunctional for extended periods of time. Part of the issue with focusing mainly on constructing and counting toilets is that some of the details around sanitation as a service may be overlooked. Despite having access to toilet facilities, several issues still need to be addressed, such as: the numbers of people sharing toilets, inadequate refuse removal and drainage services, and sanitation as a service rather than a facility.

The purpose of this paper is to demonstrate that toilets are only one part of sanitation services, and the need to address remaining gaps in sanitation services. Principles promoting better coordination of sanitation planning and programme implementation between different sanitation-related stakeholders are presented. Recommendations are based on experiences in informal settlements in South Africa where toilet facilities are provided, but often still fall short of addressing sanitation and hygiene needs as demonstrated by the case study of janitorial services in Cape Town.

Keywords: urban sanitation; South Africa; informal settlements; janitorial services

INTRODUCTION

Over 1.8 billion people worldwide gained access to improved sanitation facilities (facilities that ensure hygienic separation of human excreta from human contact) between 1990 and 2010, but 2.5 billion people still lack access due to rapid population growth (WHO & UNICEF, 2012; WHO & UN-Water, 2012). While the majority of people lacking access to sanitation still reside in rural areas, the high population density of cities magnifies the negative impacts of inadequate services. Sub-Saharan Africa had one of the smallest increases in the percentage of the population with improved sanitation facilities since 1990, and the lowest overall percentage in 2010 with only 30% coverage as compared to 56% for all developing regions (WHO & UNICEF, 2012).

Regionally, South Africa stands out for being one of the few countries in Sub-Saharan Africa considered "on track" to meet Millennium Development Goals (MDG) for both water and sanitation (Still et al., 2009; WHO & UNICEF, 2012). However, it should be noted that 26% of the population, still lack access to what is deemed to be an adequate level of service according to national standards (StatsSA, 2012a), with significant regional disparities regarding sanitation

coverage. The claim of being "on track" is thus disputed. The introduction of Free Basic Services in 2000, which supports subsidising the provision of a "basic" sanitation service (in addition to water) to low-income households, represents the main policy vehicle for trying to address sanitation needs in informal settlements and other low-income areas. A basic sanitation service is the minimum standard considered to meet an adequate level of service, and is defined in national policy as:

> *The provision of a basic sanitation facility which is easily accessible to a household, the sustainable operation of the facility, including the safe removal of human waste and wastewater from the premises where this is appropriate and necessary, and the communication of good sanitation, hygiene and related practices.* (DWAF, 2003, p.46)

There are significant shortcomings with the implementation of basic sanitation in many places. The quality of service, impact on quality of life, and operation and maintenance (O&M) details have been neglected (Mjoli *et al*., 2009). Meaningful community engagement and long-term planning coordinated between different municipal departments are often given short shrift in the push to meet delivery targets (Tissington, 2011). In essence, a major issue with basic sanitation is that despite good intentions, it has largely been reduced to the construction of toilet facilities with little regard for what happens to waste after it is removed (Mjoli, 2010). Clear communication of roles and responsibilities for different sanitation stakeholders is often lacking in many sanitation projects in South Africa (Lagardien *et al.*, 2012).

Principles of integrated sanitation management

Both 'software' approaches to encourage good hygiene, *e.g*. Community-Led Total Sanitation (CLTS) or Participatory Hygiene and Sanitation Transformation (PHAST) and 'hardware' (physical infrastructure) are required to provide a sanitation service that meets the minimum health and environmental objectives of acting as a barrier to disease, and preventing pollution. A whole suite of infrastructure related services to handle human excreta, greywater, stormwater, and solid waste (sometimes referred to as environmental sanitation) in addition to hygiene programmes are required to fully address sanitation needs (Lüthi *et al*., 2011).

One of the major challenges with sanitation service provision is that a successfully functioning system is dependent on a wide range of actors and institutions that often do not have the opportunity to coordinate planning or day-to-day operations. Furthermore, ensuring good communication between the users of a service, and the service providers is a critical coordination challenge. One way to address the challenges of poor coordination between different institutions providing sanitation services and to foster communication between users and service providers is to incorporate principles for integrated sanitation management into existing practices. Seven principles for integrated sanitation management, modified and collated from the "Bellagio Principles for Sustainable Sanitation" (WSSCC, 2000), integrated resource management (IRM) and the closely related integrated water resource management (IWRM) literature, are (Bellamy *et al.* 1999; Van der Zaag, 2005; De Carvalho *et al.*, 2009):

1. Supporting reuse and resource recovery of sanitation waste products where possible
2. Promoting a holistic approach to sanitation services that considers environmental, economic, social and institutional impacts and influences
3. Involving all relevant stakeholders (different levels of involvement are required at different stages)
4. Advocating for consensus-based decision making processes; where trade-offs must be made, promoting equitable sharing of benefits and responsibilities

5. Coordinating government, nongovernment bodies (including businesses) and community sanitation policies and activities through both formal and informal avenues
6. Building different stakeholders' capacity to participate and manage sanitation systems
7. Allowing for flexible management plans and institutional arrangements

An integrated approach to sanitation management has many challenges, including the lack of a statutory basis and potentially increased costs for staff and other resources needed to coordinate management (Mitchell, 2005). Additionally, given the potentially large number of stakeholders from the public sector, private sector, and civil society organisations that would be involved, trying to adopt an integrated approach could result in an unwieldy institutional arrangement or even parallel competing structures if integration is not designed pragmatically based on "existing customary practices" (Van der Zaag, 2005, p.869) with clearly defined functions for different stakeholders. Integration should not be seen as an end in itself or imply that an entire complex system can be controlled. Rather the focus should be on establishing key relationships and common goals to address sanitation problems such as environmental degradation and public health hazards that have "interconnected causal factors" (Mitchell, 2005, p.1337).

The principles listed represent an idealised vision for sanitation management. Even if exercised incompletely, one of the key goals should be to establish clear roles and relationships at an appropriate scale (*e.g.* household, neighbourhood, *etc*.) between different stakeholders to ensure a sustainable sanitation service. If integrated management of sanitation systems is not possible or desirable in all cases, then emphasis should be placed on coordination and communication between different stakeholders within existing institutional structures.

CASE STUDY OF JANITORIAL SERVICES IN CAPE TOWN

A case study of the janitorial service for municipally provided sanitation facilities currently being implemented in the City of Cape Town (CCT) demonstrates some of the challenges of establishing clear responsibilities between different stakeholders, gaps in the sanitation service provided and potential opportunities to address these challenges. Although the details vary based on the context, one important factor in terms of the design of both a sanitation facility and a management plan for sanitation services is to determine roughly how many people will be using the facility. For individual and shared household facilities, local authorities usually expect households to take care of routine cleaning and minor maintenance, whereas for public facilities, janitorial (caretaker) services are now provided because public facilities are prone to failure without assigned janitors (Crous, 2013). When problems extend beyond household boundaries or capabilities, as in the case of public ablution facilities, then clear roles and coordination of responsibilities between multiple stakeholders need to be established, particularly between users and service providers for: cleaning, O&M, monitoring, and health and hygiene initiatives (Lagardien *et al.*, 2009).

METHODS

The data used for the case study was drawn from a variety of both primary and secondary sources. The primary sources come from unstructured key informant interviews with two municipal officials from the water and sanitation department and two Social Justice Coalition (SJC) members, as well as through field studies from colleagues who are using participant observation as a method of data collection in two of the settlements receiving janitorial services. Municipal records of janitorial staff employed, a municipally commissioned report on the status of the janitorial service, and newspaper articles about the janitorial service were used as secondary sources of data. Problems with the janitorial service from all data sources were tagged using Microsoft OneNote, and overlapping issues were highlighted in the case study.

Janitorial services in Cape Town: a work in progress

Cape Town has a population of approximately 3.7 million people and 1 million households of which at least 21% live in informal dwellings (StatsSA, 2012b). Informal settlements are unplanned residential areas which do not meet local authority requirements for conventional townships, and are often characterised by inadequate infrastructure, makeshift dwellings, and poor access to health and education facilities (PGWC, 2003). Providing adequate water and sanitation services to informal households in South Africa is a consistent challenge as indicated by numerous service delivery protests across the country, with water and sanitation services ranking amongst the top five grievances from 2007-2012 (Community Law Centre, 2012).

In May 2012, in response to campaigning and protests organised by the advocacy-focused NGO, Social Justice Coalition (SJC) based in Khayelitsha (see Figure 1), the mayor of Cape Town announced a plan to provide selected informal settlements with janitorial services for "flush toilets, standpipes and surrounding areas" (CCT, 2012). An example of sanitation facilities is shown in Figure 2. The initial proposal was to hire 500 janitors on short term contracts through the Expanded Public Works Programme (EPWP) (CCT, 2012). The janitorial programme, however, was expanded over time to cover 144 settlements, and to provide additional administrative support for permanent municipal employees in the Water and Sanitation Department's Informal Settlement Unit (WSISU) with ~860 temporary staff as of April 2013 hired as: janitors, supervisors to oversee teams of janitors, clerks to assist with administrative tasks, and additional maintenance staff to help with minor repairs. The janitorial contracts are usually for a six month period with staggered starting and ending dates for new employees. The programme has been promoted as part of a city-wide job creation strategy in addition to providing a vital service (Silber, 2011).

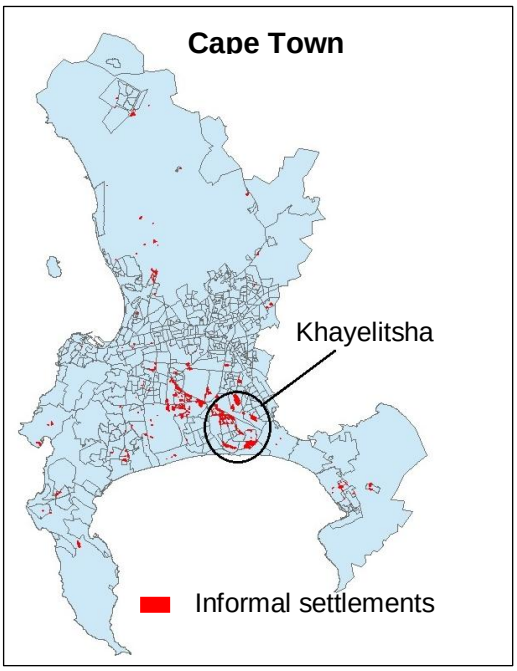

Figure 1: Distribution of informal settlements in Cape Town in 2011

Figure 2: Toilets in Khayelitsha

The programme has however been plagued with issues from its inception. Some of the problems include amongst others: a lack of protective equipment for janitors, inadequate cleaning supplies, insufficient training and skill building opportunities, and difficulty coping with workloads for staff in the water and sanitation department. Permanent municipal staff members are assuming new responsibilities for managing and monitoring the temporary janitorial employees in addition to their

core responsibilities. The first two problems mentioned relate to supply chain management problems. The last two problems relate to municipal officials' struggle to fulfil additional and unfamiliar responsibilities, which is an underlying problem highlighted by the janitorial case study. The issue of "communal", but essentially public toilets locked for "private" use by individual households or business owners is another on-going issue, since locked toilets mean fewer are available for people to use. Another issue is whether or not janitors can or should clean locked toilets. These problems, and others such as general maintenance and responsiveness to issues such as blockages, parts replacement, *etc*. (Crous *et al.*, 2013) relate to the need to incorporate integrated sanitation management principles into practice, such as those previously described in Principles 5-7, relating to coordination, capacity building and flexible institutional arrangements.

Untapped potential for coordination and capacity building

The janitorial programme was conceived of through the mayor's office, but implementation responsibility currently rests with the CCT water and sanitation department, in particular the informal settlements unit. There is currently a mismatch between the mayoral office's expectations for the scale of the programme and the current capacity of the implementing department with regards to the capacity available to manage a temporary employment programme, *e.g.* one monitoring and evaluation officer responsible for overseeing 338 new employees who are on short-term contracts. There is, by design of the EPWP, a high staff turnover in a volatile social environment where unemployment levels are high (Klasen & Woolard, 2008), leading to a great potential for labour disputes when contracts are terminated. The problems highlighted would benefit from greater coordination between municipal departments, such as environmental health and social development, to identify additional staff who could assist with administering and improving the janitorial programme, particularly during training of EPWP employees, and when contracts are started and terminated. The potential to collaborate and build the institutional capacity of community-based organisations (CBOs) and NGOs like SJC to assist with regularly monitoring the janitorial service and the status of facilities is also currently underexploited.

Continued engagement between service providers with residents through local street committees, ward councillors, facilitators from CBOs, or directly through community meetings or household visits is a weakness of the janitorial programme and other municipal service programmes. As noted by Beall *et al.* (2000), "the issue of service standards also has as much to do with the micro-politics of the number of people per toilet as with the technical quality of the service." Both the micro-politics between residents, janitors, contractors used to manage hiring, and municipal officials, and the quality of the service itself need careful re-evaluation and likely institutional rearrangement to incorporate an integrated approach to achieve an acceptable service standard.

DISCUSSION

A fundamental shift from bureaucratic government-led infrastructure provision to a collaborative multi-stakeholder service-focused sanitation approach is required. Integrated development plans and water service development plans are required for municipalities and are intended to bring together different stakeholders as mentioned in the White Paper on Basic Household Sanitation (DWAF, 2001), but the mechanisms for public participation, monitoring programmes and pilot projects, and capacity building support are still un(der)developed in most municipalities who are designated as the principal role players in sanitation service delivery. Investing time and resources for setting up adequate 'software' programmes and institutional structures to increase coordination and communication between key stakeholders such as users and community leaders and service providers, whether contractors or municipal employees, has the potential to pay 'dividends' of not only potentially reduced operations and maintenance (O&M) costs due to fewer blockages of

sewers, more timely repairs, *etc.*, but also an improved service and better health outcomes for residents who require assistance accessing sanitation services (Silber, 2011).

One unresolved issue with trying to provide basic sanitation services in South African municipalities is the financial sustainability of subsidising both capital and O&M costs. For example one of the issues with providing janitorial services encountered in both eThekwini and Cape Town is how to continue paying for janitorial services if EPWP funding is not earmarked for the service. Providing the suite of environmental sanitation services is also still a challenge in informal settlements. Even after the provision of toilets, the water supply points and facilities for hand washing, drainage of stormwater and greywater are often lacking or inadequate. Although not highlighted in the case study, stormwater drainage is often a major issue in most of the informal settlements around Cape Town due to both their unplanned nature and frequent location in marginal areas such as flood-prone areas, steep slopes, and former landfill sites (Graham, 2003; Baumann & Huchzermeyer, 2004). With respect to greywater, disposal points are often not provided or go unused because of the walking distance to access disposal points so greywater is inappropriately disposed of along roads, adjacent wetlands, or informal dump sites (Winter *et al.*, 2010).

At a national level, an unanswered question is who should act as the primary sanitation steward. Previously, the Department of Water Affairs (DWA) was the ministry that was responsible for sanitation planning and policy development at a national level, but in 2009, the National Sanitation Programme Unit (NSPU) was transferred to the Department of Human Settlements (Tissington, 2011); although the DWA retained some responsibilities relating to regulation and management of the Bulk Infrastructure Grant (NSPU, 2012). The fragmentation of responsibilities and the "lack of a single national body taking the lead in the sector" (NSPU, 2012, p.24) are recognised as a challenge to coordination, regulation, the maintenance of standards, and monitoring the performance of sanitation service delivery.

CONCLUSION

Obtaining a toilet is just one element of sanitation. As highlighted in the case study, looking at sanitation as a service is particularly important in areas where facilities are shared by multiple households. In addition to dealing with human excreta, ensuring a water supply, refuse removal, and drainage for greywater and stormwater are also important to include as part of the suite of sanitation services alongside hygiene programmes. Furthermore, given that there are often many stakeholders involved, fostering institutional arrangements and forums for communication between various stakeholders is critical. In addition to improving the sanitation service standards in informal settlements, greater communication and coordination both between different levels of government and within municipalities will be required to address some of the challenges mentioned.

REFERENCES

Baumann, T. & Huchzermeyer, M. 2004 *Study into Supporting Informal Settlements--Background Report 7: Recommendations*. Department of Housing, Pretoria.

Beall, J., Crankshaw, O. & Parnell, S. 2000 Victims , Villains and Fixers : the Urban Environment and Johannesburg ' s Poor. *Journal of Southern African Studies*, **26**(4), 833–855.

Bellamy, J.A. *et al*. 1999 Society & Natural Resources : Policy Review Evaluating Integrated Resource Management Evaluating Integrated Resource Management. *Society & Natural Resources: An International Journal*, **12**(4), 37–41. Available through University of Cape Town Library website: <www.lib.uct.ac.za> [Accessed 14 January 2013].

Briceño-garmendia, C., Smits, K. & Foster, V. 2008 *Financing Public Infrastructure in Sub-Saharan Africa : Patterns and Emerging Issues*, **15**.

Chambers, R. 2009 Going to Scale with Community-Led Total Sanitation : Reflections on Experience, Issues and Ways Forward, pp.1–50.

CCT 2012 *Statement by the Executive Mayor of Cape Town, Alderman Patricia de Lille on the janitorial service for flush toilets in informal settlement* [press release] 16 May 2012, City of Cape Town. Available at: <https://www.capetown.gov.za/en/mayor/Documents/DeLille_speeches/Statement _janitorial_service _informal_settlements.pdf> [Accessed 30 May 2013].

Community Law Centre of the University of the Western Cape 2012 MLGI Service Delivery Protest Barometer. *Local Government Bulletin*, **14**(3), 1–15. Available at: <http://www.mlgi.org.za /publications/publications-by-theme/local-government-bulletin/2012-local-government-bulletin-october-volume-14-issue3/LGB%20vol%2014%283%29%20October%20 2012.pdf> [Accessed 30 May 2013].

Crous, P.A., Haarhoff, J. & Buckley, C.A. 2013 Can shared facilities be sustainable? Experience from communal ablution blocks in eThekwini , South Africa. In 36th WEDC International Conference, 2013 Delivering Water, Sanitation and Hygiene Services in an Uncertain Environment. Nakuru , Kenya, pp. 1–7.

De Carvalho, S.C.P., Carden, K.J. & Armitage, N.P. 2009 Application of a sustainability index for integrated urban water management in Southern African cities : Case study comparison – Maputo and Hermanus. *Water SA*, **35**(2), 144–151. Available through University of Cape Town Library website <http://lib.uct.ac.za> [Accessed 18 January 2013].

DWAF 2001 *White Paper on Basic Household Sanitation*. Department of Water Affairs and Forestry: Republic of South Africa. Available at: <http://www.dwaf.gov.za/Documents/Policies/Sanitation ReviewPolicy.pdf> [Accessed 13 September 2012].

DWAF 2003 *Strategic Framework for Water Services: Water is life, sanitation is dignity*. Department of Water Affairs and Forestry, South Africa. Available at: <http://www.dwaf.gov.za/Documents /Policies/Strategic%20Framework%20approved.pdf> [13 September 2012].

Goven, G. 2007 Green Urbanism- Kosovo informal settlement upgrade Case Study, Cape Town, South Africa.

Graham, N. 2003 *A review of infrastructure services for the upgrade of South African informal settlements*. Master of Science in Engineering, University of Cape Town, Department of Civil Engineering, Cape Town, South Africa.

Huchzermeyer, M. 2009 The struggle for in situ upgrading of informal settlements: a reflection on cases in Gauteng. *Development Southern Africa*, **26**(1), 59-73.

Klasen, S. & Woolard, I. 2008 Surviving Unemployment Without State Support: Unemployment and Household Formation in South Africa. *Journal of African Economies*, **18**(1), 1–51. Available at: <http://jae.oxfordjournals.org/cgi/doi/10.1093/jae/ejn007> [Accessed 24 June 2013].

Kvarnström, E., McConville, J., Bracken, P. ,Johansson, M., & Fogde, M. 2011 The sanitation ladder – a need for a revamp? *Journal of Water, Sanitation and Hygiene for Development*, **1**(1), 3-12. Available at: http://www.iwaponline.com/washdev/001/washdev0010003.htm [Accessed 8 March 2012].

Lagardien, A., Cousins, D. & Benjamin, A. 2012 *Interactive Risk Reduction Approach-- An approach to reducing risks from informal settlement waste streams: community-based risk assessment with municipal partnerships*, WRC Report No 1901/1/11, Water Research Commission, South Africa.

Lagardien, A., Muanda, C., Cousins, D. & Zindoga, C. 2009 *A Guideline: Integrating Community-based Procurement in the Operation and Maintenance of Basic Services*, WRC Project K5/1714, Water Research Commission, South Africa.

Lüthi, C., Morel, A., Tilley, E. & Ulrich, L. 2011 *Community-Led Urban Environmental Sanitation Planning : CLUES*. Eawag-Sandec; WSSCC; UN-HABITAT.

Mitchell, B. 2005 Integrated water resource management, institutional arrangements, and land-use planning. *Environment and Planning*, **37**(8), 1335–1352. Available at: https://faculty.nipissingu.ca /danw/dwhome/savepowerpshere/Water_Mitchell 2005.pdf [Accessed 21 January 2013].

Mjoli, N., Sykes, G. & Jooste, T. 2009 *Towards the realization of free basic sanitation : evaluation , review and recommendations, WRC Report No. TT 422/09*. Water Research Commission, Gezina.

Mjoli, N. 2010 *Review of sanitation policy and practice in South Africa from 2001-2008, WRC Report No. 1741/1/09*.Water Research Commission.

Naranjo, A. 2009 *Innovative sanitation case study: The Mobisan approach in informal settlements of Cape Town*, Master of Science, Loughborough University.

NSPU 2012. *Report on the status of sanitation services in South Africa.* National Sanitation Programme Unit Department of Human Settlements, Department of Water affairs and Department of Performance Monitoring and Evaluation, Pretoria.

PGWC 2011 *Informal Settlements Handbook*. Provincial Government of the Western Cape. Introduction. Available at: <http://www.westerncape.gov.za/eng/pubs/guides/I/10448> [Accessed 8 July 2013].

Sherpa, M.G., Lüthi, C. & Koottatep, T. 2012 Applying the Household-Centered Environmental Sanitation planning approach: a case study from Nepal. *Journal of Water, Sanitation and Hygiene for Development*, **2**(2), 124–131. Available at: <http://www.iwaponline.com/washdev /002/washdev0020124.htm> [Accessed 1 August 2012].

Silber, G. 2011 'SJC Welcomes Mayor de Lille's Consideration of Janitorial Services for Sanitation Facilities in Informal Settlements', *Politics Web*, 3 Oct. 2011. Available at: <http://www.politicsweb .co.za/politicsweb/view/politicsweb/en/page71654?oid=259319&sn=Detail> [Accessed 30 May 2013].

StatsSA 2012a *Census 2011 Key Results*. Statistics South Africa. Available at: <http://www.statssa.gov.za/Census2011/Products/Census_2011_Key_results.pdf> [Accessed 1 November 2012].

StatsSA 2012b *Census 2011 Municipal report Western Cape*. Statistics South Africa. Available at: <http://www.statssa.gov.za/Census2011/Products/WC_Municipal_Report.pdf> [Accessed 30 May 2013].

Still, D., Walker, N., and Hazelton, D. 2009 *Basic sanitation services in South Africa: Learning from the past, planning for the future WRC Report No.TT 414/09*. Water Research Commission.

Taing, L. 2010 *Improving Sanitation Delivery in South Africa*, Master in Integrated Water Management, International Water Centre and University of Cape Town.

Tissington, K. 2011 *Basic Sanitation in South Africa: A Guide to Legislation, Policy and Practice*. Socio-economic Rights Institute of South Africa. Available at: <http://www.nwu.ac.za/webfm_send /42156> [Accessed 9 October 2012].

UN-HABITAT 2012.*State of the World's Cities 2012/2013: Prosperity of Cities*. United Nations Human Settlements Programme, Nairobi. Available at: <http://www.unhabitat.org/pmss/listItemDetails. aspx?publicationID=3387> [Accessed 23 October 2012].

van der Berg, S. 2010. Current Poverty and Income Distribution in the Context of South African History. *SSRN Electronic Journal*, 1–23. Available at: <http://www.ssrn.com/abstract=1727599> [Accessed 13 June 2012].

Van der Zaag, P., 2005 Integrated Water Resources Management : Relevant concept or irrelevant buzzword ? A capacity building and research agenda for Southern Africa. *Physics and Chemistry of the Earth*, **30**, 867–871.Available through University of Cape Town Library website <http://lib.uct.ac.za> [Accessed 17 January 2013].

Winter, K., Spiegel, A., Armitage, N. & Carden, K. 2010 *Sustainable options for community-level management of greywater in settlements without on- site waterborne sanitation*, WRC Report No. K5/1654. Water Research Commission, South Africa.

WSSCC 2000. *Summary Report of Bellagio Expert Consultation on Environmental Sanitation in the 21st Century*. Water Supply and Sanitation Collaborative Council and Swiss Federal Institute for Environmental Science and Technology, Switzerland.

World Bank, 2010 *South Africa at a Glance*. Available at: <http://devdata.worldbank.org/AAG/zaf_aag.pdf> [Accessed 13 June 2012].

WHO & UNICEF 2012 *Progress on Drinking Water and Sanitation 2012 Update.* Report of the Joint Monitoring Programme of the World Health Organization and United Nations Children's Fund, United States of America.

WHO & UN-Water 2012 *UN-Water Global Analysis and Assessment of Sanitation and Drinking-Water*. Report of the World Health Organization and United Nations Water, Geneva.