Perceptions of Municipal Water and Sanitation Services

Report to the

Water Research Commission

by

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Executive Summary

In 2011 the Water Research Commission commissioned a survey that investigated urban South Africans' perceptions of their drinking water quality and the variables that influence these perceptions. The response was positive: 81% of urban South Africans perceived their tap water to be safe to drink.

This study was aligned with the drinking water perception study of 2011; it tested if perceptions of drinking water quality have changed in the past four years. However, the scope of the study was broader. Instead of focusing on drinking water quality only, it investigated the general public's perspective on aspects of water services that SALGA has identified as relevant to investigate.

Eleven questions were attached onto one of the existing syndicated studies that are conducted by the major market research houses. The OMNIBUS survey of Nielsen South Africa was used.

The OMNIBUS survey covers adults, aged 16 years and older, from all race groups. An area-stratified, probability sample of 2513 urban households was drawn. The total coverage represents 92% of the urban adult population of South Africa and 56% of the total adult population.

Personal at-home interviews were conducted in the home language, or preferred language of the respondent. The interviews were conducted using a structured questionnaire on a CAPI (Computer Assisted Personal Interview) machine as well as show cards. The results have been post weighted to estimated population proportions.

The main findings of the study confirm the results found in similar studies done in other countries.

Drinking water quality

> 88% of urban South Africans (7% more than in 2011) perceive their tap water to be safe to drink.
>
> This concurs with international studies, which found that most people in countries with a reliable water supply perceive tap water as having a low safety risk to drink.

➤ Consumers in the Metro Municipalities perceive their tap water to be significantly safer to drink than consumers in the other urban municipalities.

➤ For Metro Municipalities, the study found a 15% gap between the Metros with the highest consumer confidence in drinking water quality (City of Cape Town [98%], eThekwini [97%]) and the Metros with the lowest consumer confidence (Buffalo City [83%] and Nelson Mandela Bay [82%]).

> Consumers in the North West and Mpumalanga provinces have the lowest confidence in their drinking water quality.
>
> These two provinces also have the least reliable water supply in terms of consumer experience and perception. 60% of consumers in North West said that they suffered water interruptions at least once a month or more frequently.

➤ The younger age categories (16-34) were found to be more positive about drinking water quality than the older age category (50+).

➤ A wide range of factors influence the individual's perception of drinking water quality. The **top six** reasons why people think tap water is **safe to drink** are:

  a. The water looks clean.

  b. Nobody gets sick.

  c. The water tastes good.

  d. The water smells good.

  e. People say the water is safe to drink.

  f. The municipality cleans the water.

The **top six** reasons why people think tap water is **unsafe to drink** were: "the water looks dirty"; "the water tastes bad"; "the water smells of chlorine";" the water smells bad"; "some people got sick from the water" and "people say the water is unsafe to drink ".

➤ International studies found that media reporting has very little impact on the individual's risk perception of drinking water safety. In this study as well**, a very small percentage of the population (4%) base their perception that tap water is safe or unsafe to drink on what they have heard or read in the media.**

➤ The Blue Drop status of municipalities is very low on the list of drivers of perceptions. **Only 2% gave the Blue drop as a reason for confidence in their drinking water quality.**

➤ **Tap water versus bottled water:** Reported drinking water behaviour seems to be a combination of perceptions of drinking water quality and affluence. The less confident people are about how safe it is to drink tap water, the more likely they are to boil or filter tap water or to use bottled water if they could afford it. In North West, where 56% of consumers are confident that tap water is safe to drink, only 54% of consumers drink water straight from the tap.

On the other hand, consumers in the higher Living Standard Measure (LSM) groups and with high incomes seem to be buying bottled water irrespective of their perception of the quality of tap water. 98% of the City of Cape Town's consumers are confident that tap water is safe to drink, but only 67% drink water straight from the tap. 7% say that they never drink water; they only drink coffee, tea cool drink – or wine!

Service quality

Three general questions were asked about the quality of water and sanitation services. 72% of urban consumers believe that their municipality is competent to deliver a good water and sanitation service in normal circumstances. They are less confident about their municipality's ability to deal with extraordinary circumstances.

> 57% believe that their municipality is competent to deal with water scarcity in the event of a drought.

(The fieldwork for the study was done in September 2015, before the current drought hit the country.)

A service quality perception tool was developed for the 2015 study to calculate a quality perception index score for each individual. The quality index is based on the three general questions plus a number of questions that dealt with specific aspects of service delivery. These were:

a. Reliability of service (interruptions and water pressure)
   - Does the municipality maintain or keep a strong water pressure in the tap(s)?
   - How often do you experience water interruptions?
b. Maintenance
   - Does the municipality repair leaking or broken water or sewage pipes in the street within 1 to 2 days?
   - Does the municipality clean up sewage spills within 1 to 2 days?
   - Does the municipality empty full pit latrines regularly?
   - Does the municipality repair faulty water meters?
c. Clear and accurate billing
   - Does the municipality read water meters every month?
   - Does the municipality send out clear and accurate bills?
d. Customer service
   - Does the municipality answer the phone and emails?
   - Does the municipality respond to complaints and queries about water or sanitation?
   - Does the municipality solve water and sanitation issues in the community?

> The urban population rates the quality of the water and sanitation service at 6,34 out of a possible 10.
>
> [9-10=outstanding; 7-9=very good; 6-7=good; 5-6=adequate; less than 5=disappointing/requires urgent improvement in services]

The service quality index indicated that:

➢ Consumers in the higher LSM groups are more positive about the water and sanitation service that their municipality delivers than consumers in the lower LSM groups.

➢ The findings for LSM groups correlate with income: the higher income groups are more positive about their municipal service than lower income groups.

> Higher LSM and income groups experience a better service from their municipalities than lower LSM and income groups.

➢ There are no significant gender differences.

➢ The age group 35-49 has the most negative perception of their municipality's service with an index score of 6,28 out of a possible 10, whereas consumers older than 50 have the most positive perception with an index score of 6,43.

➢ The service quality scores are sensitive for province and the size of the municipality. Consumers in Gauteng and the Western Cape have the highest index scores, in other words, they have the most positive perception of the water and sanitation service that their municipalities deliver. Consumers in Mpumalanga, the Eastern Cape and North West have the most negative perception.

➢ Consumers in metropolitan areas (index score = 6,59) are more positive about their municipality's quality of service than consumers in smaller cities and towns (index score – 5,93).

➢ For the Metros, the service quality scores are as follows:

City of Cape Town	7,01
City of Tshwane	6,97
City of Johannesburg	6,77
Mangaung	6,62
eThekwini	6,53
Ekurhuleni	6,41
Nelson Mandela Bay	5,83
Buffalo City	5,6

Awareness of consumption and the cost of water

The study also tested **awareness of water conservation and demand management.**

> **61% of urban consumers** do not know how much water their household consumes per month.
>
> **48% of paying consumers** do not know how much they pay for water per month.
>
> **79% of urban consumers** are aware that they should save water and they are also aware of how they could save water. 21% do nothing to save water.

Higher LSM groups (LSM 6 to 10) and consumers with a matric or some form of tertiary education are better informed than consumers from the lower LSM groups and consumers without matric.

The findings of the study have several implications for policy, management and further research:

➢ Sensory aspects such as appearance, taste and odour have the strongest influence on South Africans' perceptions of the safety of tap water. Therefore, the Blue Drop criteria should take consumers' perceptions into consideration, as recommended by the World Health Organisation (2004).

➢ Municipalities' Water Safety Plans should take the drivers of risk perceptions into consideration when emergency plans are developed.

➢ The findings point out several areas of drinking water quality which are insufficiently communicated to the general public:

- Blue Drop status as an indicator of drinking water quality: Currently this factor is a very weak driver of consumer perceptions. Consumers seem unaware of the Blue Drop status of their municipalities.

- The impact of chlorine on drinking water quality: Consumers seem confused about whether the addition of chlorine makes water safe or unsafe to drink.

- Water treatment processes: The general public, especially lower LSM groups, seem to lack knowledge of water treatment processes. This could be addressed with educational programmes and visits to municipal water and wastewater treatment plants.

➢ First-hand experience will, however, remain the strongest factor and consumers will use past experience (has anyone got ill?) as a reference point.

➢ Perceptions of the quality of the water and sanitation service that a municipality delivers are determined by a complex of perceptions and experiences.

> ### Clean and safe drinking water is an important driver of positive perceptions about municipal services.

Municipalities with good drinking water quality should use this finding to improve their image and to build consumers' trust in their services.

➢ Few South African consumers know how much water they use or what the cost of water is. It is therefore likely that that consumers waste large quantities of water in South Africa.

> ### SALGA and the Department of Water and Sanitation should actively and continuously raise awareness of the value of water.

➢ A multiple strategy, including school and above the line and below the line media campaigns, is recommended for communicating information about drinking water quality and water conservation and demand management.

Because family and friends have a strong influence on perceptions, social networks and the relationship between adults and children in a community should be harnessed in communication campaigns.

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1 Introduction

1.1 Background

In 2011, the Water Research Commission commissioned a survey that investigated urban South Africans' perceptions of their drinking water quality and the variables that influence these perceptions. The response was positive: 81% of urban South Africans perceived their drinking water to be safe.

Respondents were less positive about municipal service delivery in general. They scored the quality of municipal services as follows:

Perception of service	Percentage
Very good service [5]	12%
Good service [4]	31.5%
Good and bad service [3]	23.3%
Bad service [2]	24.6%
Very bad service [1]	8.5%
Mean	**3.14**
Standard deviation	**1.17**

This study was aligned with the drinking water perception study of 2011; it tested if perceptions of drinking water quality have changed in the past four years, but the scope of the study was broader. Instead of focusing on drinking water quality only, it investigated the general public's perspective on aspects of water services that have been identified as relevant to investigate.

The results should provide government and municipalities insight into the level of customer satisfaction or dissatisfaction with water services in South Africa, and the drivers of customers' perceptions of the quality of water services.

1.2 Contextualisation

The Strategic Framework for Water Services (2003) defines a basic household water service as 25 litres per person per day (or at least 6000 litres per household per month) and supplied according to the following criteria:

- Minimum flow rate of not less than 10 litres per minute;
- A standpipe within 200 metres of a household;
- Interruptions of less than 48 hours (at any one time) and a cumulative interruption time during the year of less than 15 days; and
- At a potable standard (SANS241).

The Framework also defines a basic sanitation facility and service.

The performance of municipalities in terms of water services is measured and reported by several tools:

- The regulatory tools of the Department of Water and Sanitation, namely the Blue, Green and No Drops;
- Municipal Strategic Self-assessment (MuSSA);
- The Municipal Benchmarking Initiative of SALGA and the WRC.

These tools report the perspective of the regulator or the municipalities themselves.

National feedback on the quality of water services from the perspective of the customer is limited. In 2004/5, DWAF, in collaboration with DiFD, commissioned a study into Water Services Customer Care and Protection. The study included a survey among adult South Africans on their perceptions of the water

services they receive from municipalities. As far as could be established, the survey was never repeated. Other customer satisfaction surveys on water services are usually restricted to specific WSAs or WSPs, such as the Metros of eThekwini and Cape Town.

The performance of municipalities in providing water services has been uneven over the past 20 years.

On the one hand, free basic water and sanitation services have been extended to millions of disadvantaged and poor people. SANS 241 (2011), South Africa's drinking water standards ranks among the best in the world. In 2010, South Africa has introduced a pioneering, incentive-based regulation system for water and wastewater management. Municipalities are independently audited every two years and scored on the Blue Drop, the Green Drop and the newly introduced No Drop. Several success stories of municipalities that have performed consistently well on the Drops and municipalities that have improved dramatically have been documented.

On the other hand, the Blue Drop has also pointed out gaps and challenges in the delivery of a continuous supply of safe drinking water. In metropolitan areas, South African municipalities continue to produce high quality drinking water, but this is not always the case in smaller towns. For example, according to the 2011 Blue Drop Report, 536 of 914 systems (that is 58.7%) got Blue Drop scores of less than 50%.

The reported Blue Drop results and customers' experiences of bad service have contributed to some serious negativity and concerns amongst the public. In the past five years, reports of unrest due to problems with service delivery have become common in the South African media.

> *Few Water Service Authorities practice proper management of their water services infrastructure and as a result there are regular service failures resulting in non-functionality of schemes, customer dissatisfaction, threats to health and financial losses. Deteriorating service caused 71 water-related protests in 2012.* [1]

No figures have recently been attached to the general public's level of satisfaction or dissatisfaction with their local water services.

The study provides therefore a barometer of water services in South Africa from the perspective of the customer.

1.3 Objectives
The study aimed to establish:
1. How South Africans evaluate the quality of water services;
2. The correlation between perception and various realities, such as the source of drinking water, Blue and Green Drop status and trust in the municipality;
3. Influence of demographic and geographic variables on perception of water services;
4. Outliers such as very positive and very negative perceptions; and
5. Drivers of perceptions: media, experience or word of mouth.

1.4 Methodology
A national syndicated survey was used to achieve the aims.

Eleven questions were put on one of the existing syndicated studies that are conducted by the major market research houses. The OMNIBUS survey of Nielsen South Africa was used.

The OMNIBUS survey covers adults, aged 16 years and over, from all race groups. An area-stratified, probability sample of 2513 urban households was drawn from The Nielsen Company's Customized Research computerised dwelling unit census. The sample was 1259 females and 1254 males. In each

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[1] DWA, 2013. Strategic Overview of the water sector in South Africa.

household, the male or female to be interviewed was chosen using a random selection grid. Three calls were made before substituting in an adjacent household with a person of the same sex.

The total coverage represents 92% of the urban adult population of South Africa and 56% of the total adult population. "Urban" is defined as areas of a community size of 8000 and above. This includes cities, large towns and small towns.

A copy of the questionnaire appears in the Appendix. The questionnaire was translated into Afrikaans, Zulu, Xhosa, Tswana, Southern Sotho and Northern Sotho. The questionnaire was piloted and subsequently adjusted and improved.

Personal at-home interviews were conducted in the home language, or preferred language of the respondent. The interviews were conducted using a structured questionnaire on a CAPI (Computer Assisted Personal Interview) machine as well as show cards.

A 20% validation check was done personally or telephonically on the work of each interviewer.

The results have been post weighted to estimated population proportions.

The analysis was done by specified demographic breakdowns:
- Race
- Monthly household income
- Home language
- Gender
- Provinces
- Living Standards Measure (LSM)[2]
- Municipalities where 50 or more interviews were conducted.

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[2] The Living Standards Measure (LSM) has been developed by the South African Advertising Research Foundation. It is a segmentation tool based on access to services and durables as determinants of standard of living. The tool uses 29 variables. These include water in home/on plot, hot running water and a flush toilet. There are 10 LSM groups, 10 being the highest living standard and 1 the lowest.

1.5 The sample

The distribution of the sample (number of respondents) was as follows:

Province								
Western Cape	Eastern Cape	KwaZulu-Natal	Free State	North West	Northern Cape	Mpumalanga	Limpopo	Gauteng
520	205	372	140	106	56	135	48	931

Race			
Black	Coloured	Indian	White
1238	389	155	731

Income			
R14000+	R7000-R13999	R3000-R6999	R1-R2999
715	600	720	478

Age			
15-24	25-34	35-49	50+
303	522	745	943

Living Standard Measure (LSM)			
Group 1-3	Group 4-5	Group 6-7	Group 8-10
14	225	1283	991

Education			
Up to primary complete	Some high school	High school complete	Post grade 12 / University
132	815	1100	466

Metro	Other Urban
1602	911

1.6 Literature review

1.6.1 General perceptions of quality of service

Doria (2010:10) notes that "trust in companies and institutions is often linked to the perception of quality and risk, but the causal order of this relationship is not entirely clear and may vary according to the case". Doria et al. (2005), Mori (2002) and Johnson (2003) found a very weak or no correlation between trust in water suppliers and consumers' risk perception.

Aini et al. (2008) indicated the contrary: Even though water authorities' figures indicate that municipal water is drinkable without treatment, most respondents boil tap water, filter tap water or drink bottled water, which indicates that they do not trust official figures.

1.6.2 Do consumers know how much water they use and what water costs?

A customer satisfaction study of the City of Cape Town (Devnomics, 2013: 37) found that 63.45% of respondents had no idea of the amount of water they use each month. Nearly 30% of respondents said they did not know how much their monthly water and sewerage bill was (Devnomics, 2013:52).

1.6.3 Perceptions of drinking water quality

1.6.3.1 Local studies

Local studies about perceptions of drinking water quality are rare.

In 1998, Rand Water undertook a survey of 597 respondents across all LSM[3] levels in Gauteng to identify individual characteristics and environmental influences underlying water purchase and consumption needs. These included the importance and evaluation of water quality. The Rand Water study found that:

- 90% of households get their water from municipalities by pipe;

- All segments consider water quality important – taste, smell and water clarity were the most important aspects of water quality, with mineral content the least important; and

- All segments report that their water tastes and smells good, has good clarity and comes out of the tap with good pressure. However, the higher LSM groups tended to believe, more than the other groups, that the water quality had deteriorated over the past few years.

Kolanisi (2005) did a Masters Degree on the topic: *A South African study of consumers' perception and household utilization of a rural water service*. The study found that consumers rely on the physical qualities and availability of water when evaluating a water service.

1.6.3.2 International studies

Most first world studies on drinking water perceptions are undertaken by water utilities and explore reasons why consumers prefer bottled water to tap water.

Few studies explore the psychological drivers of perception, safety risk assessment and customer satisfaction with reference to drinking water quality.

Doria (2010) gives an overview of these studies.

Strang (2001: 98) relates consumers' perceptions of water quality to three factors:

a) the sensory qualities of water: flavour, appearance and odour;

b) impressions and interpretations of information from various sources; and

c) the trust relationship with the service provider and regulator.

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[3] The Living Standards Measure (LSM) has been developed by the South African Advertising Research Foundation. It is built around a set of 29 household variables, e.g. sewing machine, flush toilet in/outside house, traditional hut, electric stove. There are 10 LSM groups.

An earlier study by Doria et al. (2005) put forward taste, perceptions of risk, context, colour, odour, familiarity and trust as the drivers of perceptions of water quality.

Other studies (referred to in Doria, 2010) investigated specific factors that influence perceptions. For example, Auslander & Langlois (1993) and AWWA (1993) discuss organoleptics, C.I. Eau (2000) explores the impact of chemicals, such as chlorine, nitrates and sediments, Parkin et al. (2001) explores personal vulnerability and AWWA (1993) explores satisfaction with water utilities and information from the mass media. Auslander & Langlois (1993) looks at the availability of water and Grondin et al. (1996) at the source of the raw water and demographics.

In 2004, Scottish Water commissioned independent research to explore attitudes and perceptions of Scottish Water among consumers.

"Perceived water quality was the key factor that determined whether respondents drank tap water or bottled water. Perceptions of the quality of tap water were seen to vary between location, with some respondents reporting that they were deterred from drinking tap water because of taste, odour or cloudiness. A number of respondents believed that the quality of tap water had deteriorated over time. This belief was underpinned by a perception that more chemicals are added to tap water today and consequently water was not as 'pure' as it used to be".

Researchers found that the relative importance of these factors can vary and change over time. According to Doria (2010), **direct experience is the strongest factor in determining perceptions of drinking water.**

We again used Doria's (2010) framework for the analysis of the findings of this study. Below, the literature relating to each factor is discussed separately.

1.6.3.3 General perception of the safety of drinking water
Doria (2010) notes that surveys undertaken by Grondin et al. (1996), AWWA (1993), C.I. Eau (2000) and CP-LM (2001), generally indicate that most people in countries with a reliable water supply perceive tap water as having a low safety risk.

"Approximately 60-80% of respondents classify it on the top of the rating scales. Even in places with persistent water-treatment deficiencies and microbiological contamination, when consumer notifications are released, the magnitude of perceived risks of tap water is close to the average point of the measurement scale used in the questionnaire (Anadu & Harding, 2000). Perceptions of drinking water safety and risk seem to be consistent and tap water is generally regarded as safe (e.g. AWWA, 1993; DWI, 1998; C.I. Eau, 2000; MORI, 2002).

A recent survey of target markets across the US, as well as a national survey, explores the impact of taste and odour on drinking water perceptions (Mackey, 2010). "Most respondents reported that they felt their tap water was 'safe' (80-87% across the eight populations surveyed) and 'healthy' (63-79%) and were satisfied with its overall quality (66-84%)."

1.6.3.4 The impact of demographic variables
Doria (2010) quotes several international studies which found gender differences in the perception of risks associated with tap water, for instance AWWA (1993); Anadu & Harding (2000) and Griffin & Dunwoody (2000). However, other studies did not find gender differences, such as Griffin et al. (1998) and Johnson (2003).

Aini et al. (2008) evaluated the level of concern, perceived quality, perceived risk, evaluation criteria and preference with respect to tap alternatives in a survey of 500 respondents in Kuala Lumpur, Malaysia. Females rate importance of water quality higher than males, but males perceived, more than females, that heavy metals and pesticide waste held higher risks for the quality of water.

Women generally perceive a higher safety risk than men. Several hypotheses have been put forward to explain this, for example the vulnerability of women, their concern for the health of children, etc.

In another international study, Canter et al. (1993/94) suggested that "culture might influence water perceptions by interfering with several factors, particularly trust in institutions, the way risks are individualised or extrapolated in the community, beliefs in personal immunity, preferences for personal optimism and reactive behaviour". Although "culture" is not unpacked, it could relate to the demographic variables of race, language and religion.

Studies which either found (Grondin et al., 1996), or did not find (Park et al., 2001; Johnson, 2003), that education and income were significant demographic variables for risk perception usually relate their explanations to "better informed" respondents.

According to Doria (2010), the role of age is ambiguous in the broader risk perception literature. Some studies (AWWA, 1993; Park et al., 2001) found that younger respondents are more concerned about the safety of tap water, whereas other studies such as Syme & Williams (1993) found the opposite.

1.6.3.5 Drivers of perceptions about the safety of drinking water
A wide range of factors influence the individual's perception of the safety of drinking water.

Although the general perception may be stable over time, the relative impact of the factors which drive perceptions may change. Doria (2010) reports a study by CI Eau (2002), which found that the relative impact of a factor may vary by as much as 15% over a four-year period.

1.6.3.6 Organoleptics (sensory qualities, for instance appearance, taste and odour)
Doria (2010:2), Warren (1996) and MORI (2002) note that the relative importance attributed to each of the senses varies according to time and culture. In western countries, water taste is usually identified as more important than odour or appearance.

Taste was cited most frequently in Mackey (2010) as the primary reason when consumers reported dissatisfaction with their tap water quality. Taste was also the main reason why people would switch from tap water to bottled water.

Chemicals which have a distinct taste such as chlorine can affect risk perception either way. Doria (2010) says: "Chlorine is sometimes mentioned as a cause of objectionable tastes, but there are also suggestions that subtle tastes may be interpreted as a sign of water safety (Kelly & Pomfret, 1997) ".

Awareness of microbiological contamination is low in the international studies. C.I. Eau (2000) reports a French study in which only 7% of respondents believe that their tap water has microbes and viruses. Doria (2010) also refers to a survey (Mahler et al., 1999) in the United States (Idaho) where less than 5% of respondents considered bacteria as a risk factor in drinking water.

1.6.3.7 Contextual factors
Doria (2010) notes that the public generally has a low awareness of contextual factors, such as environmental factors or the pollution of a water resource. He refers to surveys (Grondin et al., 1996; Oliver, 1999) which found that only half of the respondents could correctly identify their tap water source.

On the other hand, familiarity with contextual factors does influence risk perceptions (Theodori et al., 2009). A study conducted in Texas investigated the treatment and reuse of oil and gas field brine aka 'produced water' (water present in an underground hydrocarbon-bearing formation that is brought to the surface with the crude oil or natural gas) and the general public's knowledge and perception about this possibility. The study found that respondents who are more familiar with desalination technology are more likely than those who are less familiar, to believe that desalinated oil and gas field water could be safely used for selected purposes.

1.6.3.8   Personal experience

Doria (2010:13) notes that of all the factors which drive perceptions about the safety of drinking water, "the influence of direct experience is the strongest".

Strang (2001) notes that prior experience sets a standard for drinking water quality. Qualitative research on water organoleptics suggests that people prefer what they are used to. Therefore, people in areas where the drinking water is naturally brown or yellow or has a distinct taste, might regard the water as safe to drink, whereas newcomers to an area, such as student populations, might have negative perceptions about the safety of the drinking water.

1.6.3.9   Impersonal and interpersonal information

The impersonal impact hypothesis (Tyler, 1980) suggests that information from the mass media influences perceptions at the societal level, but not at the personal level. On the other hand, interpersonal information mostly affects perceptions at the personal level, but not at the societal level.

Water safety issues attract wide media coverage, but international studies have found a weak correlation between publicised drinking water risks in the media and other information campaigns and the individual's personal risk perception (Wahlberg & Sioberg, 2000; Griffin & Dunwoody, 2000 and Park et al., 2001).

On the other hand, interpersonal sources, such as friends and family members have a stronger influence on perceptions about drinking water safety (Park et al., 2001; Doria et al., 2005).

2 Findings

2.1 General perception of drinking water quality

The 2015 study found that 88% of urban South Africans perceive the tap water that the municipality provides to be safe to drink.

In 2011, 81% of urban South Africans perceived their tap water to be safe to drink.
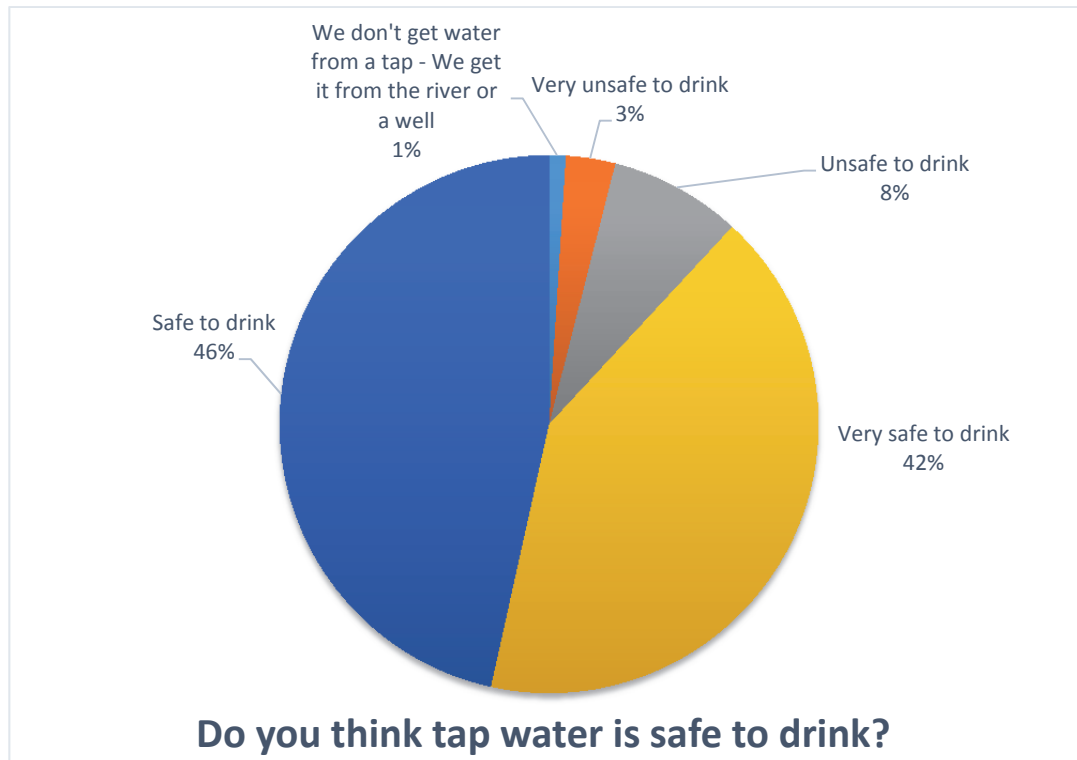
FIGURE 1: GENERAL PERCEPTION OF DRINKING WATER QUALITY

2.2 The impact of demographic variables

2.2.1 Province and community size

Provincial differences were again found in perceptions on drinking water quality.

Mpumalanga (MP) and North West (NW) have the highest perceived risk of tap water. Only 56% of consumers from North West believe that their tap water is safe to drink.

Drinking water quality perceptions per province

Percentage (%)

	WC	LP	GP	KZN	FS	NC	EC	MP	NW
Very safe and safe to drink	98	93	93	91	90	89	82	65	56
Very unsafe and unsafe to drink	2	7	7	5	11	11	18	32	43
We don't get water from a tap	0	0	0	3	0	0	0	2	0
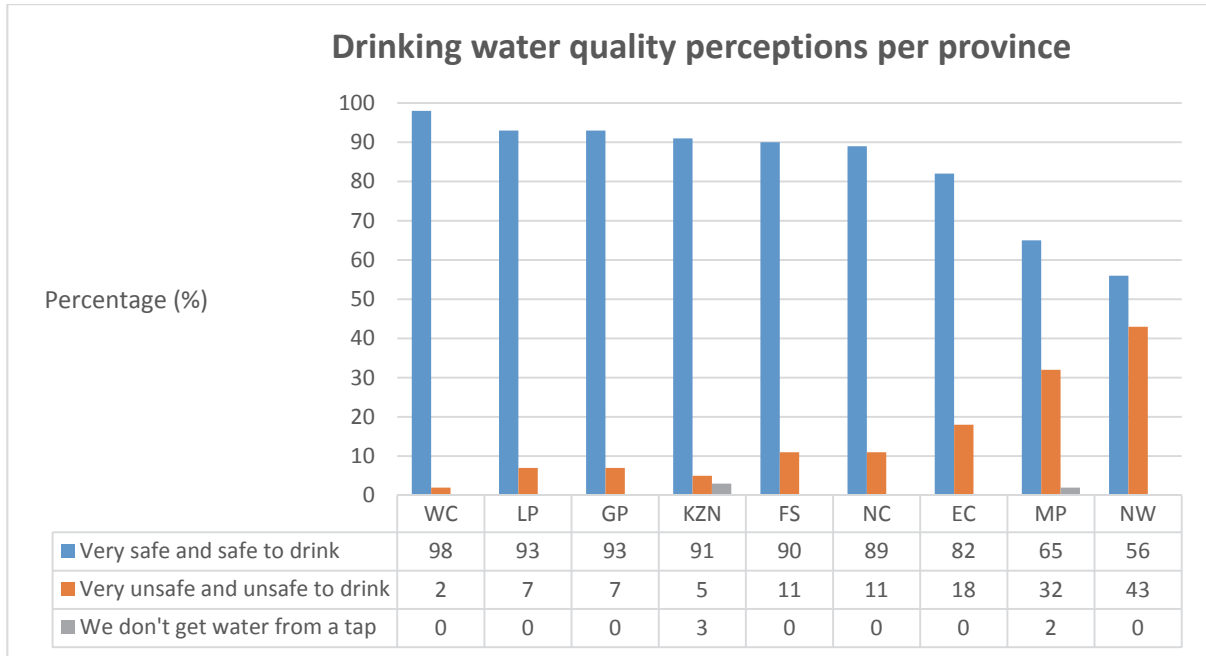
FIGURE 2: PROVINCIAL DIFFERENCES IN PERCEPTIONS THAT TAP WATER IS SAFE TO DRINK

According to Doria (2010), "most people in countries with a reliable water supply perceive tap water as having a low safety risk".

This study found that Mpumalanga and North West, the two provinces with the lowest confidence in drinking water quality, also rated low on a reliable water supply.

How does reliability of supply compare across provinces?

Interruptions less than once a month
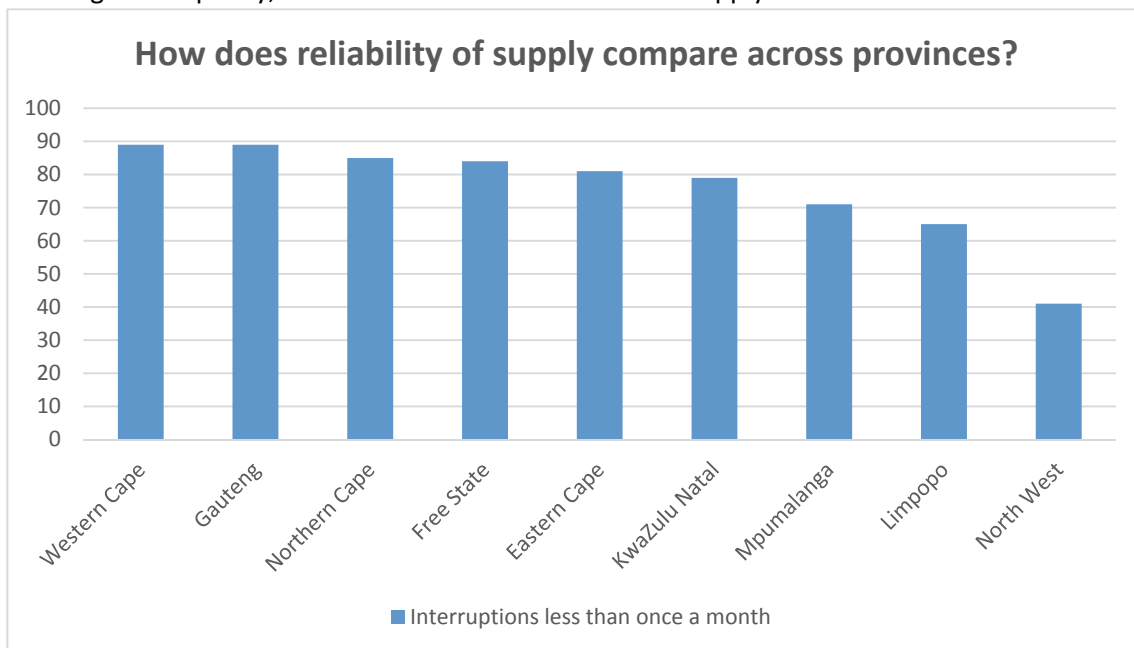
FIGURE 3: RELIABILITY OF SUPPLY PER PROVINCE

2.2.2 Gender

No significant gender differences were found in 2015 in perceptions about the safety to drink tap water. Also, no significant gender differences were found in the reasons for the perception that the tap water is either safe or unsafe to drink.

Nor were there any significant gender differences in behaviour.

Gender differences in behaviour (2015)

	I don't drink water on its own, only drink coffee, tea or cool drink	I only drink tap water and do not boil, filter or clean it first	I only drink tap water, but boil, filter or clean it first	I sometimes drink tap water and sometimes bottled water (that is bought)	I only drink bottled water (that is bought)
Male	4	68	9	15	4
Female	4	67	9	15	4
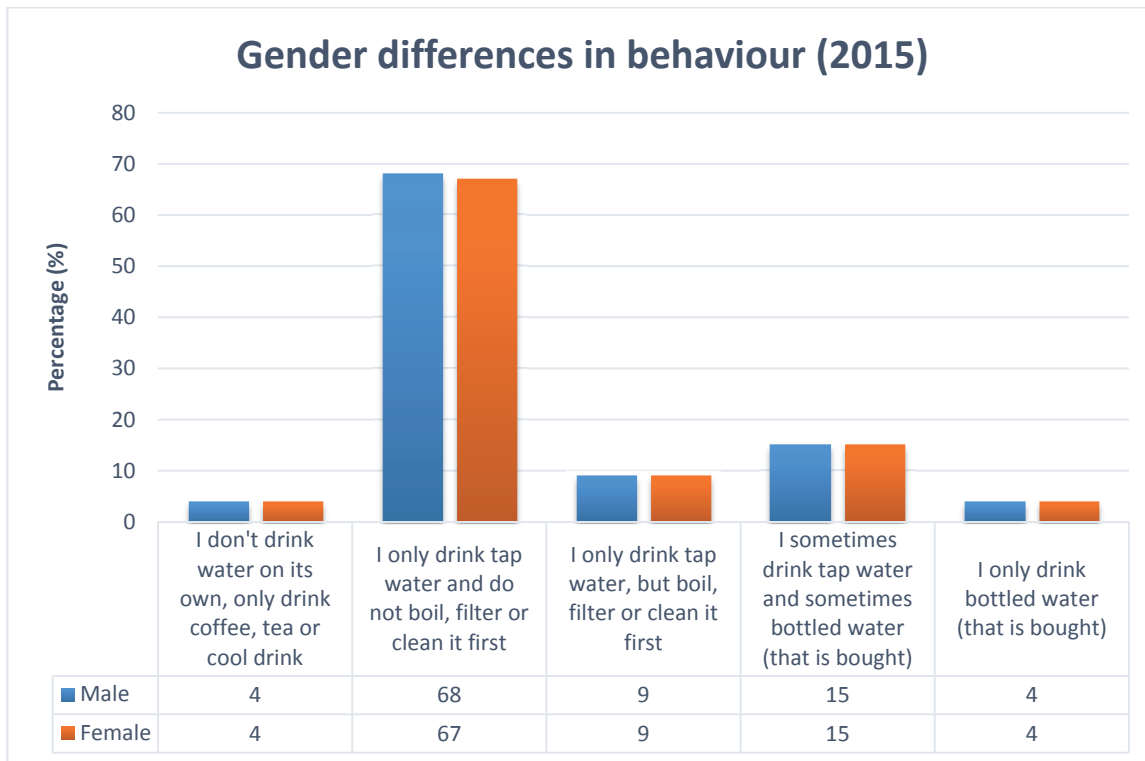
FIGURE 4: GENDER DIFFERENCES IN DRINKING WATER BEHAVIOUR

2.2.3 Age

The younger age categories (16-34) were found to be more positive about the safety of drinking water than the older age category (50+).

➢ 15% in the age group of 50+ perceive tap water to be unsafe to drink; and

➢ Only 9% in the age group of 16-34 have the same perception.

11

2.2.4 Municipality (comparison between 2015 and 2011)

Differences between Metros and other municipalities decreased between 2011 and 2015. Overall, the perceived safety risk to drink tap water lowered.

2011 Perception of safety to drink tap water

	Metro	Other Urban
■ Very safe and safe to drink	87.1	72.2
■ Very unsafe and unsafe to drink	12.2	26.5

2015 Perception of safety to drink tap water

	Metro	Other Urban
■ Very safe and safe to drink	93	82
■ Very unsafe and unsafe todrink	6	17
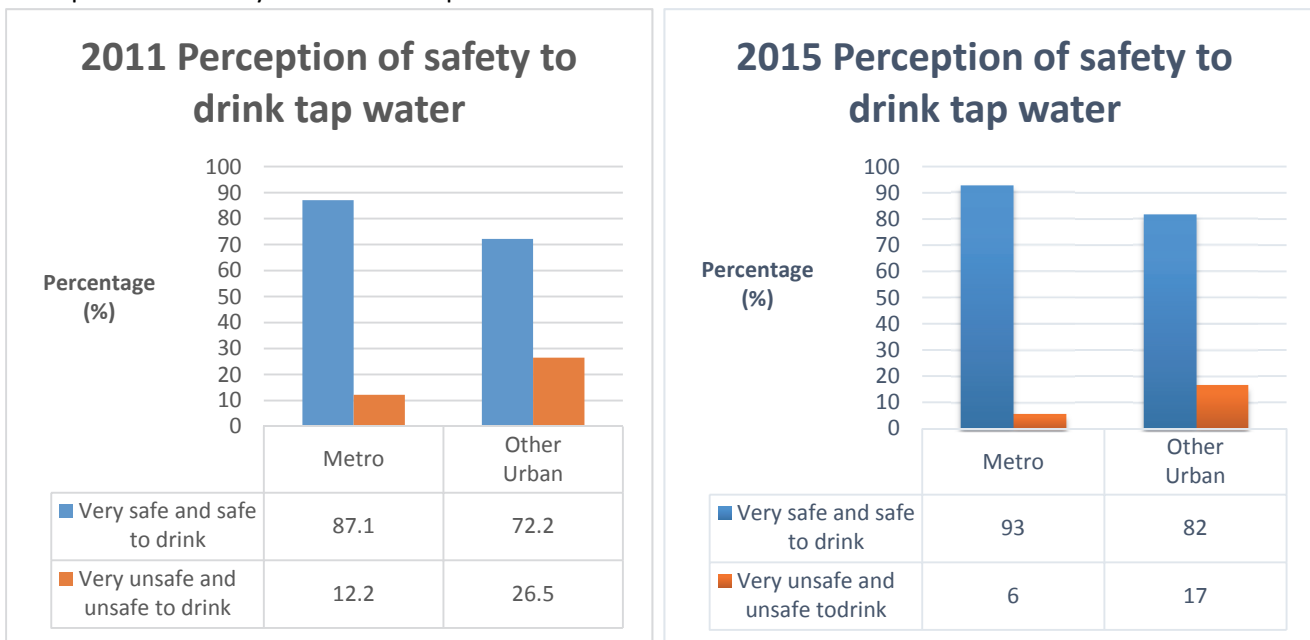
FIGURE 5: COMPARISON OF RISK PERCEPTIONS OF THE SAFETY OF DRINKING WATER IN 2011 AND 2015

The figure below ranks the composite scores of "safe to drink" versus "unsafe to drink" for eight Metros. The gap between the highest perceived risk and the lowest perceived risk narrowed from 25% in 2011 to 16% in 2015.

Perception of drinking water quality – Metros

	City of Cape Town	eThekwini	City of Jhb	Mangaung	City of Tshwane	Ekhurhu-leni	Buffalo City	Nelson Mandela Bay
■ Safe to drink	98	97	94	93	92	91	83	82
■ Unsafe to drink	2	3	6	7	8	9	17	18
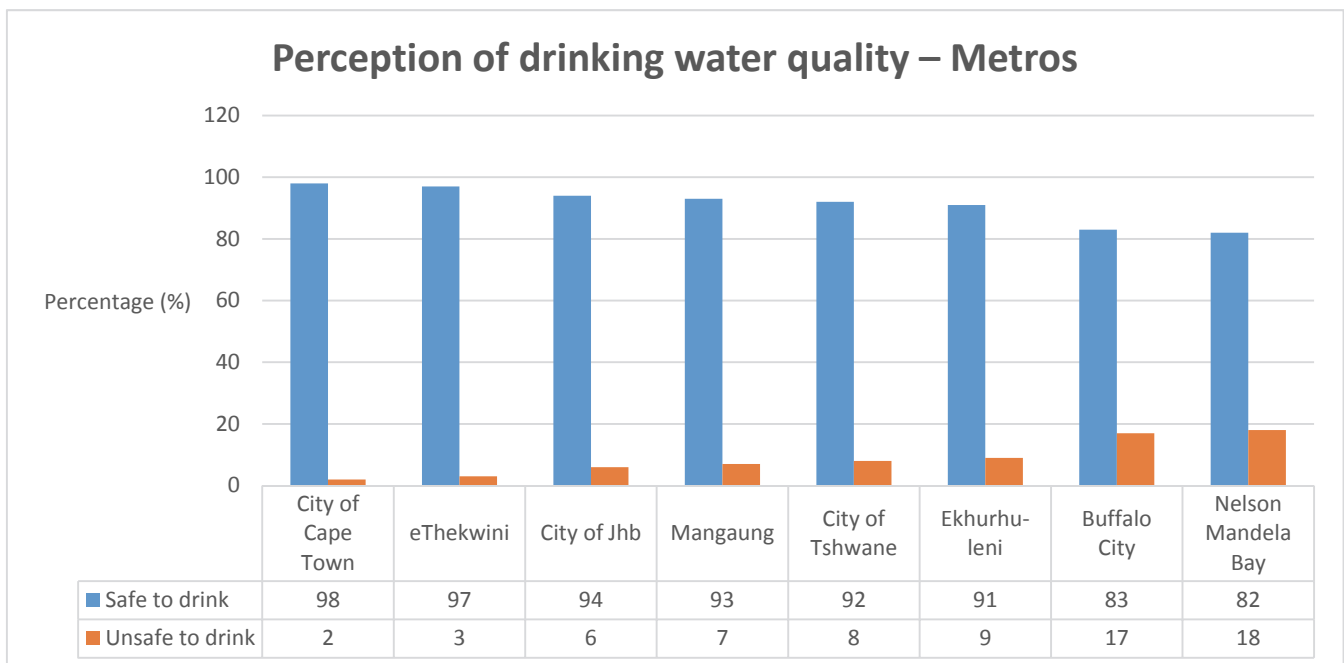
FIGURE 6: RISK PERCEPTIONS ACCORDING TO METROS

The figure below gives the perception of the safety of drinking water in smaller municipalities or non-metros. Please note that the sample only covered the urban areas or towns of these municipalities. The Limpopo sample was small (48 respondents) and further research would be needed to confirm the result for this province.

12

2015 Perception of drinking water quality in smaller towns

	WC Other	LP Other	GP Other	NC Other	FS Other	KZN Other	EC Other	MP Other	NW Other
■ Safe to drink (total)	96	93	92	89	88	83	82	65	56
■ Unsafe to drink (total)	3	7	8	11	13	9	18	32	43
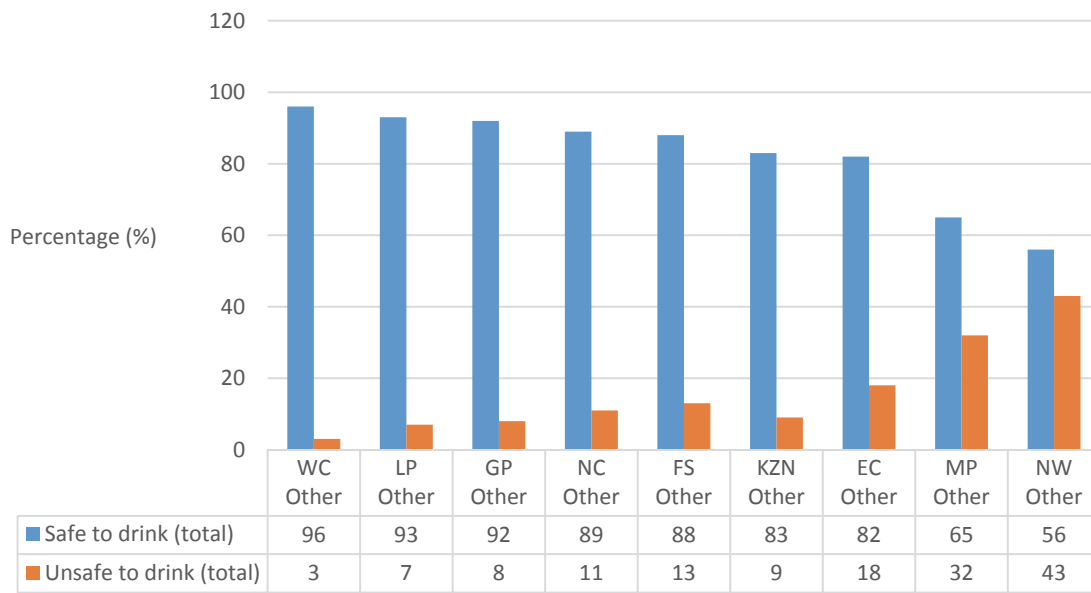
FIGURE 7: RISK PERCEPTIONS ACCORDING TO SMALLER TOWNS

In Mpumalanga and KwaZulu-Natal, 3% and 8% respectively, do not get water from a tap. This explains why the percentages for these two provinces do not add up to 100%.

In 2011, the pattern was the same, although the position of some provinces changed.

2011 Perception of drinking water quality in smaller towns

	GP Other	KZN Other	WC Other	LP Other	NC Other	NW Other	EC Other	FS Other	MP Other
■ Safe to drink (total)	88	80	78	78	73	68	67	63	49
■ Unsafe to drink (total)	12	16	20	22	25	33	28	37	51

FIGURE 8: PERCEPTION OF DRINKING WATER QUALITY IN SMALLER MUNICIPALITIES PER PROVINCE – URBAN AREAS ONLY

Although the sample sizes are relatively small in comparison with the Metros, the result confirms that consumers in smaller municipalities are less confident about the safety of their drinking water than consumers in the Metro municipalities.

2.3 Drivers of risk perceptions

Respondents' perception of drinking water quality was further explored with a follow up question about the reasons for their perception. No show card was used; answers were coded and respondents could give multiple answers.

The table below compares the main drivers of the perception that tap water is safe to drink with the main drivers of the perception that tap water is unsafe to drink.

The results confirm international findings as cited in Doria (2010:14) that the public's perception of drinking water quality is "based on a combination of multiple factors".

TABLE 1: MAIN DRIVERS OF PERCEPTIONS – 2015

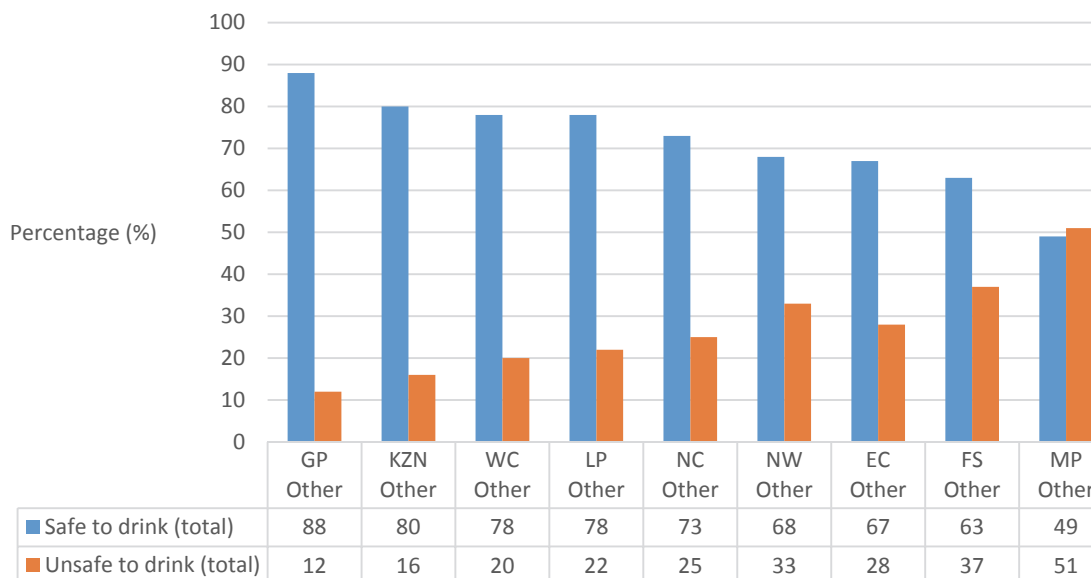| Tap water is safe to drink because…		Tap water is unsafe to drink, because…	
The water looks clean	66%	The water looks dirty	55%
Nobody gets sick	60%	The water tastes bad	46%
The water tastes good	47%	The water smells bad	29%
The municipality cleans the water	32%	People say the water is unsafe to drink	26%
The water smells good	26%	Some people got sick from the water	24%
People say the water is safe to drink	17%	The water smells of chlorine	17%
The municipality tests the water to see if it is safe to drink	13%	The municipality does not clean the water	11%
The water smells of chlorine	12%	The municipality does not test the water to see if it is safe to drink	9%
I heard in the media (radio, TV, newspaper) that the water is safe to drink	4%	The municipality told us that the water is unsafe to drink	4%
Our municipality has a Blue Drop	2%	I heard in the media (radio, TV, newspaper) that the water is unsafe to drink	4%
		The tap is communal OR the tap is on the street	3%
		The river or dam where we get our water from is dirty and polluted	2%
		Our municipality does not have a Blue Drop	2%

The figures below compare the relative impact of these factors.
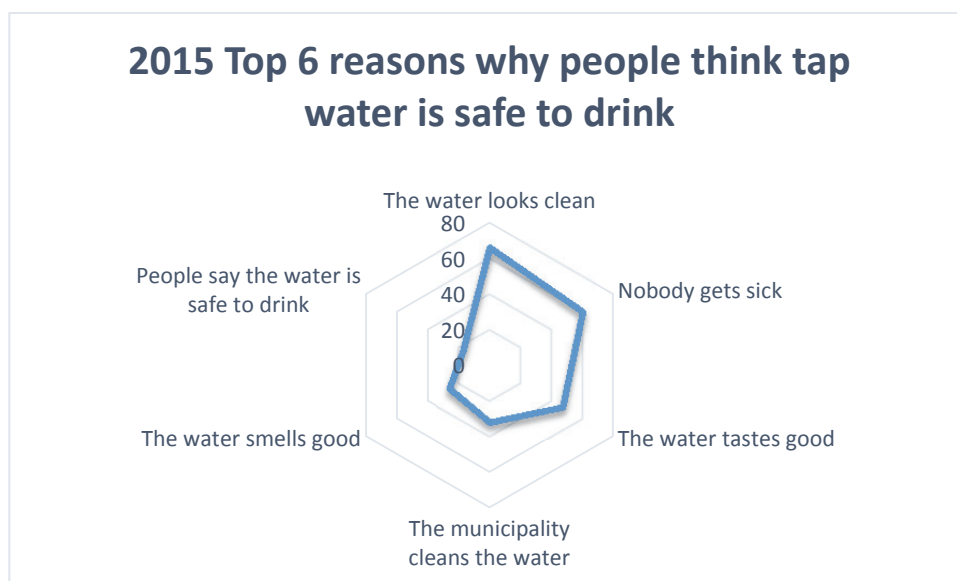
FIGURE 9: TOP 6 REASONS WHY PEOPLE THINK TAP WATER IS SAFE TO DRINK

2015 Top 6 reasons why people think tap water is unsafe to drink
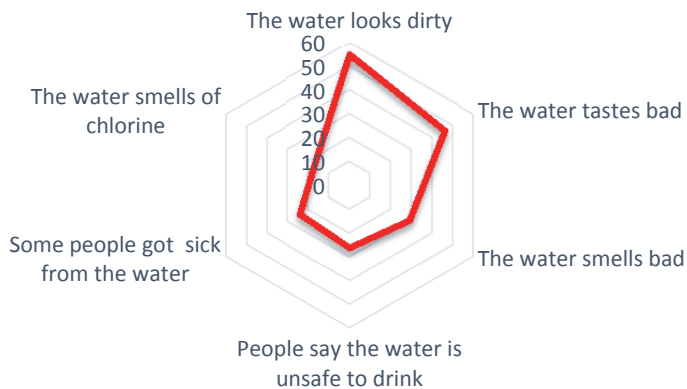
FIGURE 10: TOP 6 REASONS WHY PEOPLE THINK TAP WATER IS UNSAFE TO DRINK

We will now compare each group of factors with the findings of international studies discussed above.

2.3.1 Organoleptics (the sensory experience of water) 2015

The 2015 results are similar to the 2011 study: South Africans' risk perception of the safety of tap water is mainly guided by the appearance of the water. Taste is in the second place and odour in the third place as sensory drivers of perceptions about the safety of tap water.

This differs from the international results discussed above, which found taste to be main indicator that tap water is safe to drink.

No significant race, gender or age differences were found for the contribution of organoleptics to the perception of drinking water quality.

However, the reasons provided by consumers of the eight metros for their perception that tap water is safe or unsafe to drink differed significantly in a number of respects, as the table below illustrates.

The major drivers are however the same. Further research is needed in order to explain the reasons for these profile differences. The variability of the relative impact or the major factors found in international studies could have attributed to this result.

TABLE 2: THE RELATIVE WEIGHT OF DIFFERENT DRIVERS OF PERCEPTIONS ABOUT SAFE DRINKING WATER – PER METRO

	Total	Buffalo City	City of CPT	City of JHB	City of Tshwane	Ekur-huleni	eThe-kwini	Man-gaung	Nelson Mandela Bay
The water looks clean	66	67	69	66	71	58	70	57	52
Nobody gets sick	60	72	69	61	69	52	50	71	46
The water tastes good	47	21	52	46	61	44	47	30	31
The municipality cleans the water	32	18	43	27	35	37	38	36	20
The water smells good	26	11	40	24	43	21	21	7	13
People say the water is safe to drink	17	3	30	14	13	18	18	4	12
The municipality tests the water to see if it is safe to drink	13	9	27	11	9	7	16	12	6
The water smells of chlorine	12	8	18	14	15	12	12	0	3
I heard in the media (radio, TV, newspaper) that the water is safe to drink	4	4	10	4	5	2	7	0	10
Our municipality has a Blue Drop	2	0	4	3	0	4	2	0	0

2.3.2 The impact of chlorine on perceptions

Perceptions about chlorine in drinking water were similar to those found in the 2011 study. The smell of chlorine in tap water could either induce a positive perception that the water is safe to drink (12%) or a negative perception that it is unsafe to drink (17%). However, water which smells of chlorine is more likely to be perceived as rendering water unsafe to drink.

2.3.3 Confidence in the municipality

Respondents rely heavily on their municipalities to treat their drinking water and to test that it is safe to drink.

2.3.4 Prior experience

The study confirmed again that personal experience of people getting ill is a major driver of perceptions of water safety. 60% of urban consumers are positive that tap water is safe to drink because ''nobody got sick''.

2.3.5 Impersonal and interpersonal information 2015

TABLE 3: THE IMPACT OF IMPERSONAL AND INTERPERSONAL INFORMATION ON RISK PERCEPTION

Drivers of perception that water is safe to drink	Percentage	Perceptions that tap water is unsafe to drink	Percentage
The impact of information from a source which is impersonal			
Our municipality has a Blue Drop	2%	The municipality told us that the water is unsafe to drink.	4%
I heard in the media (radio, TV, newspaper) that the water is safe to drink.	4%	I heard in the media (radio, TV, newspaper) that the water is unsafe to drink	4%
The impact of information from family or friends			
People told me the water is safe to drink	17%	People told me the water is unsafe to drink	26%
The impact of the municipality			
The municipality cleans the water	32%	The municipality does not clean the water	11%
The municipality tests the water to see if it is safe to drink	17%	The municipality does not test the water to see if it is safe to drink	9%
The impact of the smell of chlorine			
The water smells of chlorine	12%	The water smells of chlorine	17%

The Blue Drop status of Metros remains very low on the list of drivers of perceptions. Only 2% of consumers gave "Our municipality has a Blue Drop" as a reason for their perception that tap water is safe to drink. This finding has major implications for municipal communication.

International studies found that media reporting has very little impact on the individual's risk perception of drinking water safety. In this study as well, a very small percentage (4%) said that their perception that tap water is safe or unsafe to drink is determined by what they have heard in the media. Doria (2010:14) points out that, although the influence of media reports on perception might be statistically weak, a negative media report on water quality in a large Metro impacting on 4% of a population of 1 million adults, could flood the municipality's call centre with calls by concerned consumers.

2.4 Tap water versus bottled water

Reported drinking water behaviour seems to be a combination of perceptions of drinking water quality and affluence. The less confident people are about how safe it is to drink their tap water, the more likely are they to boil or filter tap water or to use bottled water if they could afford it. In North West, where 55% of consumers are confident that tap water is safe to drink, only 56% of consumers drink tap water straight from the tap.

Drinking water behaviour according to province

Legend:
- I don't drink water on its own, only drink coffee, tea or cool drink
- I only drink tap water and do not boil, filter or clean it first
- I only drink tap water, but boil, filter or clean it first
- I sometimes drink tap water and sometimes bottled water (that is bought)
- I only drink bottled water (that is bought)
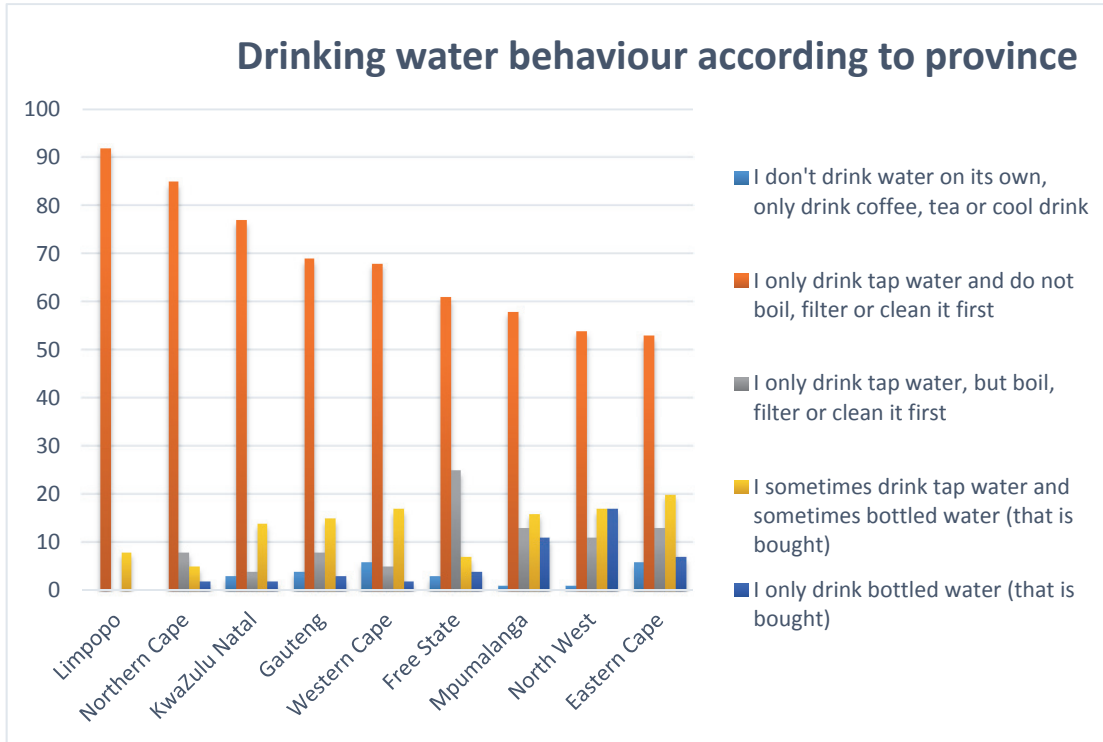
FIGURE 11: DRINKING WATER BEHAVIOUR ACCORDING TO PROVINCE

On the other hand, consumers in the higher LSM groups and with high incomes seem to be buying bottled water irrespective of their perception of the drinking water quality of tap water. 98% of City of Cape Town's consumers are confident that tap water is safe to drink, but only 67% drink water straight from the tap. 7% say that they never drink water; they only drink coffee, tea cool drink – or wine!
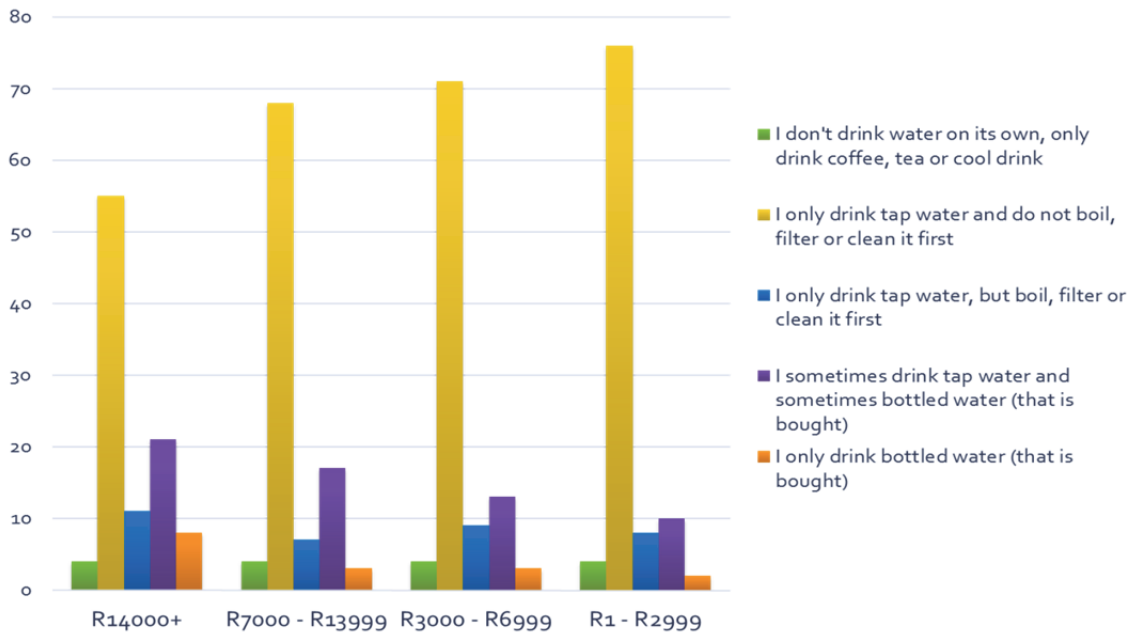
Drinking water behaviour according to income level

FIGURE 12: DRINKING WATER BEHAVIOUR ACCORDING TO INCOME LEVEL

2.5 Perceptions about the quality of water and sanitation services

2.5.1 Covering a broad range of service aspects

In addition to the drinking water perception question, the 2015 questionnaire added 13 questions[4] in which respondents could rate the quality of water and sanitation service that they receive. The questions referred to both the process and the output of service.

The questions can be categorised into two groups: general service perceptions and specific service aspects. Within the specific service aspects, there are four sub-groups: reliability of service, maintenance, clear and accurate billing and customer service.

2. Three general questions about perception of service were asked:
   - How would you describe the municipality's water and sanitation service (anything that has to do with water, toilets and sewage) in the area where you live?
   - Do you think your municipality is competent to deliver a good water and sanitation service?
   - Do you think your municipality will be able to deal with water scarcity in the event of a drought?
3. Water and sanitation services were split up into different aspects. Questions were asked on each aspect. For questions b-d, the respondent could answer ''not applicable'' or "don't know'' if they had no experience of this aspect of the municipality's service.
   a. Reliability of service (interruptions and water pressure)
      - Does the municipality maintain or keep a strong water pressure in the tap(s)?
      - How often do you experience water interruptions?
   b. Maintenance
      - Does the municipality repair leaking or broken water or sewage pipes in the street within 1 to 2 days?

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[4] Ten of these were linked to the same rating scale in a single question on the syndicated study.

- Does the municipality clean up sewage spills within 1 to 2 days?
- Does the municipality empty full pit latrines regularly?
- Does the municipality repair broken water meters?
    c. Clear and accurate billing
- Does the municipality read water meters every month?
- Does the municipality send out clear and accurate bills?
    d. Customer service
- Does the municipality answer the phone and emails?
- Does the municipality respond to complaints and queries about water or sanitation?
- Does the municipality solve water and sanitation issues in the community?

2.5.2 General questions

2.5.2.1 How would you describe the municipality's water and sanitation service (anything that has to do with water, toilets and sewage) in the area where you live?

This is the same question as was asked in 2011. In 2011, many respondents related their answer to non-water aspects, such as rubbish removal. This round, the fieldworkers were asked to make sure that respondents refer to water services only.
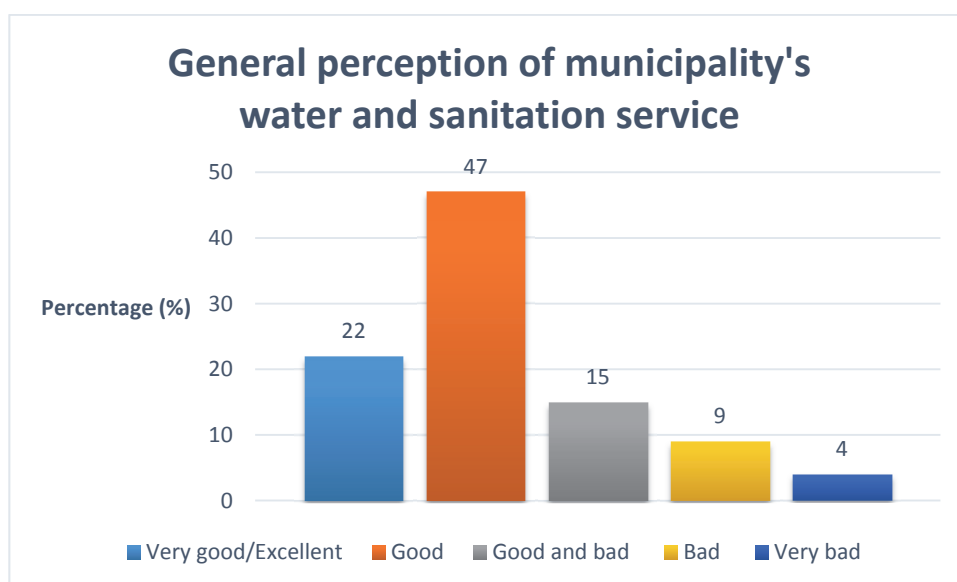
FIGURE 13: GENERAL PERCEPTIONS OF THE MUNICIPALITY'S WATER AND SANITATION SERVICE

This question was asked directly after the drinking water quality questions. It was expected therefore that answers would relate to perceptions about drinking water quality. This was evident from the reasons that respondents gave for their answers in an open question.

Reasons why you say that the service is good:

Water is Clean	21%
Tastes Good	3%
Water is Always Available	4%
Water is Safe to drink	4%

Doria (2010:11) cites several studies, for instance Jordan & Elnagheeb (1993) and Contu et al. (2004) which found that the perceived control influenced perception. For example, consumers are more likely to perceive tap water from a public supplier as unsafe than their own borehole water. Doria (2010:11) concludes that "there are some suggestions that good communication with water companies is interpreted by consumers as a form of control".

It is therefore interesting that response time, which reflects the quality of communication between the consumer and the municipality, is an important indicator of the general perception of quality of service.

2.5.2.2 Is your municipality competent to deliver a good water and sanitation service?

In the second general question, respondents could evaluate the competency of their municipality to deliver a quality service. The result is very similar to the first general question about service quality. 72% of urban consumers believe that their municipality is competent to deliver a good water and sanitation service in normal circumstances.
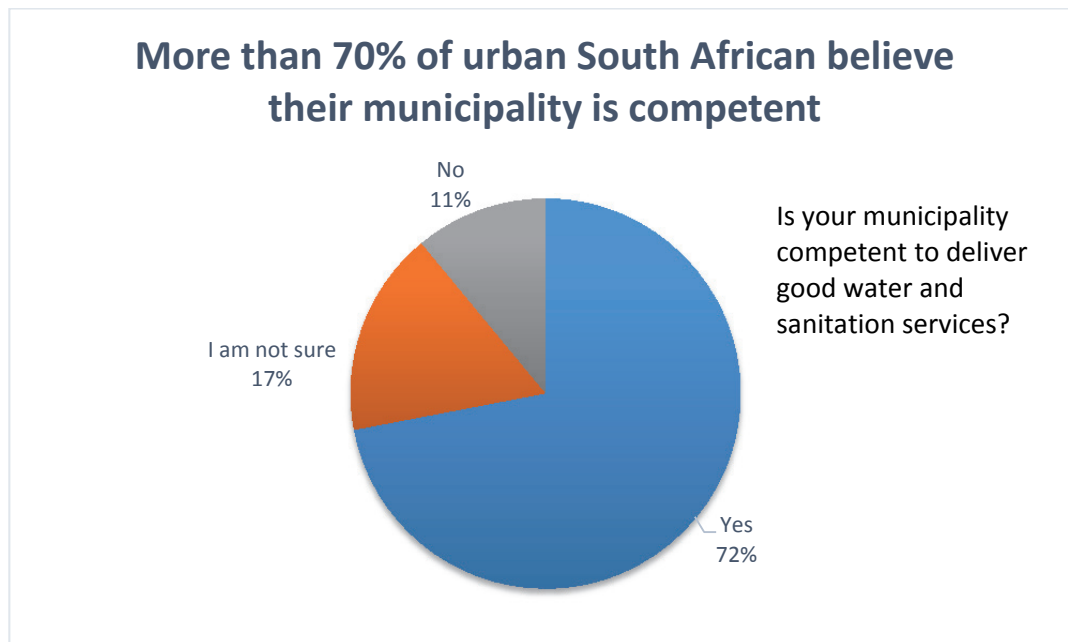
FIGURE 14: COMPETENCE TO DELIVER A GOOD WATER AND SANITATION SERVICE

2.5.2.3 Will your municipality be able to deal with water scarcity in the event of a drought?

They are less confident about their municipality's ability to deal with extraordinary circumstances.

> 57% believe that their municipality is competent to deal with water scarcity in the event of a drought.

Respondents were less confident about their municipality's ability to deal with water scarcity in the event of a drought. The survey was done in September 2015, before the drought hit the country.

Less than 60% of urban South Africans believe that their municipality is competent to deal with a drought

Is your municipality competent to deal with water scarcity in the event of a drought?

No 13%

I am not sure 30%

Yes 57%
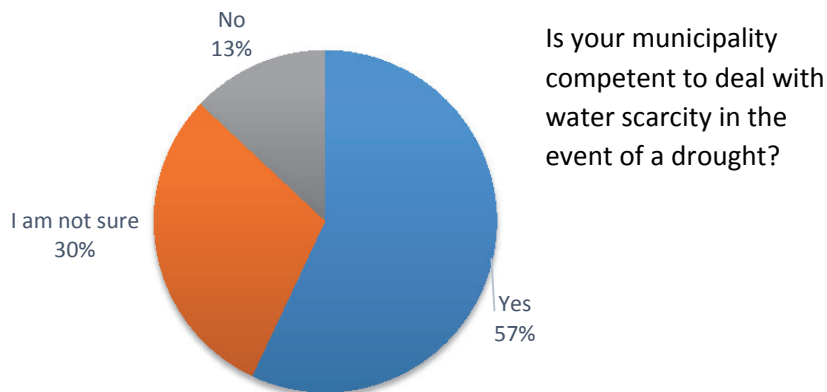
FIGURE 15: WILL YOUR MUNICIPALITY BE ABLE TO DEAL WITH WATER SCARCITY IN THE EVENT OF A DROUGHT?

2.6 Service quality perception tool

The answers to each of the 14 service quality questions were given a rating between 1 and 4.

The following formula was used to subsequently calculate a service perception index score out of 10:

[SCORE – NOT NA/(NOT NA X 4) – (NOT NA)] X INDEX MAX

NOT NA (not applicable) = the number of rating questions that the respondent answered with a rateable answer. For example, there are 14 rating questions. If the respondent answered 3 of these with NA, NOT NA = 11.

The service quality perception tool calculates a composite score of respondents' perceptions across a range of aspects of municipal water and sanitation service. In view of the findings of the international studies, it is probably an accurate indicator of consumers' perceptions as it combines general perceptions and specific experiences. It also takes into consideration the fact that not all consumers experience all aspects of a municipality's water and sanitation service. Some consumers have never contacted the municipality; some consumers do not have a water meter; some consumers do not have on-site sanitation.

2.6.1 Interpretation of the service quality scores

The index scores were interpreted as follows:

- 9-10 = outstanding;
- 7-9 = very good;
- 6-7 = good;
- 5-6 = adequate;
- less than 5 = disappointing/requires urgent improvement.

2.6.2 How do urban South Africans rate the water and sanitation service that their municipalities deliver?

The service quality index score for the total urban population was 6,34 out of a possible 10.

2.6.3 Distribution of scores

The distribution is a normal curve that peaks around 7 out of 10.

Distribution of service quality index

	'0	'1	'2	'3	'4	'5	'6	'7	'8	'9	'10
Perception index (out of 10)	1	2	4	6	7	12	15	19	18	12	5

% of the urban population (y-axis: 0, 5, 10, 15, 20)
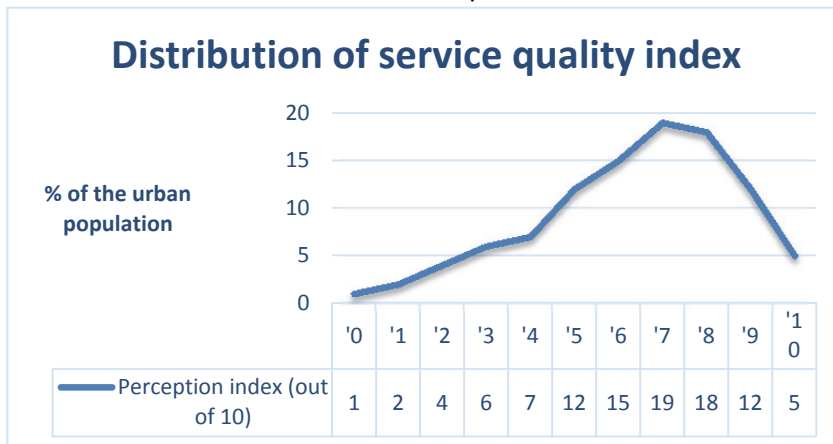
FIGURE 16: DISTRIBUTION CURVE OF SERVICE QUALITY INDEX

In the subsections below we will illustrate how the service quality index is influenced by various demographic and other variables.

2.6.4 Gender

Gender differences were negligible.

Service quality index according to gender

	Male	Female
Perception index (out of 10)	6.36	6.33

Perception index (y-axis: 6, 6.1, 6.2, 6.3, 6.4, 6.5)
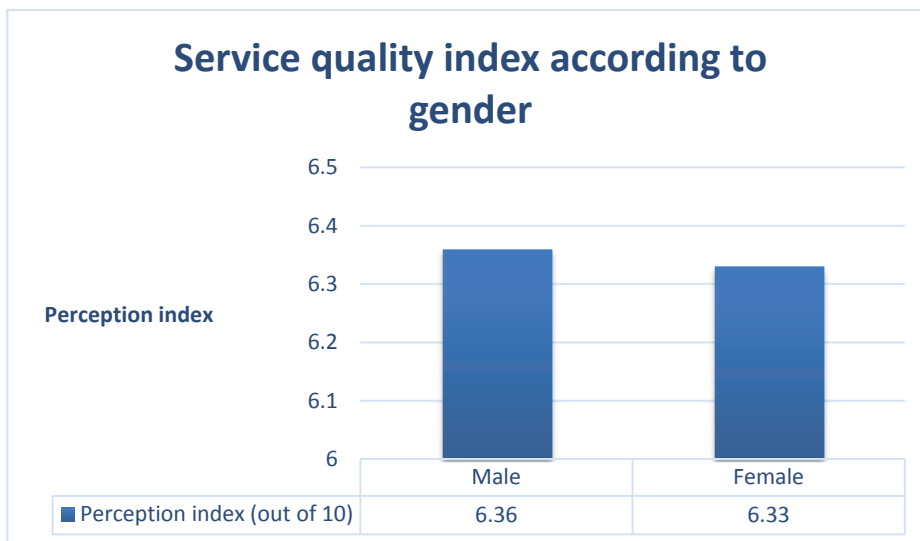
FIGURE 17: SERVICE QUALITY INDEX ACCORDING TO GENDER

2.6.5 LSM

Consumers in the higher LSM groups are more positive about their municipality's service than consumers in the lower LSMs. Note: the sample size for LSM Group 1-3 was too small for a reliable result.

Service quality index according to LSMs

	Group 1-3	Group 4-5	Group 6-7	Group 8-10
Perception index (out of 10)	4.35	5.34	6.28	6.93
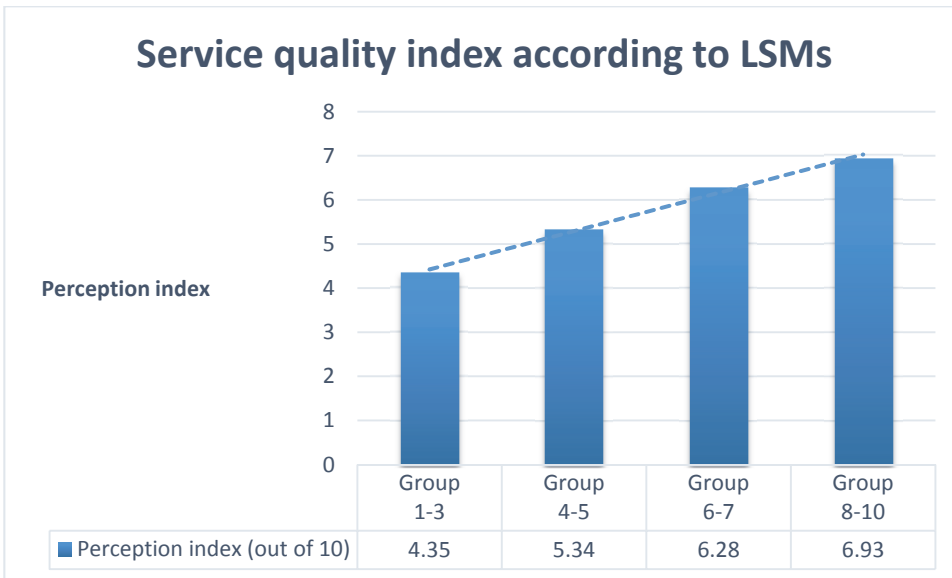
FIGURE 18: SERVICE QUALITY INDEX ACCORDING TO LSM GROUP

2.6.6 Income

The findings for LSM groups correlate with income: the higher income groups are more positive about their municipal service than lower income groups. Higher LSM and income groups experience a better service from their municipalities than lower LSM and income groups.

Service quality index according to household income

	R14000 +	R7000 - R13999	R3000 - R6999	R1 - R2999
Perception index (out of 10)	6.92	6.59	6.1	5.86
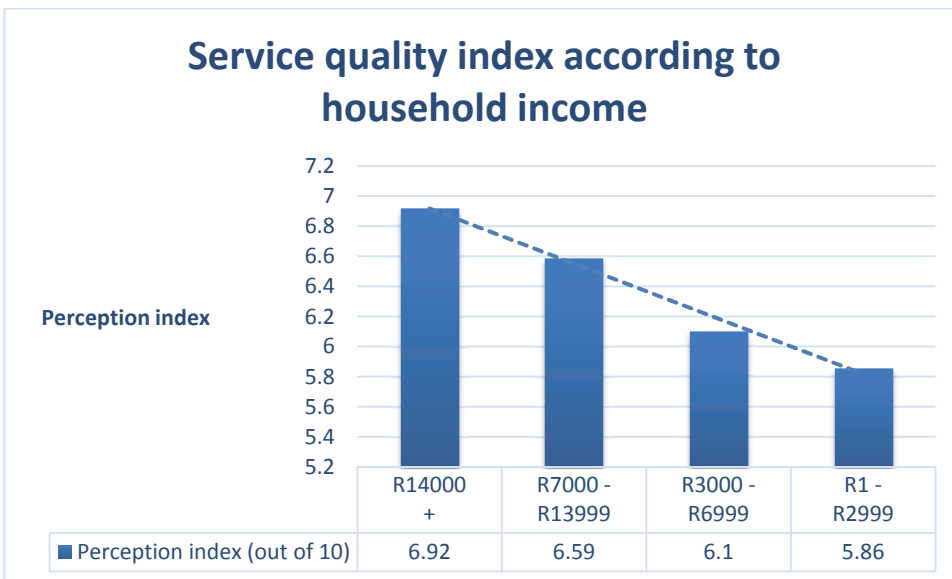
FIGURE 19: SERVICE QUALITY INDEX ACCORDING TO HOUSEHOLD INCOME

2.6.7 Age

The age group 35-49 has the most negative perception of their municipality's service whereas consumers older than 50 have the most positive perception.

Service quality index according to age

	15-24	25-34	35-49	50+
■ Perception index (out of 10)	6.34	6.32	6.28	6.43
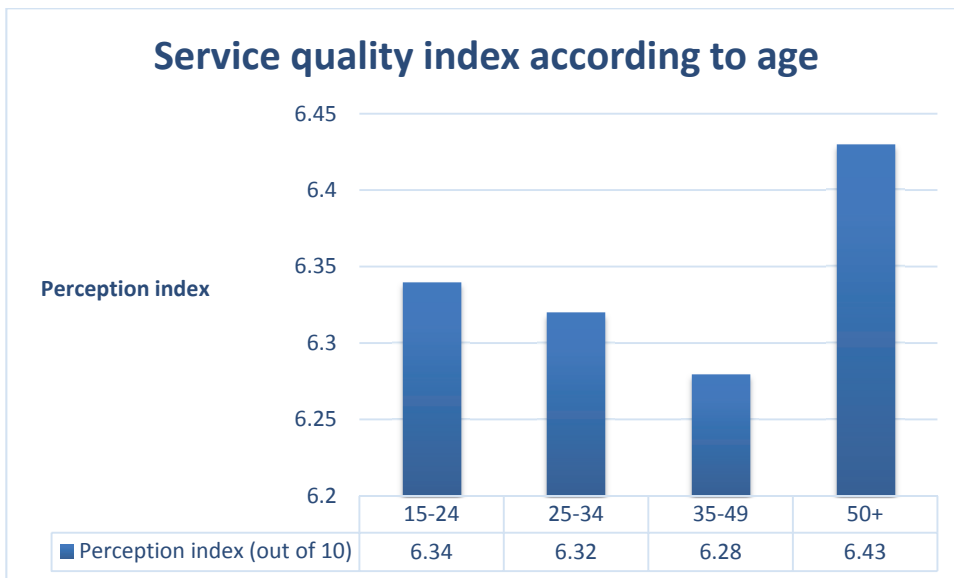
FIGURE 20: SERVICE QUALITY INDEX ACCORDING TO AGE

2.6.8 Community size

Consumers in metropolitan areas are more positive about their municipality's quality of service than consumers in smaller towns.

Service quality index according to community size

	Metro	Other Urban
■ Perception index (out of 10)	6.59	5.93
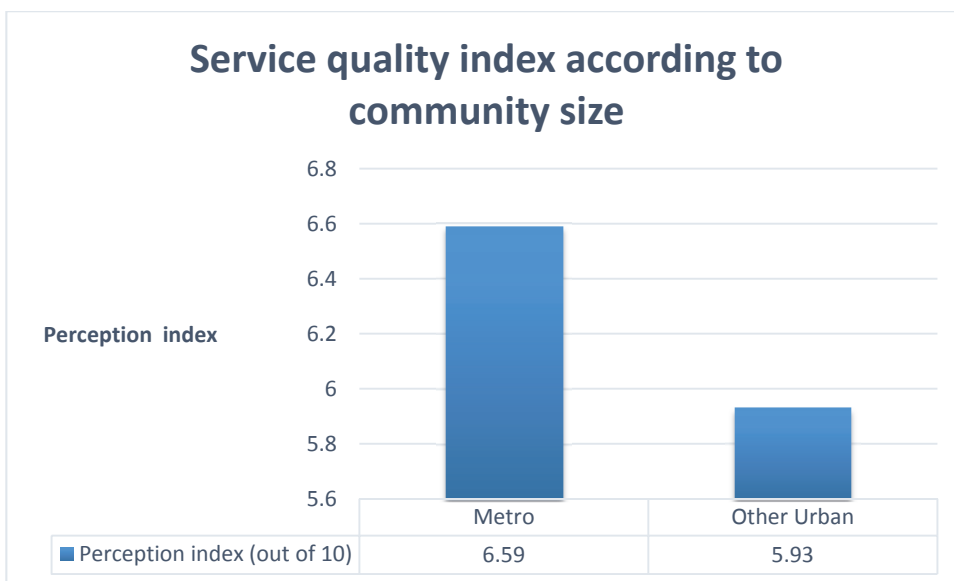
FIGURE 21: SERVICE QUALITY INDEX ACCORDING TO COMMUNITY SIZE

2.6.9 Province

Consumers in Gauteng and the Western Cape have the most positive perception of the water and sanitation service that their municipalities deliver. Consumers in Mpumalanga, the Eastern Cape and North West have the most negative perception.

Service quality index according to province

	GP	WC	NC	LP	FS	KZN	MP	EC	NW
Perception index (out of 10)	6.65	6.58	6.5	6.46	6.31	6.3	5.89	5.6	4.93
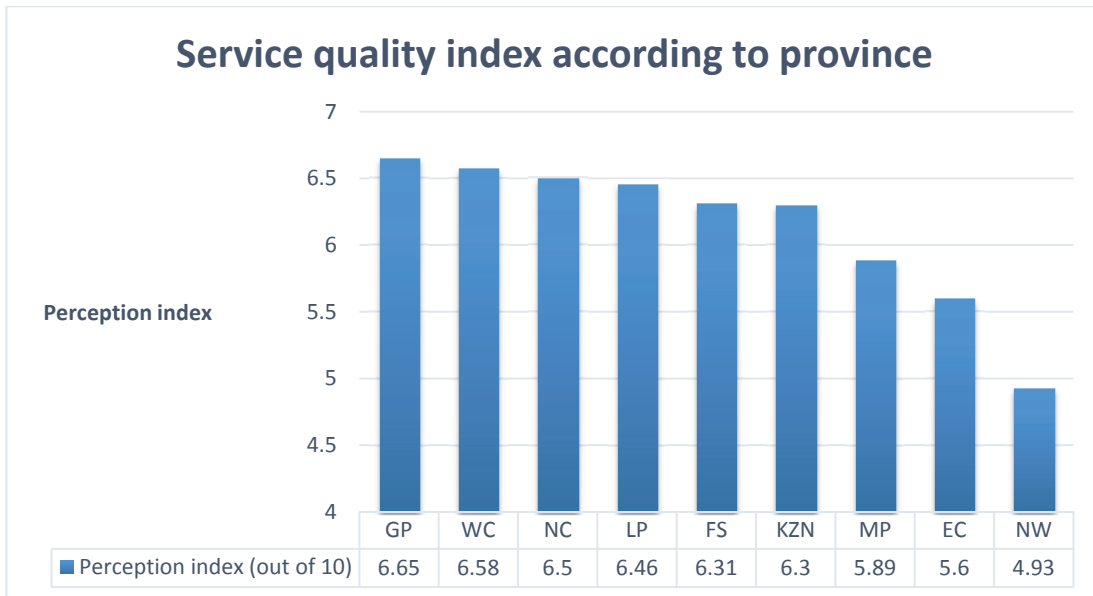
FIGURE 22: SERVICE QUALITY INDEX ACCORDING TO PROVINCE

2.6.10 Metros versus smaller towns

Consumers in metropolitan areas (index score = 6,59) are more positive about their municipality's quality of service than consumers in smaller cities and towns (index score – 5,93).

For the Metros, the service quality scores are as follows:

|	
City of Cape Town	7,01
City of Tshwane	6,97
City of Johannesburg	6,77
Mangaung	6,62
EThekwini	6,53
Ekurhuleni	6,41
Nelson Mandela Bay	5,83
Buffalo City	5,6

Service quality index according to Metros

	City of Cape Town	City of Tshwane	City of Jhb	Man-gaung	eThe-kwini	Ekhurhu-leni	Nelson Mandela Bay	Buffalo City
Perception index (out of 10)	7.01	6.97	6.77	6.62	6.53	6.41	5.83	5.6
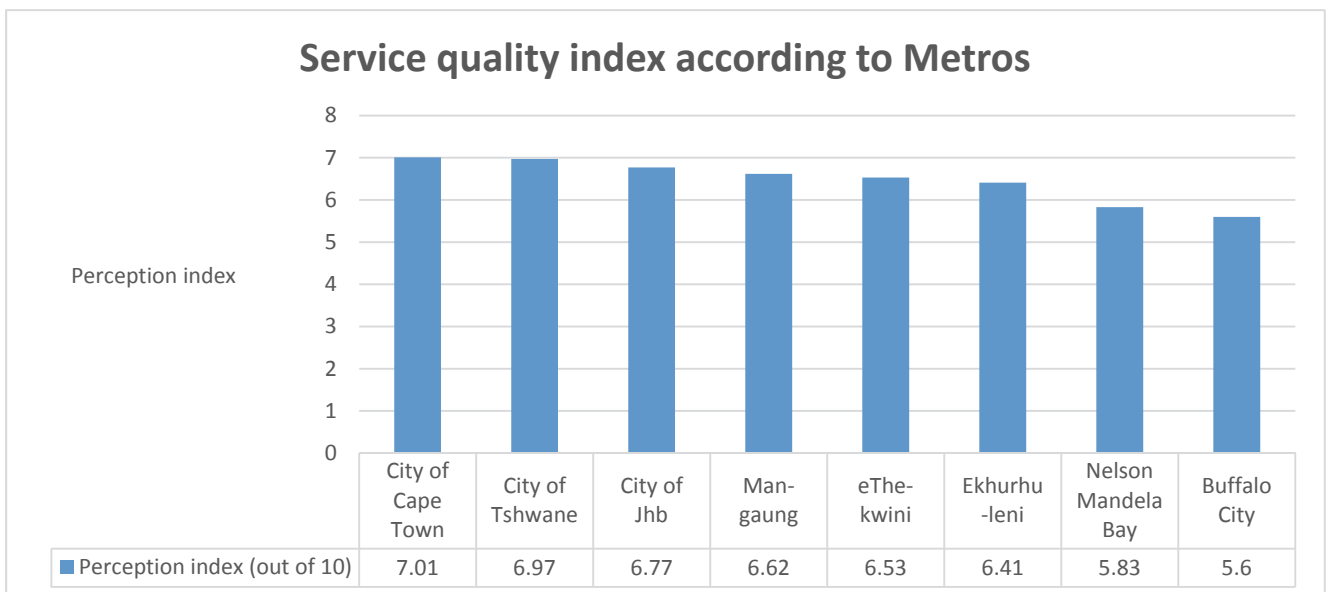
FIGURE 23: SERVICE QUALITY INDEX ACCORDING TO METROS

Service quality index according to smaller towns

	NC Other	LP Other	GP Other	FS Other	KZN Other	MP Other	WC Other	EC Other	NW Other
Perception index (out of 10)	6.5	6.46	6.41	6.18	5.94	5.89	5.66	5.34	4.93
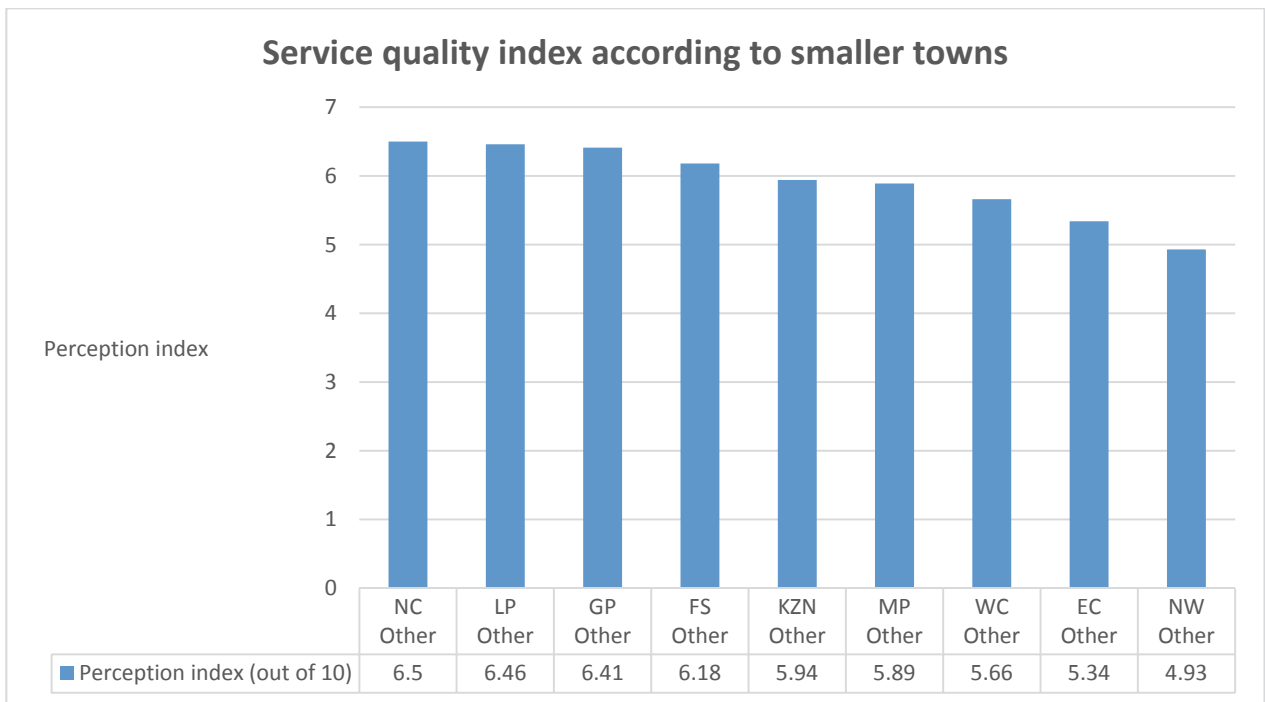
FIGURE 24: SERVICE QUALITY INDEX ACCORDING TO SMALLER TOWNS

Do consumers in Metros expect a higher level of service than consumers in small towns? This will have to be further investigated.

2.7 Water conservation and demand management

2.7.1 Do urban people know how much water they use?

The questionnaire included a question to establish if people know how much water they use per month and how much they pay for water.

61% of urban people admitted that they do not know how much water they use per month. Only 9% could give an answer that could be interpreted as an accurate figure.
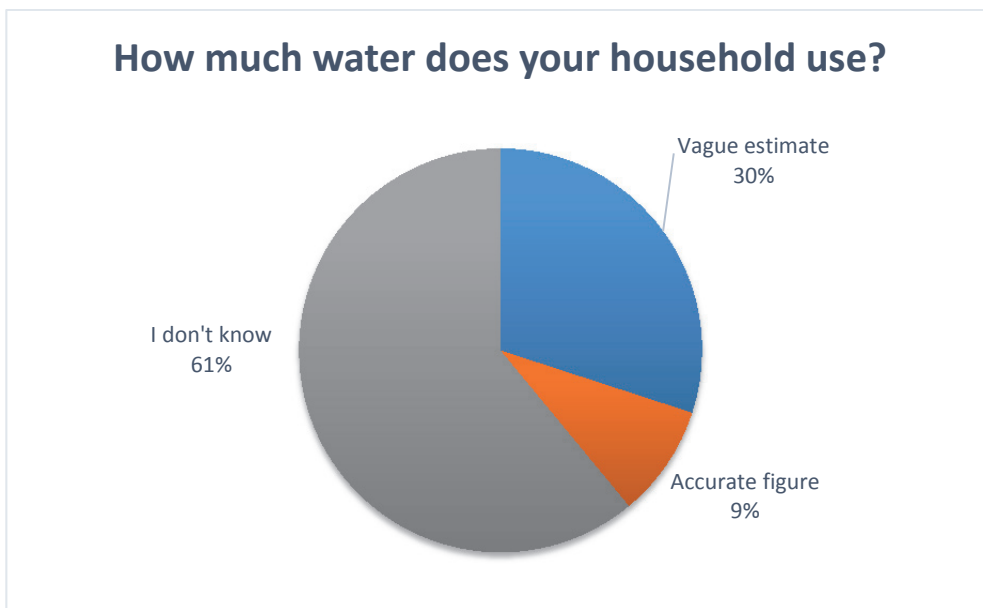
FIGURE 25: HOW MUCH WATER DOES YOUR HOUSEHOLD USE?

Knowledge of water use correlates with LSM group and level of education as the two figures below illustrate:

How much water does your household use?

How much water does your household use?	LSM 1-3	LSM 4-5	LSM 6-7	LSM 8-10
■ Vague estimate	5	25	30	32
■ Accurate figure	0	5	8	13
■ I don't know	95	70	62	55
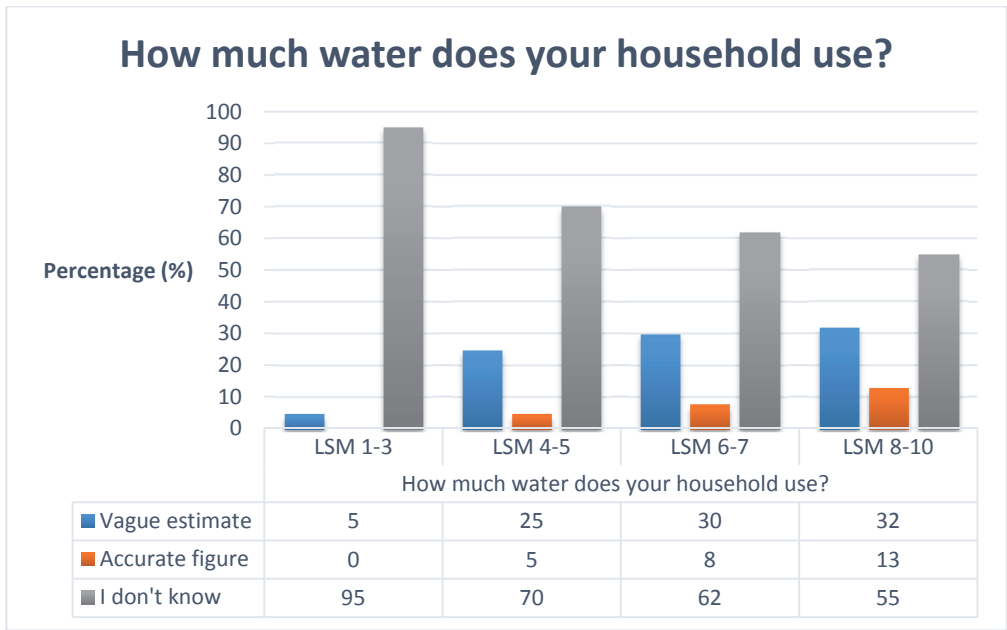
FIGURE 26: KNOWLEDGE OF WATER USE ACCORDING TO LSM GROUP

How much water does your houshold use?

How much water does your household use?	Up to primary complete	Some high school	High school complete	Post grade 12 / University
■ Vague estimate	27	27	31	32
■ Accurate figure	5	6	11	15
■ I don't know	68	67	58	52
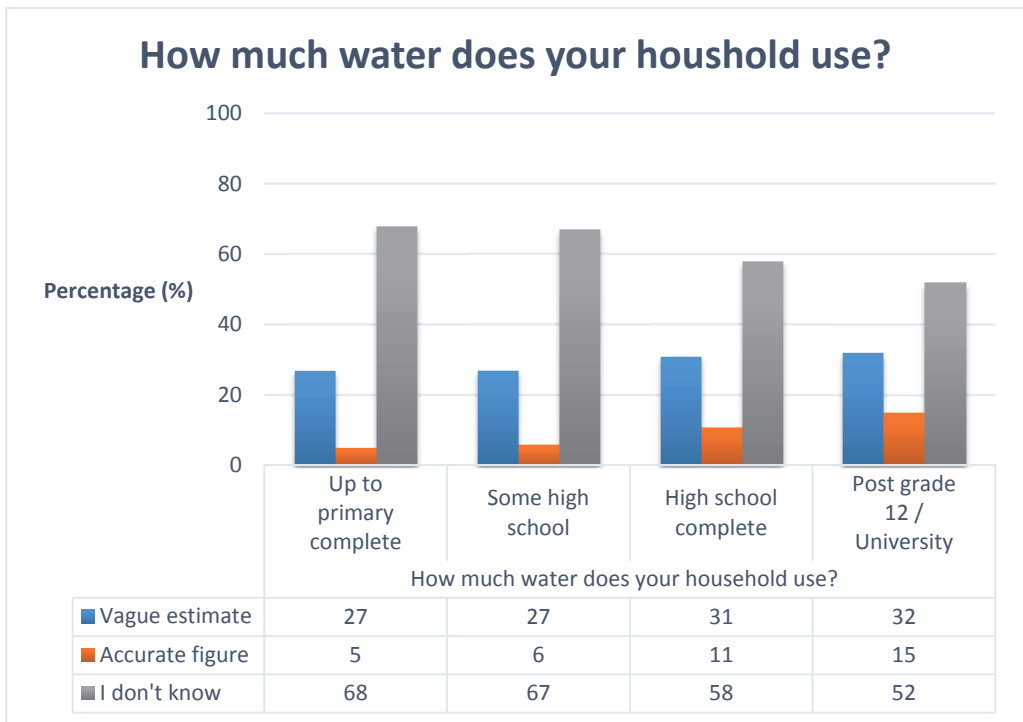
FIGURE 27: KNOWLEDGE OF WATER USE ACCORDING TO EDUCATION LEVEL

2.7.2 Do urban people know how much they pay for water?

17% said that they do not pay for water, for various reasons; 41% do not know how much their household pays per month. For paying consumers, the figure is 48%.

How much do you pay for water?

- Nothing. We don't have to pay for water. 5%
- Nothing. We don't pay for water 12%
- Vague, estimated amount 28%
- Accurate figure 14%
- I don't know. 41%

FIGURE 28: KNOWLEDGE OF THE COST OF WATER

Knowledge of the cost of water correlates with income and LSM group. The higher LSM and income groups are more aware of the cost of water.

FIGURE 29: KNOWLEDGE OF THE COST OF WATER ACCORDING TO INCOME

How much do you pay for water?
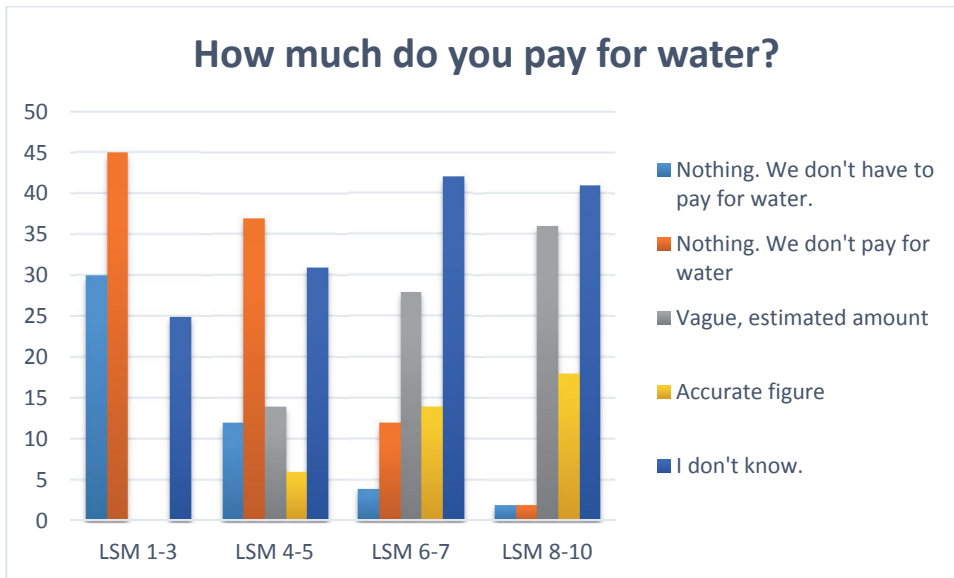
FIGURE **30**: KNOWLEDGE OF THE COST OF WATER ACCORDING TO **LSM** GROUP

2.7.3 Do urban people save water?

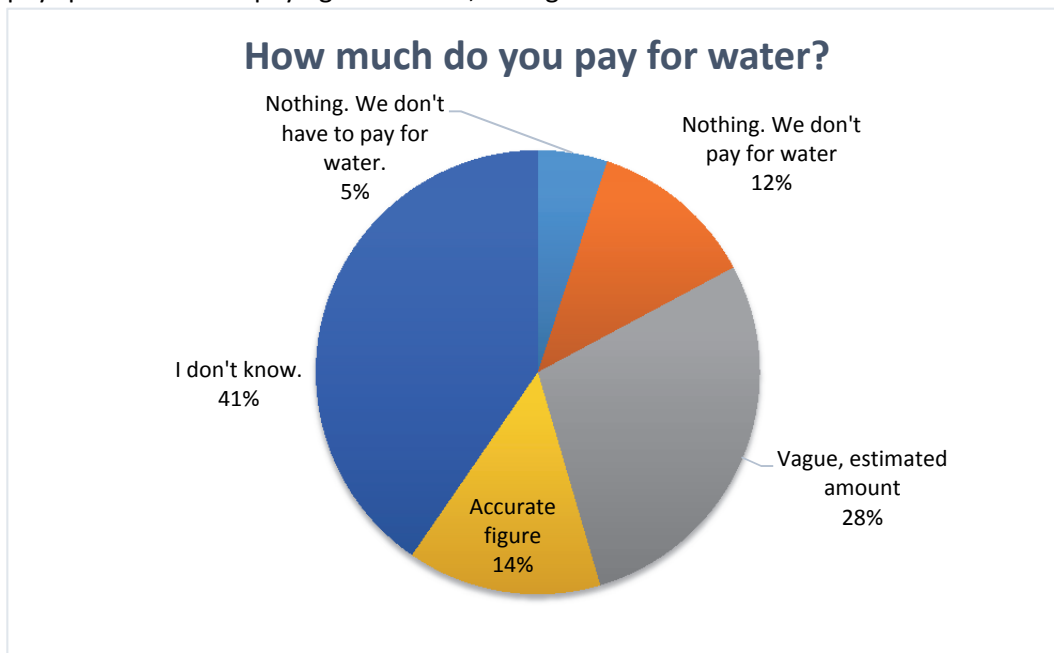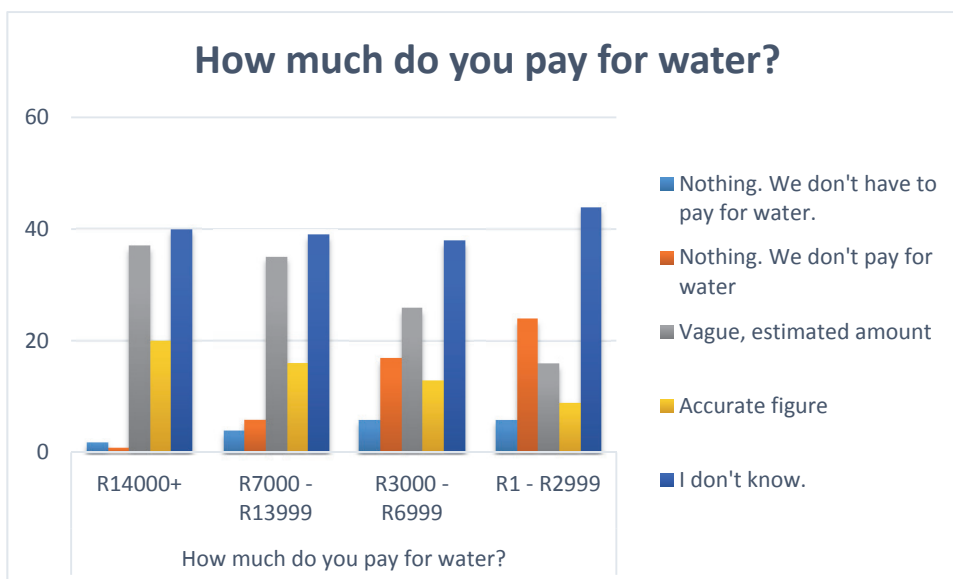21% said they do nothing to save water; 79% mentioned one or more measure that they take to save water. The measures that people say they use and the frequency of mention appear in the table below:

Don't leave open taps running	50%
Repair leaking taps	41%
We already use as little water as possible. (For example, if the household fetches water with a bucket)	27%
Try to use as little water in the garden as possible (plant indigenous plants, only give water at night, have a drip irrigation system, etc.)	18%
Take a shower instead of a bath	14%
Make sure that it is a full load before we switch on the washing machine or dishwasher	12%
Re-use our grey water (water used to bath, shower, wash dishes or washing)	9%
Collect rainwater	6%

The responses indicate that many consumers are aware of what they should do to save water. Whether they actually practice what they say they do, will have to be confirmed.

3 Conclusions

The 2011 study provided a baseline with which to compare future studies. It also gave SALGA and the WRC an understanding of how South Africans perceive the quality of drinking water.

3.1 Perceptions of drinking water quality

The findings of the 2015 study on perceptions of drinking water quality could be compared with the 2011 study. The comparison confirmed the findings of international research and has several implications for policy, management and further research:

- ➢ Multiple factors determine consumers' perceptions about the safety of drinking water.
- ➢ Sensory aspects such as appearance, taste and odour have the strongest influence on South Africans' perceptions of the safety of tap water.
- ➢ The findings point out several areas of drinking water quality which are insufficiently communicated to the general public:

    - Blue Drop status as an indicator of safe drinking water: this factor remains a very weak driver of consumer perceptions. Consumers in the Metros seem unaware of the Blue Drop status of their municipalities and the implication that the status has for the safety of drinking water.

    - Clean and safe water is an important driver of positive perceptions about municipal services. Municipalities with high quality water should use this finding to improve their image and to build consumers' trust in their services.

    - The impact of chlorine on water safety: Consumers seem confused about whether the addition of chlorine makes water safe or unsafe to drink.

    - Water treatment processes: The general public, especially lower LSM groups, seem to lack knowledge of water treatment processes.

3.2 A service perception tool

A service perception tool was developed for the 2015 study to calculate a perception index score for each individual from three general questions about service perceptions and 11 questions that dealt with specific aspects of service delivery.

The service quality perception index for the total urban population was 6, 34 out of a possible 10.

The perception index indicated that:

- ➢ Consumers in the higher LSM and income groups are more positive about the service that their municipality delivers than consumers in the lower LSM and income groups. Whether these groups indeed experience a better service, will have to be confirmed.
- ➢ There are no significant gender differences.
- ➢ The scores are sensitive for province and municipality size.
- ➢ Consumers in Gauteng and the Western Cape have the highest perception index scores, i.e. they are the most positive about the quality of water and sanitation service that their municipalities deliver.

3.3 Water conservation and demand management

61% of consumers do not know how much water their household consumes per month. Higher LSM groups and educational levels are better informed.

48%% of paying consumers do not know how much they pay for water per month. Higher income and LSM groups are better informed.

21% of the South African urban population do nothing to save water. 80% are aware that they should save water and they are also aware of how they could save water.

4 Recommendations

The findings of the study have several implications for policy, management and further research:

➢ the Blue Drop criteria should take consumers' perceptions into consideration, as recommended by the World Health Organisation (2004).

➢ Municipalities' Water Safety Plans should take the drivers of risk perceptions into consideration when emergency plans are developed.

➢ The findings point out several areas of drinking water quality which are insufficiently communicated to the general public. This could be addressed with educational programmes and visits to municipal water and wastewater treatment plants.

Doria (2010) mentions that this practice, "already mainstreamed in several countries, of using both consumer and trained panels to assess drinking water flavour and odour should be maintained or reinforced if appropriate".

➢ Perceptions of the quality of the water and sanitation service that a municipality delivers are determined by a complex of perceptions and experiences.

> Clean and safe drinking water is an important driver of positive perceptions about municipal services.

Municipalities with good drinking water quality should use this finding to improve their image and to build consumers' trust in their services.

➢ Few South African consumers know how much water they use or what the cost of water is. It is therefore likely that that consumers waste large quantities of water in South Africa.

> SALGA and the Department of Water and Sanitation should actively and continuously raise awareness of the value of water.

➢ Because perceptions about the safety of tap water are influenced by multiple factors, communication strategies should address several factors at the same time (Doria 2010:14).

➢ A multiple strategy, including school and above the line and below the line media campaigns, is recommended for communicating information about drinking water quality and water conservation and demand management.

Because family and friends have a strong influence on perceptions, social networks and the relationship between adults and children in a community should be harnessed in communication campaigns.

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6 Appendix: Questionnaire

Section B: Project Clean

<u>**Analysis**</u>

Analysis:

1. Cross tab with water service: laid on or not (necessary to make the distinction?)
2. Cross tab with sanitation service: non-flush, flush in the house, flush outside, communal, other
3. Cross tab with demographic variables
4. Cross tab with Municipalities (Metros and Province (other)). See previous analysis.
5. Calculate rating and cross tab with demographic variables and municipalities.
   a. B4 separate
   b. B4 excluded
   c. B4 included

Formula:

[SCORE – NOT NA/(NOT NA X 4) – (NOT NA)] X INDEX MAX

NOT NA(not applicable) = the number of rating questions that the respondent answered with a ratable answer. For example, with B4 excluded, there are 13 rating questions. If the respondent answered 3 of these with NA, NOT NA = 10.

SECTION B – PROJECT CLEAN

PD11 WATER LAID ON (ASK IF NOT SURE) **(SA)**

	CODE	ROUTE
Yes – inside plot	1	PD12
No – on plot	2	PD12
No	3	PD17

If water in house/plot in PD11 ask PD12, otherwise skip to PD17
PD12 Do you have hot running water from a geyser in your home? **(SA)**

	CODE	ROUTE
Yes	1	
No	2	

ASK ALL
PD17 What type of toilet do you have, if any, for this household? **(MA)**

	CODE	ROUTE
Non-flush toilet	1	
Flush toilet – inside house	2	
Flush toilet – outside house	3	
Communal portable flush toilet	4	
None	5	

READ OUT
SHOWCARD B1
B1 Is the tap water that your household uses: (SA)
IF RESPONDENT IS UNSURE, PROBE – "BASED ON YOUR EXPERIENCE/PERCEPTION, WOULD YOU SAY THE WATER IS…."

Rating		CODE	ROUTE
4	Very safe to drink	1	B2a
3	Safe to drink	2	B2a
2	Unsafe to drink	3	B2b
1	Very unsafe to drink	4	B2b
NA	We don't get water from a tap – We get it from the river or a well	5	Sect. C

Only if code 1 or 2 in B1
DO NOT READ OUT
B2a Why do you say it's (Insert answer from B1)? (MA)

	CODE	ROUTE
Nobody gets sick	1	
The water looks clean	2	
The water smells good	3	
The water smells of chlorine	4	
The water tastes good	5	
The municipality cleans the water	6	
The municipality tests the water to see if it is safe to drink	7	
People say the water is safe to drink	8	
I heard in the media (radio, TV, newspaper) that the water is safe to drink	9	
Our municipality has a Blue Drop	10	
Other (Specify)	11	

Only if code 3 or 4 in B1
DO NOT READ OUT

B2b   Why do you say it's (Insert answer from B1)? (MA)

	CODE	ROUTE
Some people got sick from the water	1	
The water looks dirty	2	
The water smells bad	3	
The water smells of chlorine	4	
The water tastes bad	5	
The tap is communal OR the tap is on the street	6	
The municipality does not clean the water	7	
The municipality does not test the water to see if it is safe to drink	8	
The river or dam where we get our water from is dirty and polluted	9	
People say the water is unsafe to drink	10	
The municipality told us that the water is unsafe to drink	11	
I heard in the media (radio, TV, newspaper) that the water is unsafe to drink	12	
Our municipality does not have a Blue Drop	13	
Other (Specify)	14	

ASK ALL
READ OUT
SHOWCARD B3

B3   How do you drink water at home? (SA)

	CODE	ROUTE
I don't drink water on its own; only drink coffee, tea or cool drink	1	
I only drink tap water and do not boil, filter or clean it first	2	
I only drink tap water, but boil, filter or clean it first	3	
I sometimes drink tap water and sometimes bottled water (that is bought)	4	
I only drink bottled water (that is bought)	5	
Other (Specify)	6	

READ OUT
SHOWCARD B4

B4   How would you describe the municipality's water and sanitation service (anything that has to do with water, toilets and sewage) in the area where you live? [SA]
EMPHASISE THAT THIS QUESTIONDEALS WITH WATER AND SANITATION SERVICES ONLY, NOT ROADS OR RUBBISH REMOVAL.

Rating		CODE	ROUTE
4	Very good/Excellent	1	
3	Good	2	
2.5	Good and bad	3	
2	Bad	4	
1	Very bad	5	
NA	I don't know	6	

For each answer in B4, ask B5
SHOWCARD B5

B5   Why do you say that the municipality's water and sanitation service is ….. (ANSWER IN B5)?
PROBE FULLY AND MAKE SURE THAT ANSWERS RELATE TO WATER, TOILETS OR SEWAGE

_____

_____

_____

_____

READ OUT
SHOWCARD B6

B6   Does the municipality'…… [SA]

Rating	All of the time/ always	Most of the time	Some of the time	Hardly ever/ Never	Not applicable	Don't know
	4	3	2	1	NA	NA
Repair leaking or broken water or sewage pipes in the street within 1 to 2 days?	1	1	1	1	1	1
Clean up sewage spills within 1 to 2 days?	2	2	2	2	2	2
Empty full pit latrines regularly?	3	3	3	3	3	3
Maintain or keep a strong water pressure in the tap(s)?	4	4	4	4	4	4
Repair broken water meters?	5	5	5	5	5	5
Read water meters every month?	6	6	6	6	6	6
Send out clear and accurate bills?	7	7	7	7	7	7
Answer the phone and emails?	8	8	8	8	8	8
Respond to complaints and queries about water or sanitation?	9	9	9	9	9	9
Solve water and sanitation issues in the community?	10	10	10	10	10	10

READ OUT
SHOWCARD B7

B7   How often do you experience interruptions in your water supply (your water supply is off)? [SA]

Rating		CODE	ROUTE
4	Never	1	
3	Seldom – less than once a month	2	
2.5	At least once a month	3	
2	At least once a week	4	
1	At least once a day	5	

DO NOT READ OUT

B8   How much water does your household use per day or per month, on average? [SA]

	CODE	ROUTE
I don't know	1	
Vague estimate If the respondent gives a vague estimated quantity. For example, less than 10 000 litres (10 kilolitre) per month. Or, between 20 000 and 60 000 litres (20-60 kilolitre) per month.	2	
Accurate figure If the respondent can say, with confidence, how much water the household uses per day or per month. For example, one 20 litre bucket and two 9 litre buckets. Or, between 15 000 and 17 000 litres per month (15-17 kilolitres) Or, 20 000 to 25 000 litres in winter and 30 000 to 35 000 litres (30-35 kilolitres) per month in summer.	3	

DO NOT READ OUT

B9   What does your household water cost you per month on average?:…… [SA]

	CODE	ROUTE
I don't know.	1	
Nothing. We don't have to pay for water. PROBE FOR REASON: We use a communal tap. OR We use less than 6 kilolitre per month OR We are indigents (registered poor people)	2	
Nothing. We don't pay for water	3	
If the person gives a vague, estimated amount. For example, less than R100 per month. Or, more than R500 per month	4	
If the person can say, with confidence, how much they pay for water per month. For example, this month we paid R298. Or the fixed amount is R80; for use, we pay between R100 and R150 per month.	5	

READ OUT
SHOWCARD B10

B10   Do you think: [SA]

Rating	Yes	I am not sure	No
	4	2	1
Your municipality is competent to deliver a good water and sanitation service?	1	1	1
Your municipality will be able to deal with water scarcity in the event of a drought?	2	2	2

DO NOT READ OUT

What does your household do to use less water? …… [MA]

B11

	CODE	ROUTE
Nothing	1	
We already use as little water as possible. (For example, if the household fetches water with a bucket)	2	
Re-use our grey water (water used to bath, shower, wash dishes or washing)	3	
Collect rainwater	4	
Try to use as little water in the garden as possible (plant indigenous plants, only give water at night, have a drip irrigation system, etc.	5	
Take a shower instead of a bath	6	
Make sure that it is a full load before we switch on the washing machine or dishwasher	7	
Repair leaking taps	8	
Don't leave open taps running	9	
Other (Specify)	10	