



01 June 2022

IOPSA RESEARCH: THE LEVEL OF COMPLIANCE IN PLUMBING INSTALLATIONS.

Introduction.

In an effort to understand the level of plumbing installation compliance throughout South Africa, the Institute of Plumbing South Africa (IOPSA) decided to undertake research in April and May 2022. The research was conducted by 42 experienced plumbing inspectors (auditors) based throughout the country. IOPSA inspectors regularly inspect water heating installations as part of their duties. During these inspections the auditors requested permission from property owners to conduct a visual inspection of other aspects of their plumbing. Note that inspectors only reported on what they could see externally, in order to fully ascertain compliance a more in-depth inspection would be needed. The purpose of this research was to get a statistically significant indication of the level of compliance. All inspections were done on properties in the formal sector. All reporting for this research was done on a voluntary basis and inspectors were not remunerated for their services. We would like to thank all those inspectors who participated for their efforts.

In total 725 properties were inspected in 8 provinces (no reporting was received from the North West province). Below is the breakdown per province, due to the low numbers from several provinces, this report will only focus on the total results as well as Gauteng and Western Cape.

Region	Number of Inspections
Western Cape	365
Gauteng	280
KwaZulu Natal	28
Eastern Cape	13
Freestate	8
Mpumalanga	14
Limpopo	11
Northern Cape	4

Inspectors were not asked to report on the specific nature of a non-compliance, however they were instructed to only report on significant and/or critical safety failures, minor non-compliances were ignored in the reporting. Property owners were informed of these issues in order for them to make an informed decision. In many instances property owners did not give permission for the inspectors to inspect other aspects of the plumbing installations, hence the results are heavily weighted to water heating.

Inspections focused specifically on the installations and did not focus on the compliance of materials per se. Previous research by amongst others, Water Research Commission, have indicated that between 50% - 60% of all plumbing materials sold in South Africa are non-compliant.

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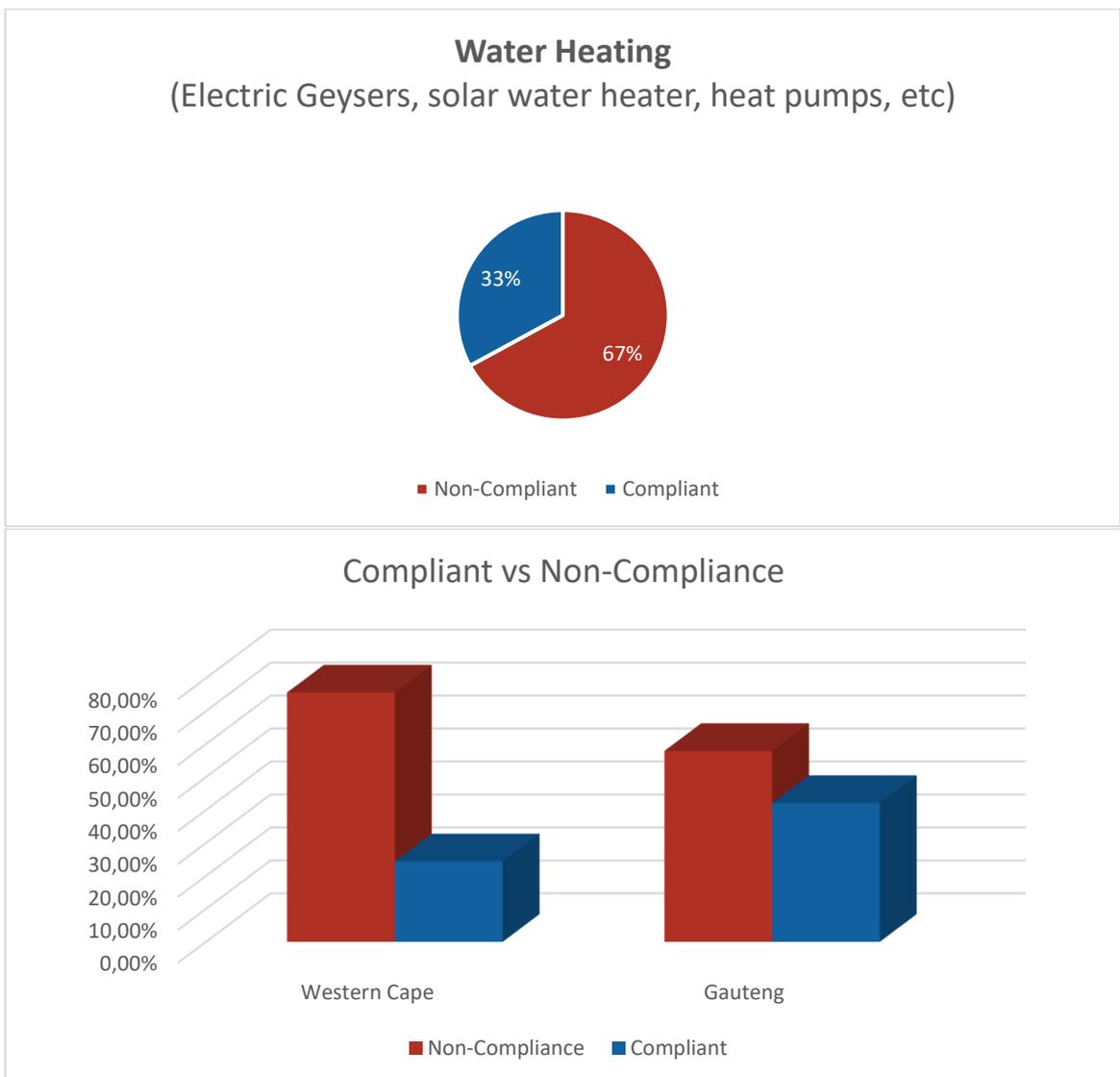
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In some cases, the inspectors were unable to determine whether the installations were compliant with the standards, regulations and by-laws. In these instances, the results were reported as “unsure”. This was largely due to the inspector being unable to see the entire installation without specialised equipment. For the purposes of this report IOPSA has given the benefit of the doubt to the property owner and recorded the “unsure” results as compliant.

Research results.

1. Water heating. (Geysers, solar water heater, heat pumps, etc)

In total 725 water heater installations were inspected nationally, of these 67% or 486 installations were found to be non-compliant. In the Western Cape non-compliance was reported at 75.6% and in Gauteng 57.9%.



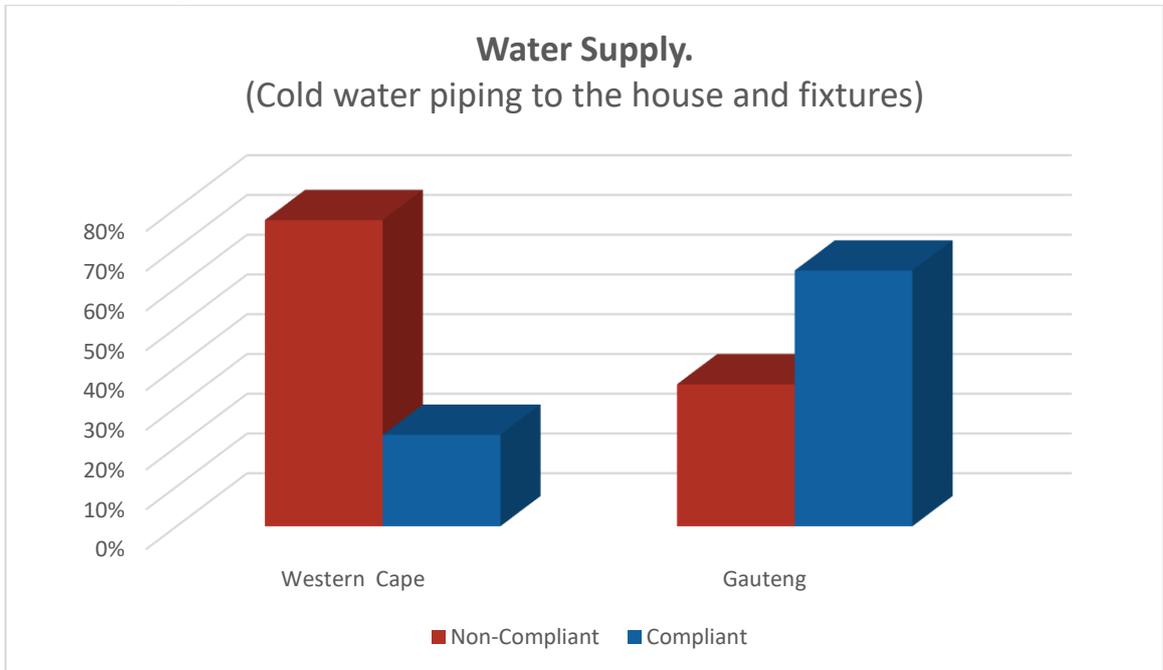
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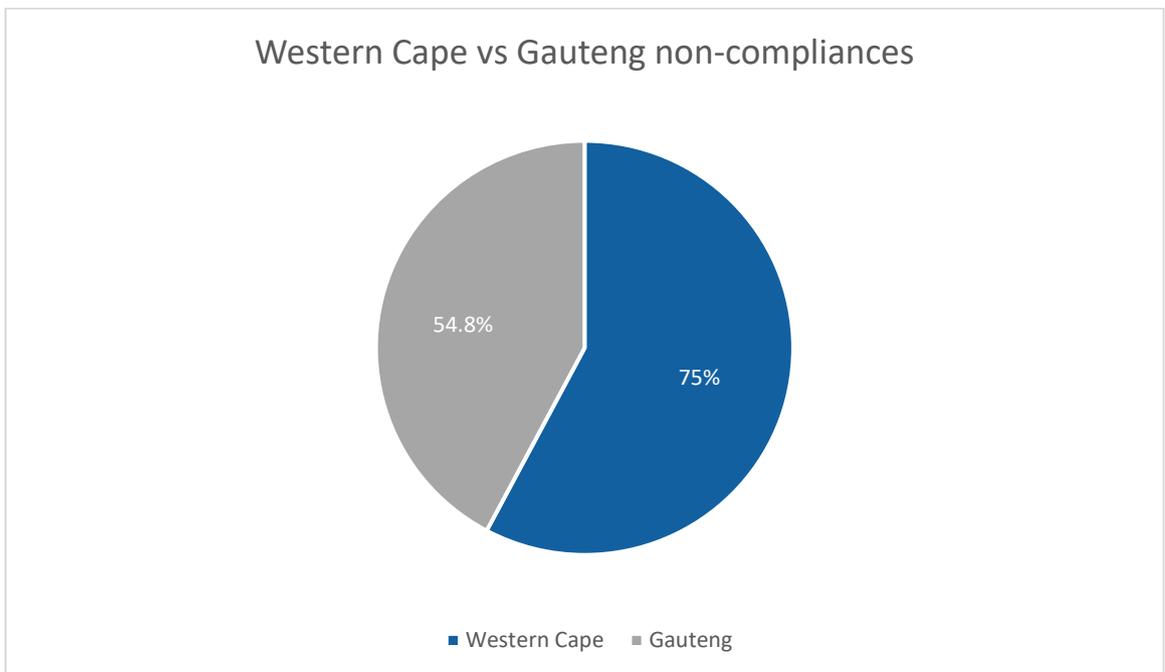
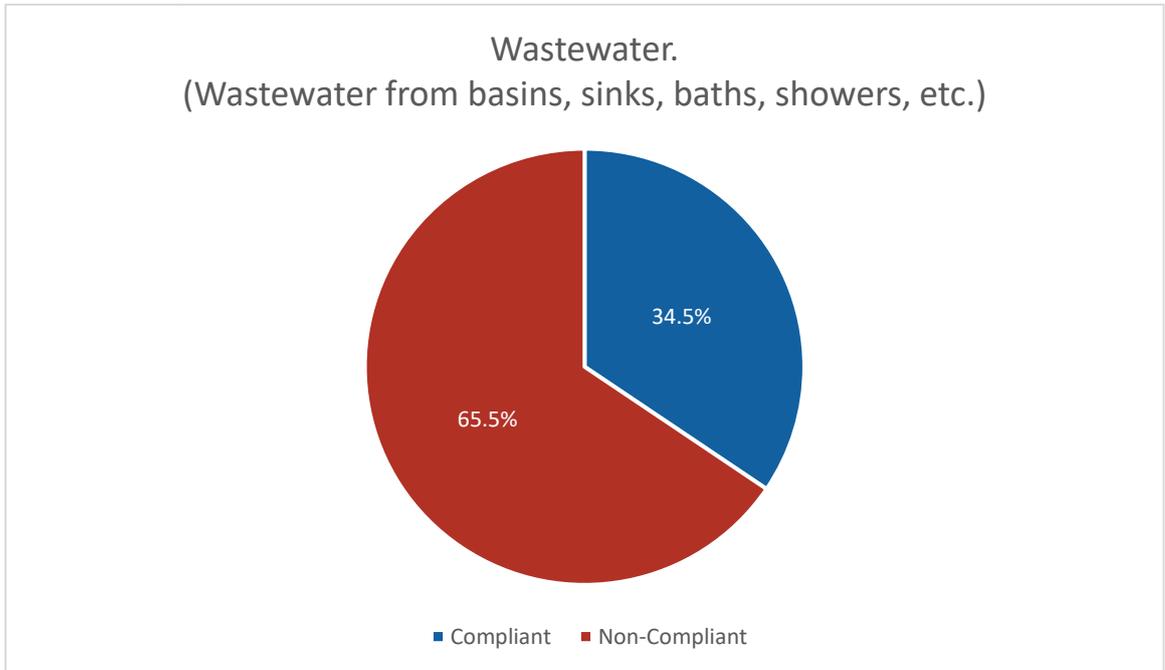
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2. Water Supply. (Cold water piping to the property and fixtures)

In total 394 water supply installations were inspected, of these 57.6% or 227 installations were found to be non-compliant. In the Western Cape non-compliance was reported at 77% and in Gauteng at 35.7%.

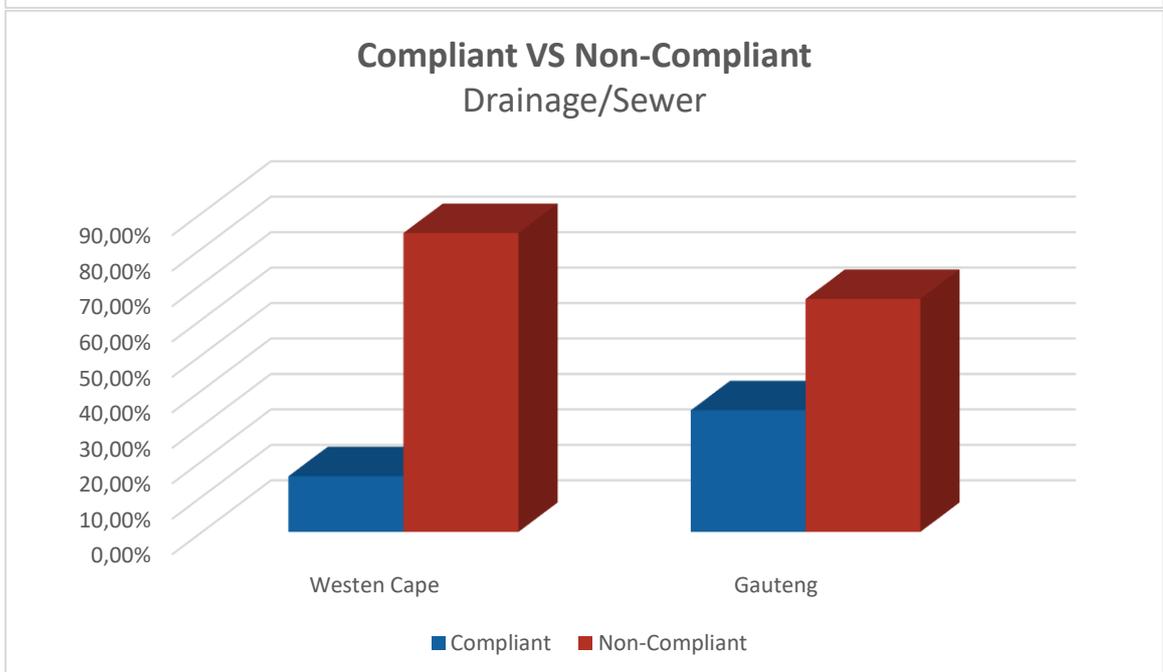
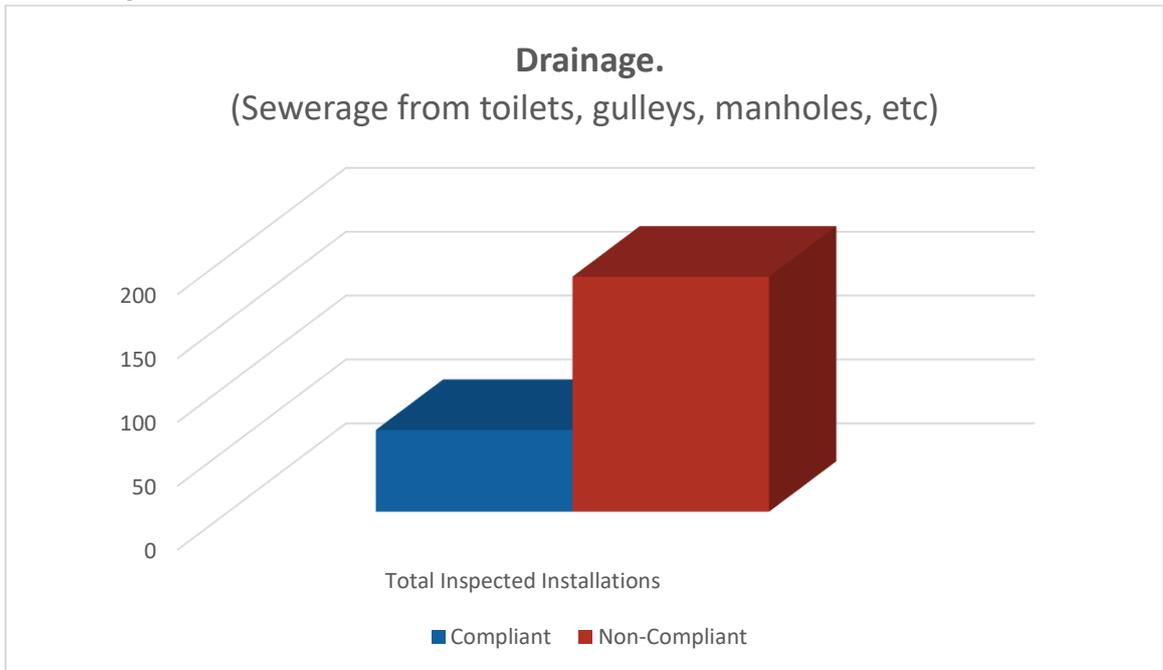


3. Wastewater. (Wastewater from basins, sinks, baths, showers, etc.)
 In total 264 wastewater installations were inspected, of these 65.5% or 173 installations were found to be non-compliant. In the Western Cape non-compliance was reported at 75% and in Gauteng at 54.8%.



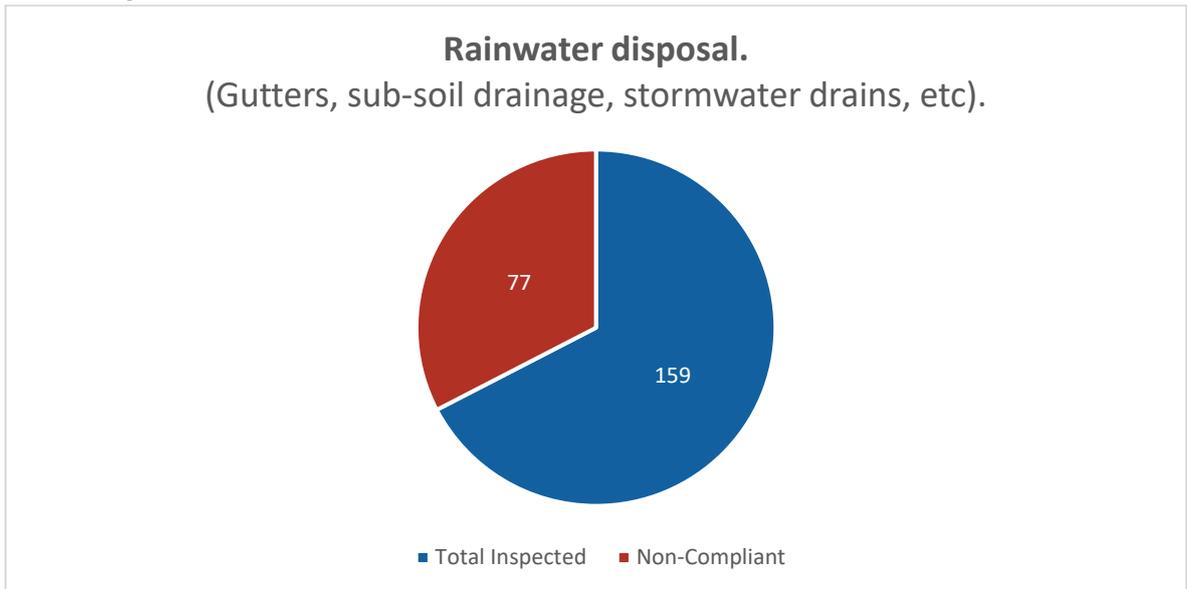
4. Drainage. (Sewerage from toilets, gulleys, manholes, etc)

In total 248 drainage installations were inspected, of these 74.2% or 184 installations were found to be non-compliant. In the Western Cape non-compliance was reported at 84.3% and in Gauteng at 65.7%.



5. Rainwater disposal. (Gutters, sub-soil drainage, stormwater drains, etc).

In total 159 rainwater installations were inspected, of these 48.4% or 77 installations were found to be non-compliant. In the Western Cape non-compliance was reported at 46.9% and in Gauteng at 51.1%.



6. Other non-compliances. (for example grease traps, swimming pool waste, etc)

Out of the total of 725 inspections done 128 “other” non-compliance were found or 17.6%.

Environmental, health and safety impacts of non-compliance.

1. Water heating.
 - a. Excessive energy consumption.
 - b. Scalding (hot water burns), especially in the elderly, children and people with disabilities.
 - c. Diseases such as legionella and Pontiac fever.
 - d. Electrocution.
 - e. Damage to property
 - f. In extreme cases, explosions.
2. Water supply.
 - a. Contamination of potable water.
 - b. Water losses through leaks.
3. Wastewater.
 - a. Ground and freshwater contamination.
 - b. Waterborne diseases

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4. Sewer
 - a. Contamination of freshwater sources.
 - b. Damage to municipal infrastructure
 - c. Waterborne diseases
5. Rainwater
 - a. Contamination of freshwater sources.
 - b. Damage to municipal infrastructure
 - c. Waterborne diseases
 - d. Flooding

Conclusion

IOPSA was surprised by these results. From anecdotal evidence, we expected to find significant numbers of non-compliances but we certainly did not expect anywhere near the numbers in the research. We had a good idea about water heating non-compliances and the research confirmed our expectations. What we were not prepared for was the results from other plumbing installation types. From anecdotal evidence it was believed that between 30%-40% of installations would be non-compliant. To find out that it is in fact between 70%-80% is a huge shock. In particular, we expected the results from the Western Cape to be far better than most other areas. In reality it was one of the worst in the country.

With hindsight, we probably should not have been surprised. All the research done in the plumbing industry points to massive disregard for the rule of law. As far back as 2008, the Water Research Commission found that 60% of plumbing material sold was non-compliant. In 2019 GIZ together with TIPS found that of the 126 000 people who identified themselves as “plumber” only an estimated 20 000 were actually qualified. In IOPSA’s 2021 investigation into municipalities, it was found that only 33% of plumbers have a copy of their municipal water by-laws, that only 80 of 256 municipalities had water by-laws publicly available and that only 15% of plumbers say that the municipality holds them accountable for their actions. In IOPSA’s annual survey for the past 4 years, the most pressing concern facing plumbing business owners was “unqualified plumbers”.

This research confirms what has been found in all the previous research papers, there is little or no regard for the rule of law in the plumbing industry. This can largely be attributed to the lack of enforcement at local government level. The difficulties facing local government are well known and well documented. From a plumbing perspective there is a definite lack of capacity, lack of knowledge and skills and a distinct lack of political will to correct the problems at local level.

South Africa is a water scare country and we are facing a significant water and sanitation crisis. Plumbing is a critical component of any discussion about water and sanitation. It is all good and well to speak about building dams, desalination plants and the like but the water still needs to get from there into homes and businesses and that cannot happen without plumbers.

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Wastewater treatment plants and bulk services are really important, but they are meaningless if the sewage never reaches them, that is the plumber's job. IOPSA does not dispute the need for bulk infrastructure such as dams, bulk supply lines, desalination plants and additional wastewater treatment facilities, but these will take decades to complete at significant cost. Based on the results of this research and others it is painfully clear that something needs to be done urgently. The state of the majority of local and district municipalities is extremely challenging and it is highly doubtful that they can accomplish the necessary changes on their own. The private sector has already come up with a workable solution in the form of a certificate of compliance from the professional body for plumbers. Significant positive impacts could be made in a very short time and with very little cost. Given the water and sanitation challenges being faced by all South Africans, there is no more time to deliberate, we need immediate and decisive action.

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