

FIRST ORDER NO DROP ASSESSMENT: GAUTENG PROVINCE



the status of water losses, water use efficiency and non-revenue water in municipalities

1. INTRODUCTION

Drinking water is supplied by 10 municipalities (WSAs) in the Gauteng Province, made up of 3 metros (Category A) and 7 local municipalities (2 category B1; 4 category B2; 1 category B3). Data sets were received for 6 municipalities representing a total population of 12 014 194 and 3 943 870 households. These households are supplied via a total mains network of 39 961 km via 1 857 944 connections, with an average of 46 connections per km pipeline. A total of 1 518 886 (81.7%) of all connections are metered and 339 058 (18.3%) are unmetered. The average system pressure is 48 m, ranging between 32 m to 65 m reported by the various municipalities.

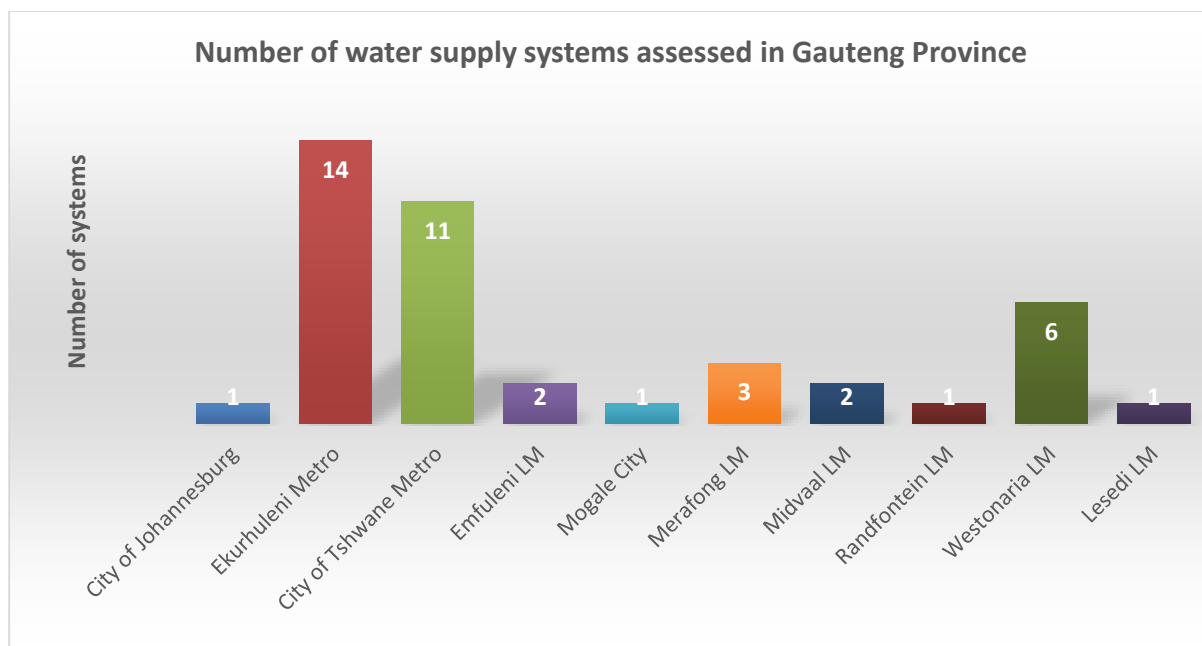
**Figures based on verified information only.*

Municipality Name [WSA]	Munic Category	No. of Systems	No. of credible data sets	Population and Number of Municipal Categories						
				A	B1	B2	B3	B4	C1	C2
City of Johannesburg	A	1	√	4 518 904						
Ekurhuleni Metro	A	14	√	3 296 125						
City of Tshwane Metro	A	11	√	2 986 073						
Emfuleni LM	B1	2	√		786 024					
Mogale City	B1	1	√		375 821					
Merafong LM	B2	3	x			x				
Midvaal LM	B2	2	√			51 247				
Randfontein LM	B2	1	x			x				
Westonaria LM	B2	6	x			x				
Lesedi LM	B3	1	x				x			
Totals	42	6		10 801 102	1 161 845	51 247	0	0	0	0
				12 014 194						
				3	2	4	1	0	0	0
				10						

2. NO DROP RESULTS FOR 2012/13

The lack of data and credibility of data as well as the lack of supporting Water Balances per supply system, prompted the DWS to collapse some of the supply systems into one integrated system for the purposes of this No Drop Report.

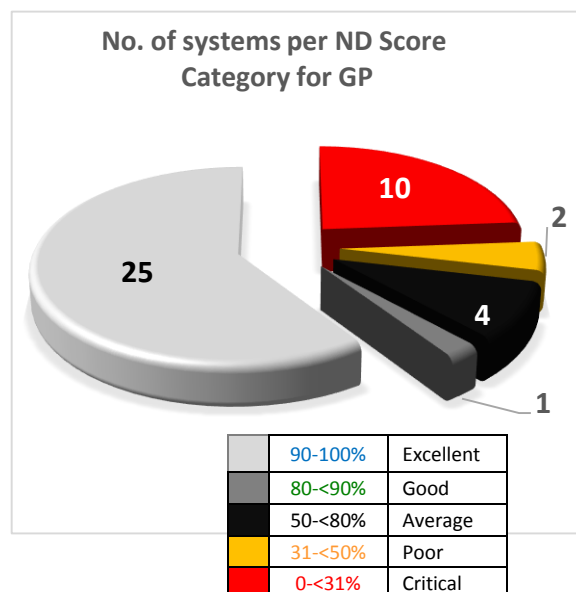
The No Drop results show that 42 water supply systems have been assessed in 10 municipalities.



A total of 5 WSAs opted to provide evidence for 'one integrated system' instead of regarding each individual supply systems separately. This accounted for 29 systems being integrated into 5 systems. The remaining 13 systems were assessed as stand-alone water supply systems. (Note: the 29 systems were allocated with individual No Drop scores to ensure counting of No Drops with >90% scores)

2013 GP NO DROP COMPARATIVE ANALYSIS	
Performance Category	Performance indicators
Number of WSAs assessed	10 (100%)
Number of systems assessed	42 (100%)
Number of integrated systems*	5 (50%)
Average No Drop score	67,8%
Number of No Drop scores $\geq 50\%$	30 (71%)
Number of No Drop scores $< 50\%$	12 (29%)
Number of No Drop awards $\geq 90\%$	25 (59.5%)
PROVINCIAL (weighted) NO DROP SCORE	78,8%

* Per original scorecard data



In total, 71% of the water supply systems obtained >50% No Drop score, with the balance of 29% systems receiving scores of <50%.

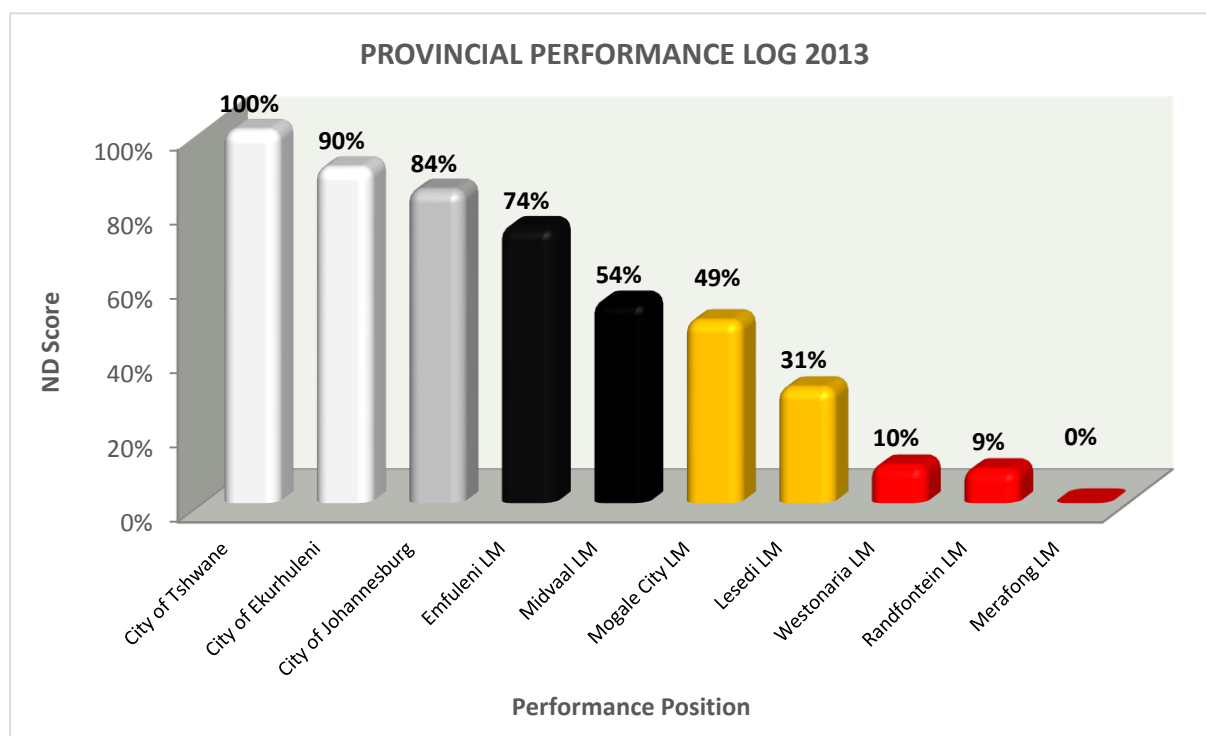
The Provincial (weighted) No Drop Score of 78.8% fall within the No Drop category of 'Average Performance', which leans closely towards 'Good Performance'. The Regulator regards this provincial performance as remarkable, given that this is the first No Drop assessment for the Gauteng municipalities. The City of Tshwane and City of Ekurhuleni achieved excellence in their Water Efficiency management practice with No Drop scores of 100% and 90% respectively. City of Johannesburg scored 84% (good), followed by Emfuleni LM with 74% (high average).

The overall Average No Drop score of 67.8% points to an average performance for municipalities as a whole. This provincial average are slightly being impacted and weighted down by municipalities who did not have information, processes and systems in place which allow them to know and measure their systems, i.e. Merafong, Randontein, Lesedi and Mogale City. The municipalities are not to be discouraged, as this is the first year of No Drop assessments, and the No Drop introduction has been a learning curve and awareness raising for all stakeholders. Municipalities are encouraged to use the first order No Drop assessment to prepare for the next (stand-alone) No Drop assessment and target progressive improvement in WCWDM over time.

Twenty five (25) of the 42 systems achieved No Drops of >90%, which reflect the accomplished status of performance measurement and knowledge of water lost and NRW in these municipalities. Five WSAs achieved No Drop scores of >50% and three WSAs are in the critical state performance category with No Drop scores <31%. The gaps between the first 7 WSAs and the lower three WSAs are in the order of about 21%.

Position	WSA Name	2013 No Drop Score	No. of systems with <31% No Drop score
1	City of Tshwane	100,0%	
2	City of Ekurhuleni	90,0%	
3	City of Johannesburg	84,0%	
4	Emfuleni LM	74,0%	
5	Midvaal LM	54,0%	
6	Mogale City LM	49,0%	
7	Lesedi LM	31,0%	
8	Westonaria LM	10,0%	6 of 6
9	Randfontein LM	9,0%	1 of 1
10	Merafong LM	0,0%	3 of 3

The Provincial Barometer for the Province with a weighted average No Drop score of 78.8% is shown in the figure below.



The following municipalities and water supply systems attained No Drop scores of >90%. The Regulator considers these municipalities to be knowledgeable on the status of their water use and having the necessary strategies and plans in place to address non-conformance:



- City of Tshwane: Temba, Cullinan, Wallmansthal, Rietvlei, Roodeplaat, Bronkhorstpruit, Bronkhorstbaai, Summerplace, Fountains, Onverwacht and Sokhulumi (11 systems)
- City of Ekurhuleni: Germiston, Nigel, Alberton, Bedfordview, Benoni, Boksburg, Brakpan, Daveyton, Duduza, Edenvale, Etwatwa, Katlehong, Kempton Park and Kwathema (14 systems)

3. THE QUALITY OF EVIDENCE PROVIDED (KPA 1 AND 2)

Municipalities were required to present evidence to satisfy 3 sub-criteria of the 2014 Blue Drop Audit:

- *Sub-criteria 6.1 of the audit measures the consistency and credibility of the MONTHLY and ANNUAL composite IWA water balance data and diagram based on actual meter readings per system as per Regulation 509 of 2001 Clause 10 of the Water Supply Regulations.*
- *Sub-criteria 6.2 reviews the Municipality's strategies and business plans (and its inclusion in the IDP) to reduce the system input volume, water losses and NRW and evaluates the progress made with the implementation of these strategies and business plans.*
- *Sub-criteria 6.3 measures the performance of the WSI against international best practice benchmarks and the water demand management regulations, and is focussed on knowing and improving the KPI status within the WSI.*

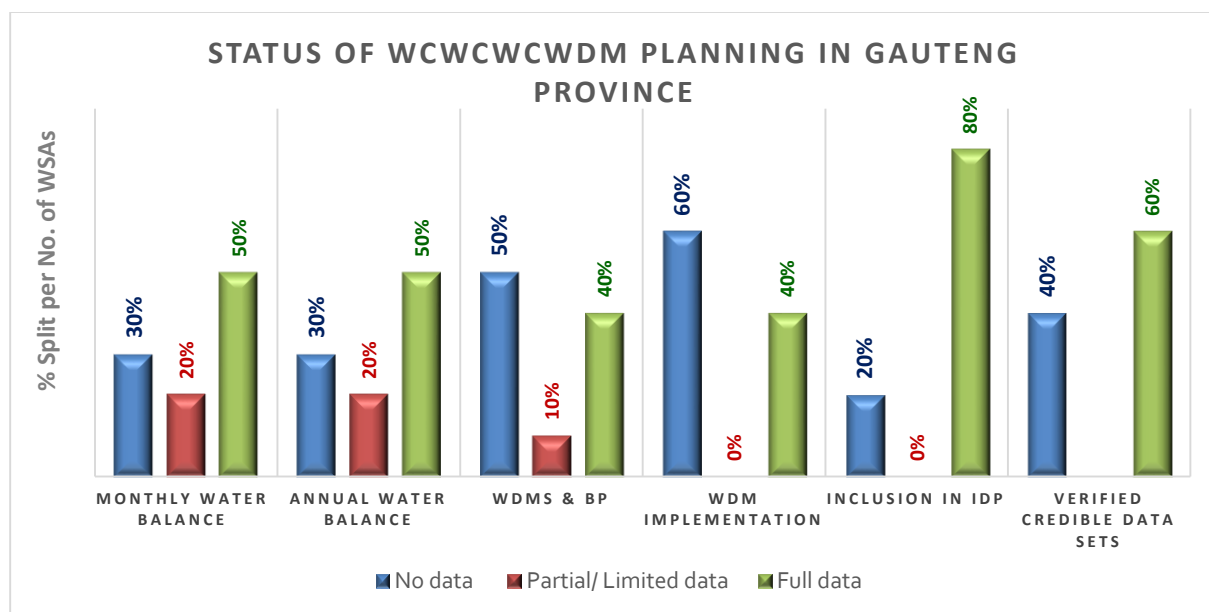
In order to derive maximum benefit from the available data, the Department has collapsed the various supply systems into one integrated system for each municipality. The results are reported accordingly:

Data Status	6.1 - Water Balance		6.2 - WCWDM Strategy and Business Plan and Implementation			6.3 - Compliance and Performance
	Monthly Water Balance	Annual Water Balance	WCWDM S & BP	WCWDM Implementation	Inclusion in IDP	Verified Credible Data Sets
No data	3 (30%)	3 (30%)	5 (50%)	6 (60%)	2 (20%)	4 (40%)
Partial data	2 (20%)	2 (20%)	1 (10%)	0	0	
Full data	5 (50%)	5 (50%)	4 (40%)	4 (40%)	8 (80%)	6 (60%)
No. of WSAs	10	10	10	10	10	10

The results shows that 3 of the 10 integrated systems (30%) does not have monthly and annual Water Balances in place, and 20% has partial balances in place. The following planning profile is observed:

- 40% of the municipalities have WCWDM strategies and plans in place, with 50% not having any plans in place;
- 40% of municipalities implement WCWDM projects and have budgets and capacity to support implementation;
- 60% of municipalities do not implement any water demand measures;
- 40 of municipalities have their WCWDM plans included in the IDP in detail, and 60% have no mention in the IDP;
- The No Drop auditors found the credibility of data and information satisfactory at 60% of the municipalities, and not satisfactory for 40% of the auditees.

The following figure shows the submissions made for No Drop assessment as pertaining to WCWDM planning:



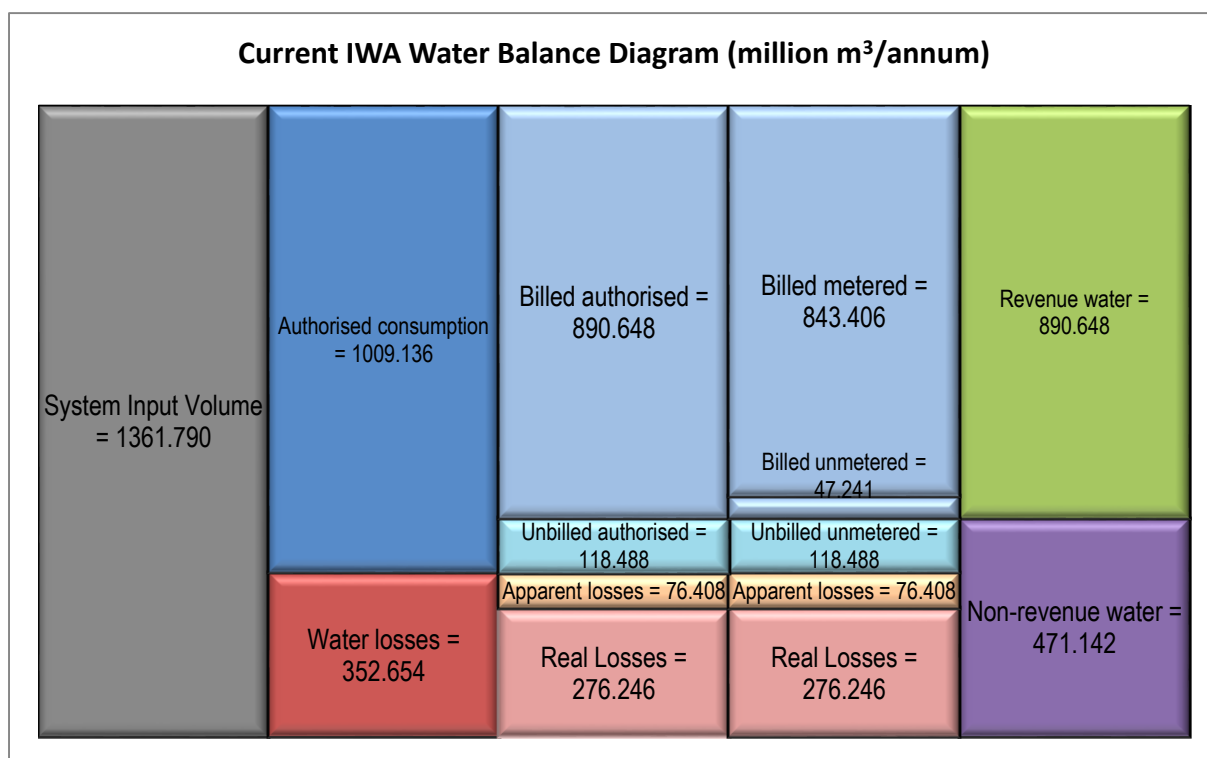
4. THE PROVINCIAL WATER BALANCE (KPA 1 AND 2)

A summary of the provincial results from the 6 (of 10) credible data sets is reflected in the following Table:

2013 Provincial No Drop Score		78.8%
Key Performance Area		Status and Performance
WATER USE EFFICIENCY & WATER LOSS MANAGEMENT (3% weight)		2.36%
No Drop Score (2013)		78.8% Average
INPUT DATA	Population	12 014 194
	Households	3 943 870
	Metered Connections	1 518 886
	Unmetered Connections	339 058
	Length of mains (km)	39 961
	Average System Pressure (m)	48.33
	2014 Water Use Targets (Water Balance Targets)	1 262.84 million
	System Input Volume (kl/annum)	1 361.79 million
	Billed Metered Authorised Use (kl/annum)	843.41 million
	Billed Unmetered Authorised Use (kl/annum)	47.24 million
	Unbilled Authorised Use (kl/annum)	118.49 million
	Assumed Commercial Losses (%)	21.7%
	Authorised Use – billed & unbilled (kl/annum)	1 009.14 million
WATER BALANCE DATA	Water Losses (kl/annum)	352.65 million
	Apparent losses (kl/annum)	76.41 million
	Real Losses (kl/annum)	276.25 million
	Revenue Water (kl/annum)	890.65 million
	Non-Revenue Water (kl/annum)	471.14 million
	Infrastructure Leakage Index (ILI)	7.10 Poor
KPIs	Apparent/ Commercial Losses (%)	5.61%
	Non-Revenue Water (%)	35% Poor
	Water Use Efficiency (l/cap/day)	310.5 Extremely poor
	Authorised Use (l/cap/day)	230.12
OTHER	Real Losses (l/cap/day)	63.00
	% Water Losses	26%

The Provincial Water Balance for the 2012/13 audit year shows a total SIV 1 361.79 million kl/annum of which 1 009.14 million kl/a (74.1%) is Authorised Consumption and 352.65 million kl/a (25.9%) is Water Losses. The Water Losses is made up of 76.41 million kl/a (21.7%) Apparent Losses and 276.25 million kl/a (78.3%) Real Losses, which result in a **NRW of 471.14 million kl/annum (35%)**.

2012/13 IWA Water Balance (million m³/annum)



5. COMPLIANCE AND PERFORMANCE (KPA 3)

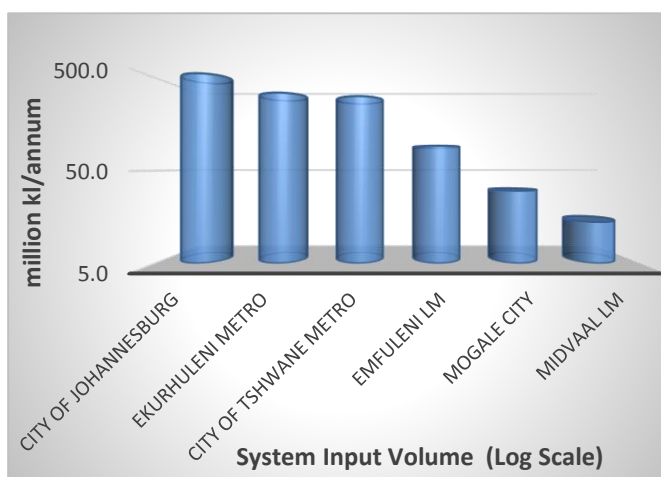
Audit Methodology

No Drop data was extracted from sub-criteria 6.3 of the Blue/No Drop assessment scorecards and the associated 2012/13 evidence/data. A secondary moderation processes ensured that the results contained in the scorecards were verified against the Water Balance historical trends. Where inconsistency and/or credibility concerns were detected, the ensuing data and results were corrected, supplemented or negated (in cases with limited data sets). Only the verified results are used in this report, and considered under the following Key Performance Indicator (KPI) headings.

5.1 System input volume (kl/a)

The System Input Volume represents the potable volume input to the water supply system from the water utility's own sources, as measured at the water treatment works (WTW) outlet, as well as any water imported from other sources.

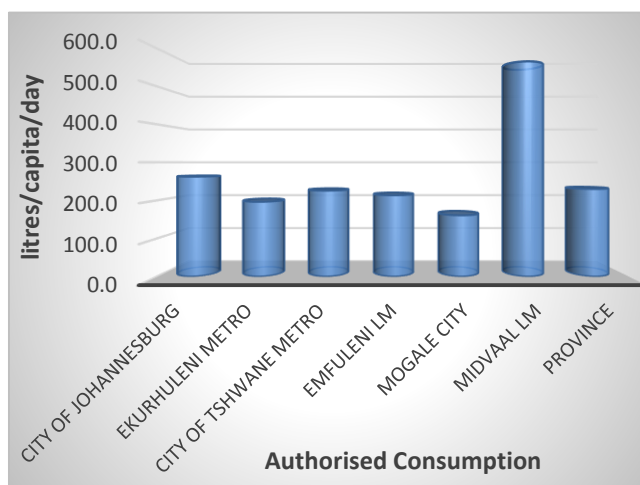
The total water consumption (SIV) is recorded as 1 361.79 million kl/a for Gauteng. The 3 Category A metros account for the majority of the total consumption, namely City of Johannesburg for 41% (560.46 million kl/a), City of Ekurhuleni for 25% (346.58 million kl/a) and City of Tshwane for 23% (317.64 million kl/a). The water consumption for the other 3 municipalities account for only 11% of the Province's consumption.



5.2 Authorised consumption (l/c/d)

Authorised consumption includes metered/unmetered and billed/unbilled consumption and provides an indication of the actual water used by the consumer.

The per capita total authorised water use by the collective consumer in Gauteng is 1625 l/c/d, with a weighted average per capita consumption rate of 230 l/c/d. Midvaal LM displays the highest level of per capita authorised consumption at 565 l/c/d, followed by City of Johannesburg (262 l/c/d). Authorised consumption per capita is the lowest in Ekurhuleni Metro (196 l/c/d) and Mogale City LM (161 l/c/d) below the benchmark of ≤ 200 l/c/d.

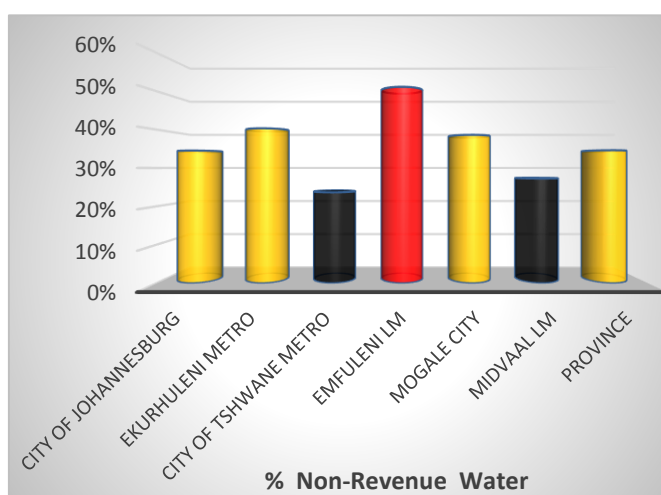


A high authorised unit consumption could be an indication of inefficient water use, often as a result of high internal plumbing leakage or paying consumers who do not value the scarcity of water or effective metering and billing systems. A low authorised unit consumption could be an indication of unmetered consumption not included in the water balance or a large number of unauthorised consumption or theft.

5.3 Non-revenue water (%)

NRW is the volume of water supplied by the water utility but for which it receives no income. It should be noted that all billed water is considered revenue water, irrespective whether it is paid for or not.

One of the 6 municipalities (16.7%) has NRW in excess of 33%. The weighted average NRW is 35%. Tshwane and Midvaal displays the best NRW within the boundary of 24-28%, whereas the highest NRW is observed for Emfuleni LM at 51% followed by Ekurhuleni Metro at 40%. The graph exhibits



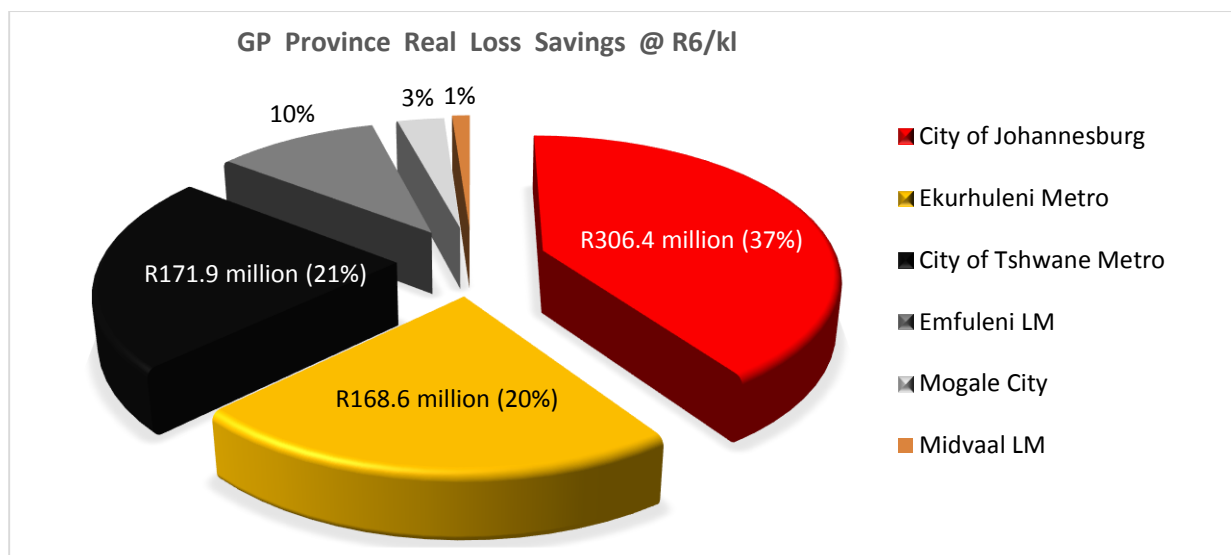
- **No Drop Benchmark:** >40% = EXTREMELY POOR ; 30-40% = POOR ; 20-30% = AVERAGE ; 10-20% = GOOD ; <10% = EXCELLENT
- **Gauteng Weighted Average:** 35% = POOR

NRW(%) performance categories

	>40%	Extremely poor
	30-40%	Poor
	20-30%	Average
	10-20%	Good
	<10%	Excellent

A total volume of 471.142 million kl/annum is lost as NRW which, calculated at a unit cost of R6/kl, amounts to R 2,826 million per annum for the province as a whole. The financial and potential saving, at a fixed unit cost of R6/kl is considered in the following table. By implementing Water Conservation and Demand Management projects, a potential saving of 138.12 million kl can be achieved per annum, which translate to R 828.7 million per year. For a province concerning itself with water conservation and economic growth based on water security, a potential **saving of R 828.7 million** is worth investing in. This potential saving is calculated from the 6 (60%) usable datasheets, which passed the No Drop quality assurance (credibility) checks. **Savings in excess of R1 billion** can be projected if all Gauteng municipalities' water balances are considered and extrapolated.

Municipality Name [WSA]	Munic Category	UARL (kl/annum)	Current		Target			Rand value (million) @ R6.00/kl		
			CARL kl/annum	ILI	TARL kl/annum	ILI	Savings kl/annum	UARL R million	CARL R million	Savings R million
City of Johannesburg	A	15 616 573	102 149 402	6.54	51 074 701	3.27	51 074 701	93.70	612.90	306.45
Ekurhuleni Metro	A	13 062 978	56 208 786	4.30	28 104 393	2.15	28 104 393	78.38	337.25	168.63
City of Tshwane Metro	A	10 742 277	57 285 009	5.33	28 642 504	2.67	28 642 504	64.45	343.71	171.86
Emfuleni LM	B1	2 680 931	26 164 830	9.76	13 082 415	4.88	13 082 415	16.09	156.99	78.49
Mogale City	B1	1 413 215	7 648 511	5.41	3 824 255	2.71	3 824 255	8.48	45.89	22.95
Midvaal LM	B2	328 763	2 821 995	8.58	1 410 998	4.29	1 410 998	1.97	16.93	8.47
Provincial Totals		38 911 399	276 245 955	7.10	138 122 977	3.55	138 122 977	233.47	1 657.48	828.74



The acceptable minimum level of leakage or UARL for the available datasets is 38.9 million m³/annum which is valued at R 233.5 million/annum based on R 6.00/kl. The current level of physical leakage or CARL, however, is 276.3 million m³/annum or 7.1 times higher than the acceptable minimum level of leakage. The current level of physical leakage is valued at R 1 658 million/a based on R 6.00/kl. If the CARL could be halved to an ILI 3.55, which is an acceptable level of leakage for developed countries, a saving of 138.12 million m³/annum or R 830 million/annum could be realised.

The R 6.00/kl is considered a realistic bulk water supply tariff for 2013/14, based on the Water Services Tariffs Report for 2012/13 (DWA, 2013). Any escalation in water unit prices above the assumed average cost of water (R6/kl) would result in higher savings potential in future (i.e. >R3 billion).

On a national scale, Gauteng province offers the highest savings potential of all provinces in South Africa (42%).



High %NRW could be due to customers not paying for water services, not being connected and billed by the WSA, households connected to the system through illegal connections, customers not receiving bills, incorrect billing based on estimates and difficult to understand for the average customer, the general lack of co-operation between the finance and technical departments of the WSA.

The most common causes for high physical water losses are

- leakage on transmission and/or distribution mains,
- leakage on service connections up to point of customer metering,
- leakage and overflows at utility's storage tanks, and

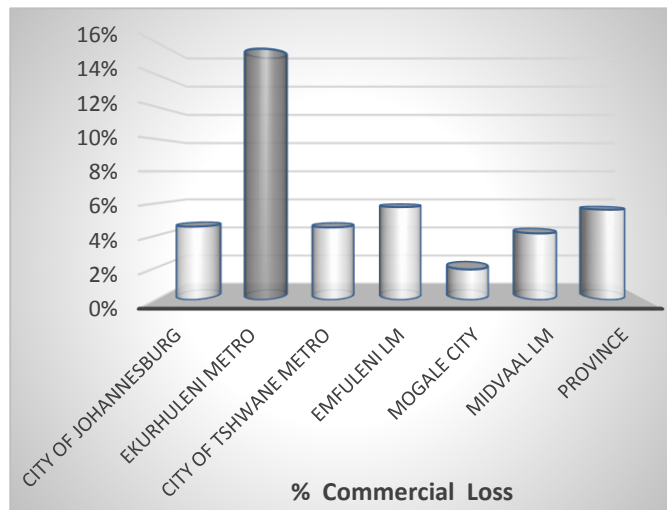
The most common causes for commercial losses are:

- unbilled unmetered consumption,
- unauthorised consumption,
- customer metering inaccuracies
- high internal plumbing leakage on private properties, and
- inefficient garden watering and household water use.

5.4 Commercial loss (%)

The commercial loss, as % of the SIV, is made up from the unauthorised consumption (theft or illegal use), plus all technical and administrative inaccuracies associated with customer metering.

The weighted average commercial loss for the Province, as % of the SIV, is 5.6%. The graphs above show commercial losses in the order of 2-15%. Most WSA's find it difficult to calculate commercial losses, as its input parameters is not easy to measure illegal connections, meter accuracy and transfer errors. As result, most WSAs accept industry default values for commercial losses and there is almost no quantification of the actual percentage. A default value of 20% is used as the norm, unless a municipality can motivate a different value. The reported commercial losses are not considered accurate and seem unusually low. The commercial losses are expected to increase once these parameters are better quantified.



High commercial losses can be a result of high unbilled and unmetered consumption, high unauthorised consumption, and customer metering inaccuracies.

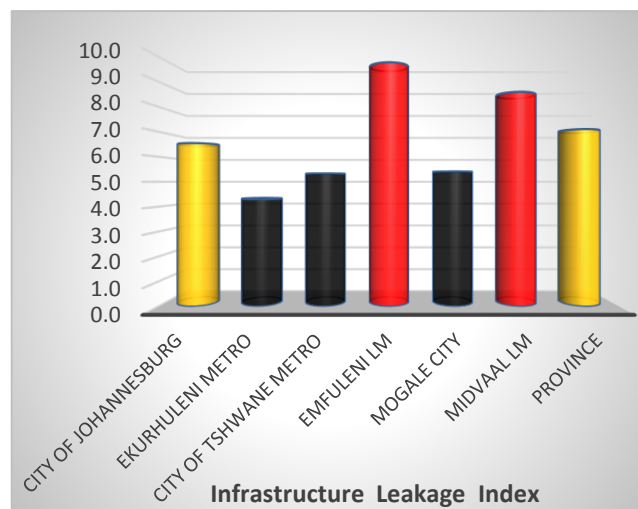
5.5 Physical water loss (ILI unit)

The Infrastructure Leakage Index (ILI) is the preferred real water loss indicator of the IWA and used in the scorecard to assess real losses. The ILI provides an indication of the current physical losses versus the expected physical losses. For example, an ILI of 3 means that the current leakage in the system is 3 times the expected minimum leakage.

No Drop Benchmark: >8 = EXTREMELY INEFFICIENT ; 6-8 = POOR ; 4-6 = AVERAGE ; 2-4 = GOOD ; <2 = EXCELLENT
 Gauteng Weighted Average: 7.1 = POOR

ILI performance categories

■	>8	Extremely inefficient
■	6-8	Poor leakage record
■	4-6	Average
■	2-4	Good
■	<2	Excellent water loss management

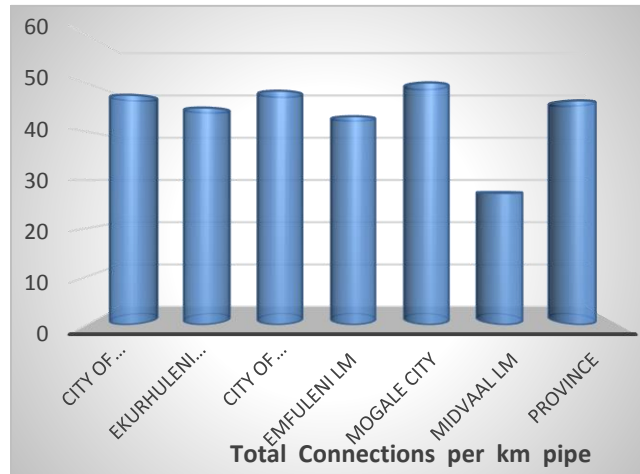


The weighted average ILI for Gauteng is 7.1.

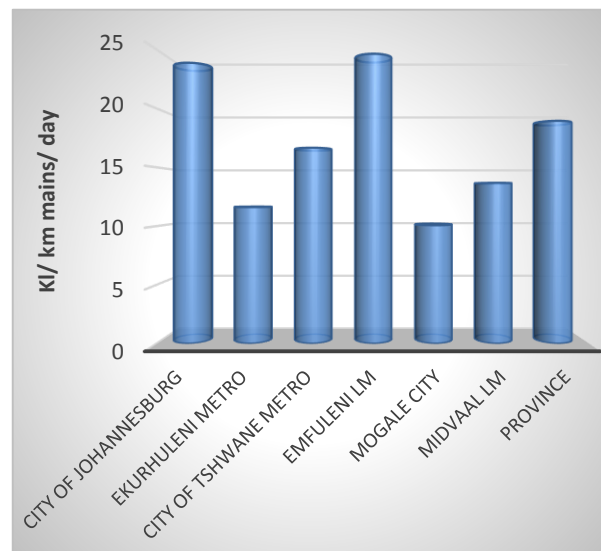
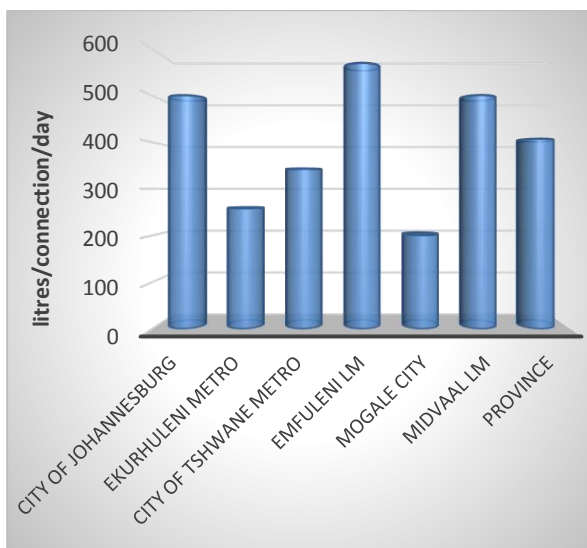
Ekurhuleni Metro has the lowest ILI of 4.3 (rated as 'average'). The highest ILI can be seen for Emfuleni LM at 9.8 and Midvaal LM at 8.6 which both exhibit highly inefficient water use.

When considering that the length of mains and number of connections influences the ILI calculation, the following comparison can be made (figure to the right):

Connection density per length of pipeline is not a performance parameter, it does provide insight into the set-up of connections and meters on the existing water supply pipeline. The density of connections per km mains varies from 50 connections per km in Mogale City LM to 27 connections per km mains in Midvaal LM, with an average of 44 connections per km. Some of the metros have raised the validity of the ILI as an indicator and the Department will investigate this further.



Other real water loss indicators include litres/connection/day (below 2nd graph) and m³ or kl/km mains/day (below 3rd graph).



The graph directly above shows that Emfuleni, Mogale City and City of Johannesburg have the highest losses per connection per day (570 to 501 ℓ/connection/d), whereas Ekurhuleni Metro and Mogale City shows low losses per connection. The graph on the left also shows that much higher real loss per km main for Emfuleni LM, City of Johannesburg and City of Tshwane. The lowest value is represented by Mogale City LM.



High physical losses could indicate leakages on the transmission and/or distribution mains, leakage on service connections up to point of customer metering, leakage and overflows at utility's storage tanks.

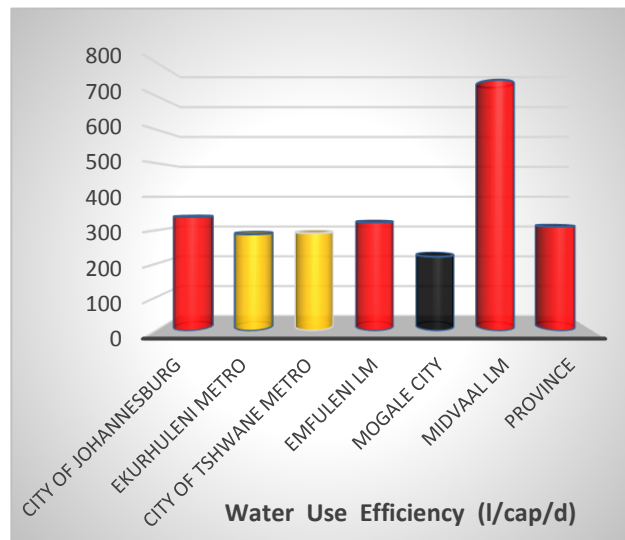
5.6 Water Use Efficiency (l/c/d)

Litres per capita per day provide an indication of the gross volume of water used per capita (person) per day. Although the calculation is based on the total system input volume (m³/year) and not just the domestic component, it does provide a useful indicator.

- **No Drop Benchmark:** >300 l/c/d = EXTREMELY HIGH; 250-300 l/c/d = POOR; 200-250 l/c/d = AVERAGE 150-200 l/c/d = GOOD; <150 l/c/d = EXCELLENT
- **Gauteng Weighted Ave:** 311 l/c/d = EXTREMELY HIGH

	>300	Extremely high per capita water use
	250-300	Poor
	200-250	Average
	150-200	Good
	<150	Excellent per capita water use

Water use efficiency is typically one of the key performance indicators and reported against at national level. The weighted average WUE is 311 l/c/d. The average consumption is well above the international benchmark of 180 l/c/d and the municipalities must look to target an average consumption of below 200 l/c/d. The results indicate that Midvaal LM has an abnormally high WUE of 747 l/c/d followed by City of Johannesburg and Emfuleni LM with 340 and 324 l/c/d respectively. The other 4 municipalities are all above the benchmark of 180 l/c/d and none fall below the international benchmark.



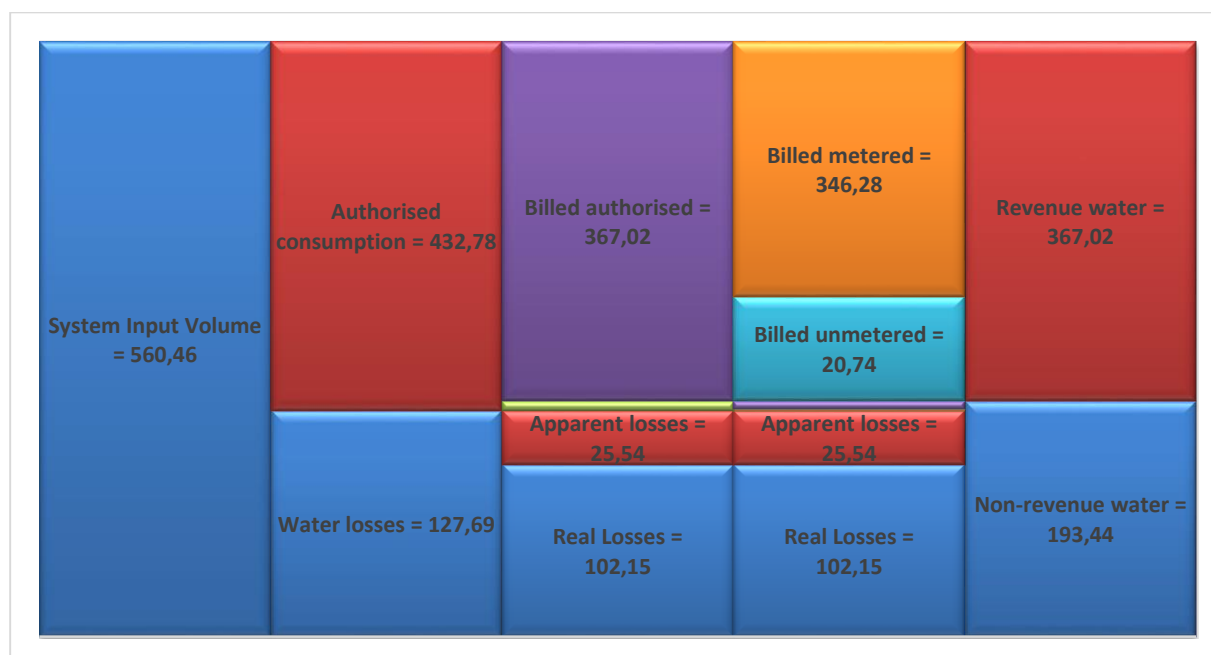
A high use of water per capita could be an indication of inefficient water use due to high internal plumbing leakages or paying consumers who do not value the scarcity of water. Unmetered as well as unauthorised consumption needs to be addressed to improve this status.

City of Johannesburg Metropolitan Municipality

2013 Municipal No Drop Score	84%
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Key Performance Area		
WATER USE EFFICIENCY & WATER LOSS MANAGEMENT (3% weight)		2.52%
No Drop Score (2013)		84% Good
INPUT DATA	Population	4 518 904
	Households	1 479 934
	Metered Connections	430 081
	Unmetered Connections	128 830
	Length of mains (km)	11 728
	Average System Pressure (m)	65
	2014 Water Use Targets (Water Balance Targets)	455.72 million
	System Input Volume (kl/annum)	560.46 million
	Billed Metered Authorised Use (kl/annum)	346.28 million
	Billed Unmetered Authorised Use (kl/annum)	20.74 million
	Unbilled Authorised Use (kl/annum)	65.75 million
	Assumed Commercial Losses (%)	20%
	Authorised Use – billed & unbilled (kl/annum)	432.78 million
WATER BALANCE DATA	Water Losses (kl/annum)	127.69 million
	Apparent losses (kl/annum)	25.54 million
	Real Losses (kl/annum)	102.15 million
	Revenue Water (kl/annum)	367.02 million
	Non-Revenue Water (kl/annum)	193.44 million
KPIs	Infrastructure Leakage Index (ILI)	6.54 Poor
	Apparent/ Commercial Losses (%)	4.56%
	Non-Revenue Water (%)	34.51% Poor
	Water Use Efficiency (l/cap/day)	339.8 Extremely poor
OTHER	Authorised Use (l/cap/day)	262.38
	Real Losses (l/cap/day)	61.93
	% Water Losses	23%

2012/13 IWA Water Balance (million m³/annum)



Regulatory Impression

The No Drop score of 84% indicates that the City has a good knowledge of its water losses and has processes, systems and resources in place to monitor and report its water losses- and NRW status. The Regulator notes that the monthly and annual water balance submitted was linked to the assessment period in question. The historic water balance trend data was used to verify and adjust the data set accordingly. A WCWDM Strategy is in place and the key components are included in the IDP. Well done to the City for elevating WCWDM to the highest decision making level. It is further noted that implementation against the WCWDM Plan are taking place, which includes amongst others; retrofitting of the meters. Historic movement of water demand was presented during the audit, using these trends to inform the project plan and evaluate progress.

Regrettably, the effort and resources applied have not yet translated to water use efficiency, as seen from the high ILI, high water use efficiency, and NRW of 34.5%. The metro is encouraged to prioritise projects that will impact and improve these performance areas.

No Drop Findings

- The ILI of 6.54 is demonstrating poor water loss management.
- The water use efficiency performance is extremely poor at 339.8l/c/d.
- The NRW (34.5%) is demonstrating poor non-revenue management.

Sustainability Pathway

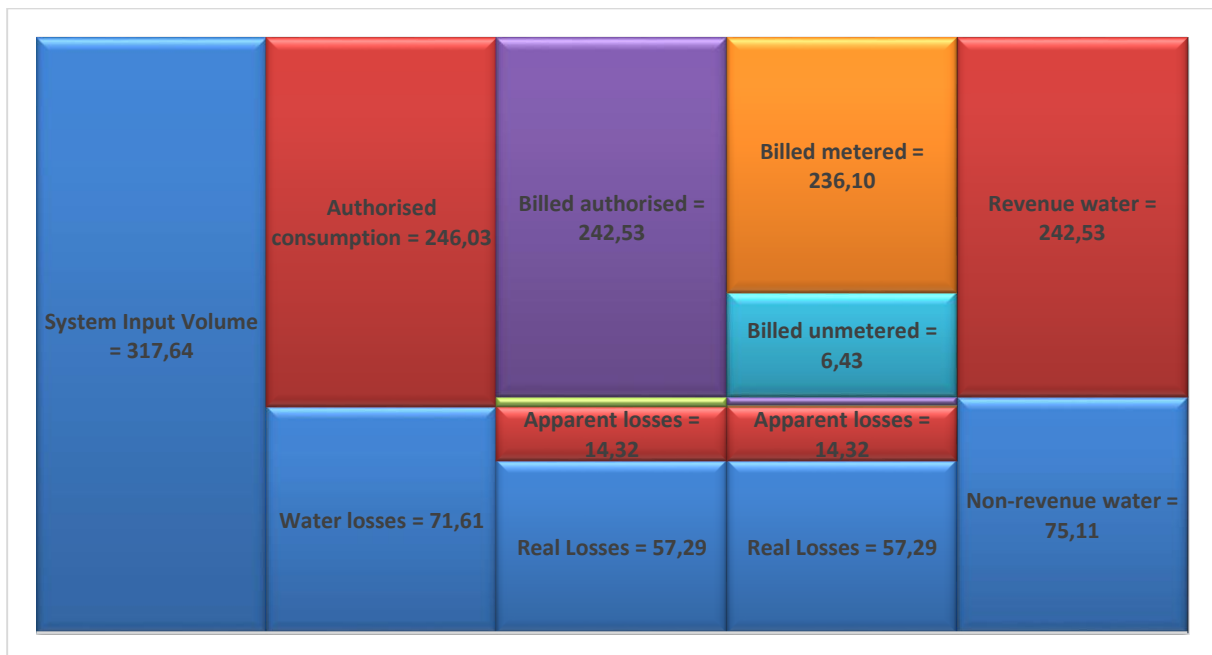
The municipality should endeavour to implement the findings and recommendations of the No Drop assessment, which will lead to improved sustainability, and security of water services.

City of Tshwane Metro

2013 Municipal No Drop Score	100%
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Key Performance Area		Status and Performance
WATER USE EFFICIENCY & WATER LOSS MANAGEMENT (3% weight)		3.00%
No Drop Score (2013)		100% Excellent
INPUT DATA	Population	2 986 073
	Households	957 714
	Metered Connections	456 889
	Unmetered Connections	0
	Length of mains (km)	9 422
	Average System Pressure (m)	55
	2014 Water Use Targets (Water Balance Targets)	330.34 million
	System Input Volume (kl/annum)	317.64 million
	Billed Metered Authorised Use (kl/annum)	236.10 million
	Billed Unmetered Authorised Use (kl/annum)	6.43 million
	Unbilled Authorised Use (kl/annum)	3.51 million
	Assumed Commercial Losses (%)	20%
WATER BALANCE DATA	Authorised Use – billed & unbilled (kl/annum)	246.03 million
	Water Losses (kl/annum)	71.61 million
	Apparent losses (kl/annum)	14.32 million
	Real Losses (kl/annum)	57.29 million
	Revenue Water (kl/annum)	242.53 million
	Non-Revenue Water (kl/annum)	75.11 million
KPIs	Infrastructure Leakage Index (ILI)	5.33 Average
	Apparent/ Commercial Losses (%)	4.51%
	Non-Revenue Water (%)	23.65% Average
	Water Use Efficiency (l/cap/day)	291.4 Poor
OTHER	Authorised Use (l/cap/day)	225.74
	Real Losses (l/cap/day)	52.56
	% Water Losses	23%

2012/13 IWA Water Balance (million m³/annum)



Regulatory Impression

The excellent No Drop score of 100% indicates that the City has an excellent knowledge base of its water losses. Processes, systems and resources are in place to monitor and report against water losses- and NRW targets. The Regulator notes that the monthly and annual water balance submitted was linked to the assessment period in question. The historic water balance trend data was used to verify and adjust the data set accordingly. A WCWDM Strategy is in place and the key components are included in the IDP. Well done to the City for elevating WCWDM to the highest decision making level. Budget is derived from various municipal units, which indicate that WCWDM receive the collective focus of the WSA.

The Regulator noted the Minutes of Water Loss Management & Coordination Meetings, indicating activities, progress, and tasks assignment to specific individuals. The effort and resources applied have translated to improved water use efficiency, as supported by the indicators for ILI and NRW (23.7%), measuring 0.5% improvement in NRW per annum. Room is left for further improvement, especially in the area of water use efficiency, which is not on par with expected performance.

No Drop Findings

- WCWDM implementation was scored positively, however, projects were not sufficiently listed.
- The budget comes from different divisions within the municipality and there is no one budget only a global budget available..
- The ILI of 5.33 is demonstrating average water loss management with potential for marked improvement.
- The water use efficiency performance is poor at 291.4 l/c/d.
- The NRW (23.65%) is demonstrating average non-revenue management with potential for marked improvement.

Sustainability Pathway

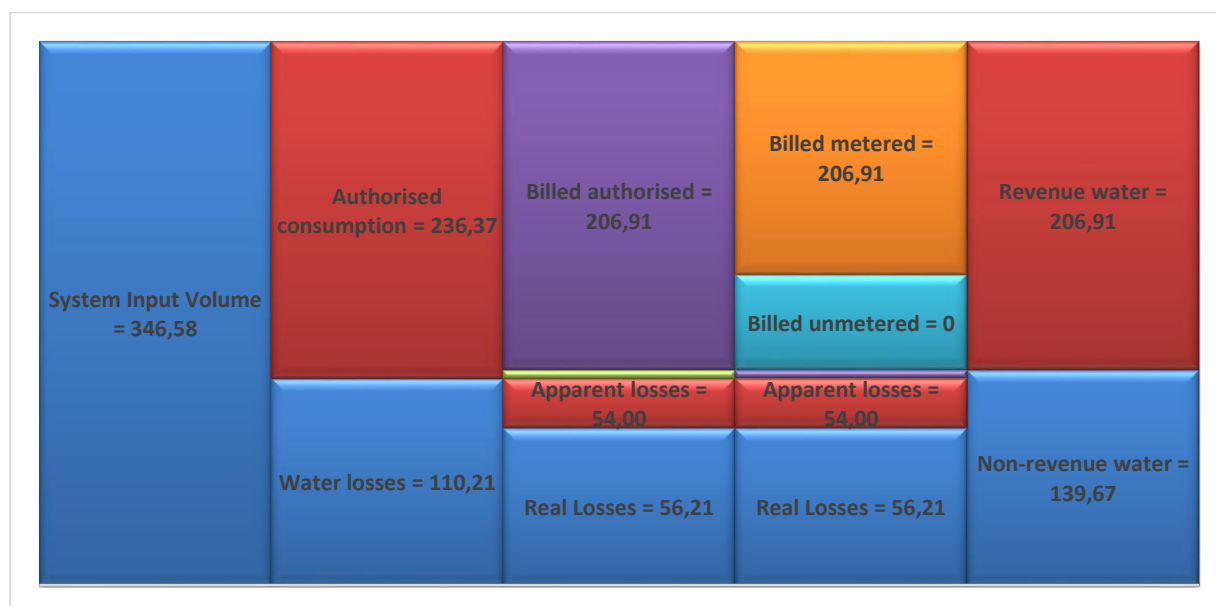
The municipality should endeavour to implement the findings and recommendations of the No Drop assessment, which will lead to improved sustainability, and security of water services.

Ekurhuleni Metro

2013 Municipal No Drop Score	90%
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Key Performance Area		Status and Performance
WATER USE EFFICIENCY & WATER LOSS MANAGEMENT (3% weight)		2.70%
No Drop Score (2013)		90% Good
INPUT DATA	Population	3 296 125
	Households	1 122 991
	Metered Connections	516 038
	Unmetered Connections	80 449
	Length of mains (km)	13 255
	Average System Pressure (m)	50
	2014 Water Use Targets (Water Balance Targets)	339.82 million
	System Input Volume (kl/annum)	346.58 million
	Billed Metered Authorised Use (kl/annum)	206.91 million
	Billed Unmetered Authorised Use (kl/annum)	0
	Unbilled Authorised Use (kl/annum)	29.46 million
	Assumed Commercial Losses (%)	49%
	Authorised Use – billed & unbilled (kl/annum)	236.37 million
WATER BALANCE DATA	Water Losses (kl/annum)	110.21 million
	Apparent losses (kl/annum)	54.00 million
	Real Losses (kl/annum)	56.21 million
	Revenue Water (kl/annum)	206.91 million
	Non-Revenue Water (kl/annum)	139.67 million
	Infrastructure Leakage Index (ILI)	4.30 Average
KPIs	Apparent/ Commercial Losses (%)	15.58%
	Non-Revenue Water (%)	40.30% Extremely poor
	Water Use Efficiency (l/cap/day)	288.1 Poor
	Authorised Use (l/cap/day)	196.47
OTHER	Real Losses (l/cap/day)	46.72
	% Water Losses	32%

2012/13 IWA Water Balance (million m³/annum)



Regulatory Impression

The excellent No Drop score of 90% indicates that Ekurhuleni has an excellent knowledge base of its water losses and that processes, systems and resources are in place to monitor and report against NRW targets. The Regulator notes that the monthly and annual water balance submitted was linked to the assessment period in question. The historic water balance trend data was used to verify and adjust the data set accordingly. A WCWDM Strategy is in place and the key components are included in the IDP. WCWDM implementation is taking place proactively and with strong support from the Council and drive from the responsible Councillor. The Regulator notes the monthly meetings held by a Task Team to monitor progress of implementation. The metro outlined its targets for 2011/2012 (baseline) for a 10 year rollout with a 5 year budget estimation focussing on the reduction of NRW from 39.3% to 20% over 10 years. The programmes include:

- Real losses: Replacement of mid-block mains, pipeline upgrading, pro-active leak detection, valve and fittings audit, control valves and pressure management, indigent leak fixing, cathodic protection of steel pipes, telemetry, discretization of water supply zones, management of district metered areas
- Apparent losses: Meter replacement, metering of unmetered stands, metering of informal settlements

Well done to the City for elevating WCWDM to the highest decision making level. It is anticipated that the energetic team and focussed drive will result in improved NRW and water loss reduction in the coming years, as these performance areas are not yet reflecting excellence status.

No Drop Findings

- The ILI of 4.30 is demonstrating average water loss management with potential for marked improvement.
- The water use efficiency performance is poor at 288.1 l/c/d.
- The NRW (40.30%) is demonstrating poor non-revenue management.

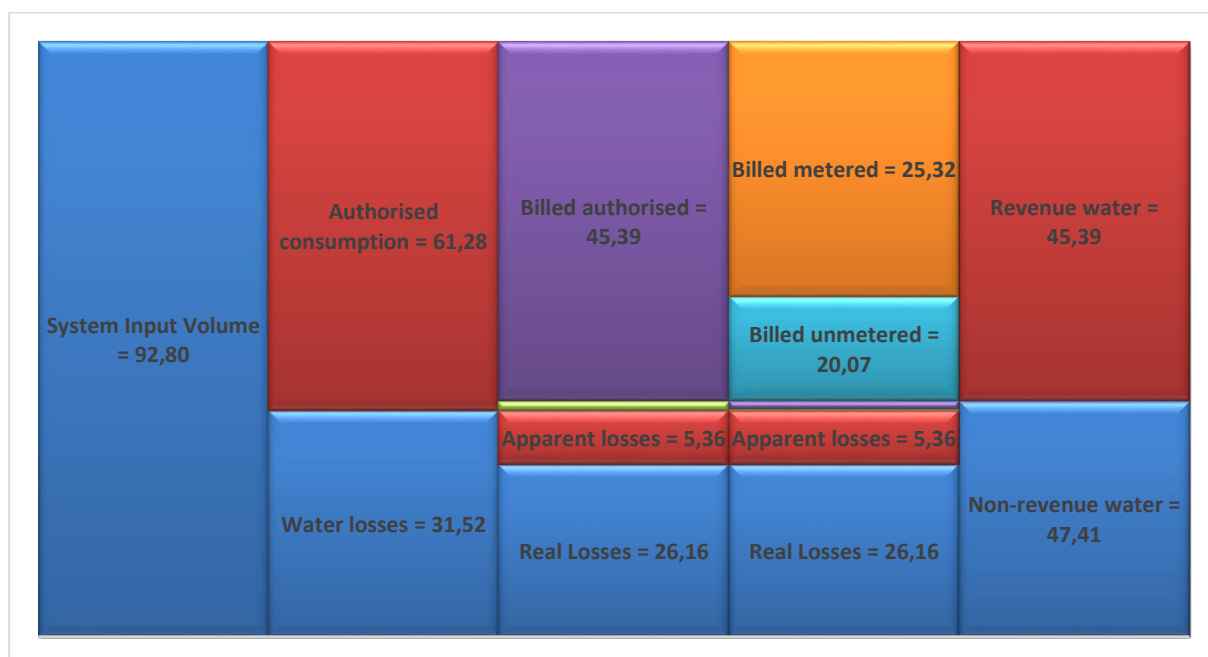
Sustainability Pathway

The municipality should endeavour to implement the findings and recommendations of the No Drop assessment, which will lead to improved sustainability, and security of water services.

Emfuleni Local Municipality

2013 Municipal No Drop Score		74%
Key Performance Area		Status and Performance
WATER USE EFFICIENCY & WATER LOSS MANAGEMENT (3% weight)		2.22%
No Drop Score (2013)		74% Average
INPUT DATA	Population	786 024
	Households	237 320
	Metered Connections	42 404
	Unmetered Connections	83 375
	Length of mains (km)	2 911
	Average System Pressure (m)	48
	2014 Water Use Targets (Water Balance Targets)	65.75 million
	System Input Volume (kl/annum)	92.80 million
	Billed Metered Authorised Use (kl/annum)	25.32 million
	Billed Unmetered Authorised Use (kl/annum)	20.07 million
	Unbilled Authorised Use (kl/annum)	15.88 million
	Assumed Commercial Losses (%)	17%
WATER BALANCE DATA	Authorised Use – billed & unbilled (kl/annum)	61.28 million
	Water Losses (kl/annum)	31.52 million
	Apparent losses (kl/annum)	5.36 million
	Real Losses (kl/annum)	26.16 million
	Revenue Water (kl/annum)	45.39 million
	Non-Revenue Water (kl/annum)	47.41 million
KPIs	Infrastructure Leakage Index (ILI)	9.76 Extremely poor
	Apparent/ Commercial Losses (%)	5.77%
	Non-Revenue Water (%)	51.08% Extremely poor
	Water Use Efficiency (l/cap/day)	323.5 Extremely poor
OTHER	Authorised Use (l/cap/day)	213.59
	Real Losses (l/cap/day)	91.20
	% Water Losses	34%

2012/13 IWA Water Balance (million m³/annum)



Regulatory Impression

The No Drop score of 74% indicates that Emfuleni has sound knowledge of its water losses and that some processes and systems are in place to plan, monitor and report against targets. The Regulator notes that the monthly and annual water balance submitted was linked to the assessment period in question. The historic water balance trend data was used to verify and adjust the data set accordingly. A WCWDM Strategy is in place and the key components are included in the IDP.

The Regulator notes the good work that has been done on meter replacements, PRV maintenance and Boloka Metsi (Retrofitting of private homes/ pressure management). A budget from 2011-14 PRV project is finished but not all PRV's are addressed. R6.3 million was budgeted and R3.18 million had been spent.

Regrettably, the effort and budget have not been sufficient to address the NRW and water losses, which is extremely high, i.e. NRW of 51% and water losses of 34%. Emfuleni is urged to address this situation as a matter of urgency.

No Drop Findings

- The ILI of 9.76 is demonstrating extremely poor and inefficient water use.
- The water use efficiency performance is extremely poor at 323.5 l/c/d.
- The NRW (51.08%) is demonstrating extremely poor non-revenue management.

Sustainability Pathway

The municipality should endeavour to implement the findings and recommendations of the No Drop assessment, which will lead to improved sustainability, and security of water services.

Lesedi Local Municipality

2013 Municipal No Drop Score		31%
Key Performance Area		Status and Performance
WATER USE EFFICIENCY & WATER LOSS MANAGEMENT (3% weight)		0.93%
No Drop Score (2013)		31% Very poor

Regulatory Impression

Limited evidence was provided during the No Drop assessment. Also, credibility of data could not be confirmed during the audit process. No 2012/13 IWA water balance diagram reflected.

The Regulator impresses on the municipality that the first and most important step to ensure water security is to know your status. Lesedi is urged to establish its Water Balance as a matter of priority.

No Drop findings

- No monthly and annual water balances in place
- A WCWDM and BP is in place but outside the assessment period in question. No evidence of WCWDM implementation
- Compliance and performance evidence could not be provided
- Insufficient evidence to award a bonus.

Sustainability Pathway

The municipality should endeavour to implement the findings and recommendations of the No Drop assessment, which will lead to improved sustainability, and security of water services.

Merafong Local Municipality

2013 Municipal No Drop Score		0%
Key Performance Area	Status and Performance	
WATER USE EFFICIENCY & WATER LOSS MANAGEMENT (3% weight)	0.00%	
No Drop Score (2013)	0% Critical	

Regulatory Impression

Limited evidence was provided during the No Drop assessment. Also, credibility of data could not be confirmed during the audit process. No 2012/13 IWA water balance diagram reflected.

The Regulator impresses on the municipality that the first and most important step to ensure water security is to know your status. Merafong is urged to establish its Water Balance as a matter of priority.

No Drop findings

- No monthly and annual water balances in place
- No WCWDM Strategy or Business Plan
- Compliance and performance evidence could not be provided
- Insufficient evidence to award a bonus.

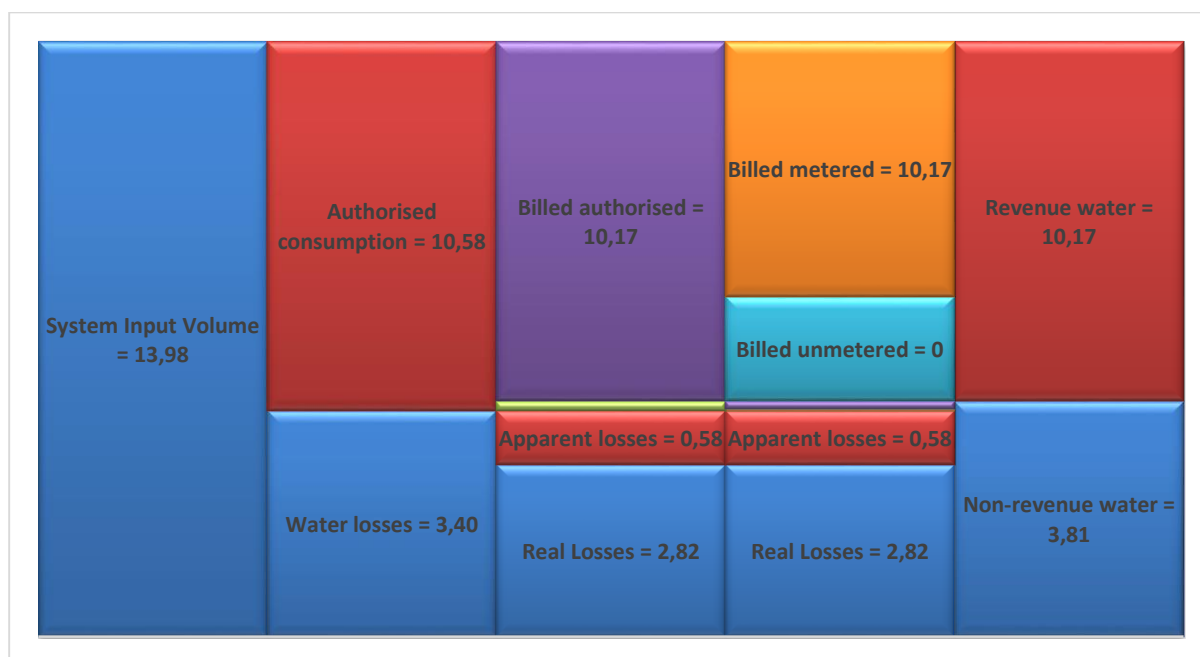
Sustainability Pathway

The municipality should endeavour to implement the findings and recommendations of the No Drop assessment, which will lead to improved sustainability, and security of water services.

Midvaal Local Municipality

2013 Municipal No Drop Score		54%
Key Performance Area		Status and Performance
WATER USE EFFICIENCY & WATER LOSS MANAGEMENT (3% weight)		1.62%
No Drop Score (2013)		54% Average
INPUT DATA	Population	51 247
	Households	16 113
	Metered Connections	14 168
	Unmetered Connections	1 267
	Length of mains (km)	565
	Average System Pressure (m)	40
	2014 Water Use Targets (Water Balance Targets)	12.23 million
	System Input Volume (kl/annum)	13.98 million
	Billed Metered Authorised Use (kl/annum)	10.17 million
	Billed Unmetered Authorised Use (kl/annum)	0
	Unbilled Authorised Use (kl/annum)	0.41 million
	Assumed Commercial Losses (%)	17%
	Authorised Use – billed & unbilled (kl/annum)	10.58 million
WATER BALANCE DATA	Water Losses (kl/annum)	3.40 million
	Apparent losses (kl/annum)	0.58 million
	Real Losses (kl/annum)	2.82 million
	Revenue Water (kl/annum)	10.17 million
	Non-Revenue Water (kl/annum)	3.81 million
	Infrastructure Leakage Index (ILI)	8.58 Extremely poor
KPIs	Apparent/ Commercial Losses (%)	4.14%
	Non-Revenue Water (%)	27.24% Average
	Water Use Efficiency (l/cap/day)	747.2 Extremely poor
	Authorised Use (l/cap/day)	565.38
OTHER	Real Losses (l/cap/day)	150.87
	% Water Losses	24%

2012/13 IWA Water Balance (million m³/annum)



Regulatory Impression

The No Drop score of 54% indicates that Midvaal has some knowledge base to monitor its water losses. Some processes and systems are in place to plan, monitor and report against targets, but much room for improvement can be identified. The Regulator notes that the monthly and annual water balance submitted was linked to the assessment period in question. The historic water balance trend data was used to verify and adjust the data set accordingly. A WCWDM Strategy is not in place and not informing the IDP.

The Regulator notes the average performance to NRW (27%), but is concerned about the high litres per capita use and high ILI of 8.9 which indicates highly inefficient water use in the municipality. Midvaal is urged to address this situation as a matter of urgency.

No Drop Findings

- No WCWDM Strategy in place
- Plans are in place to address the apparent water losses by replacing old water meters about 10% (1200 domestic meters).
- No WCWDM implementation indicated.
- The ILI of 8.58 is demonstrating extremely inefficient water use.
- The water use efficiency is extremely high per capita water use 747.2 l/c/d.
- The NRW (27.24%) is demonstrating average non-revenue management.

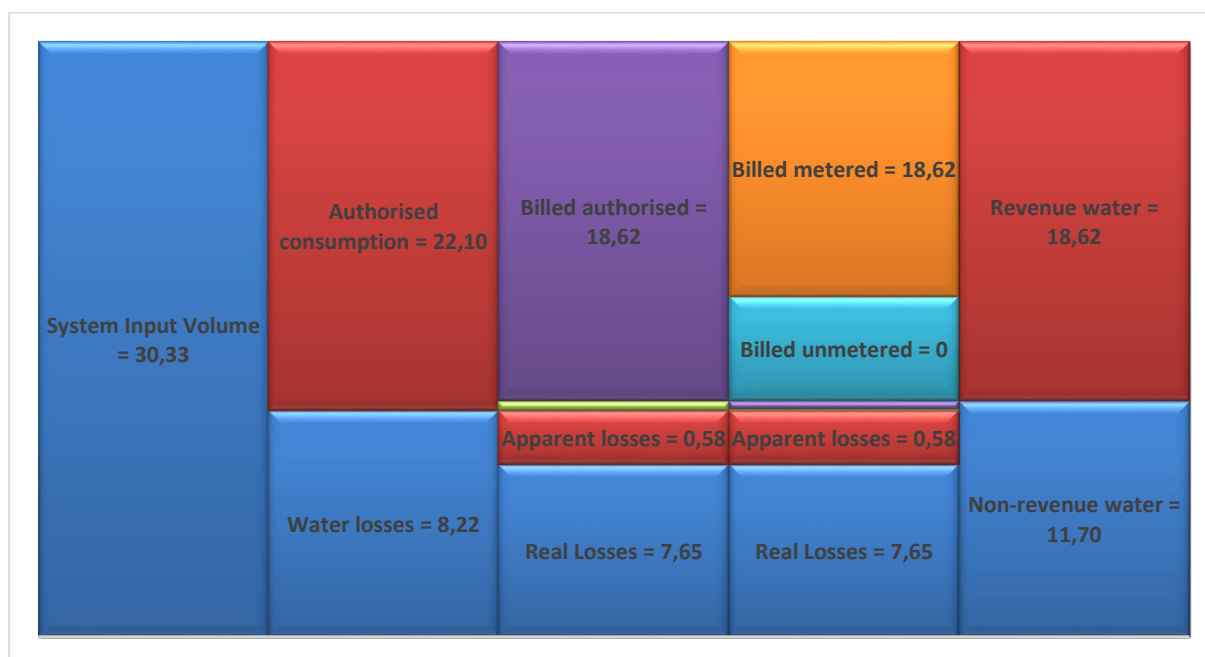
Sustainability Pathway

The municipality should endeavour to implement the findings and recommendations of the No Drop assessment, which will lead to improved sustainability, and security of water services.

Mogale City Local Municipality

2013 Municipal No Drop Score		49%
Key Performance Area		Status and Performance
WATER USE EFFICIENCY & WATER LOSS MANAGEMENT (3% weight)		1.47%
No Drop Score (2013)		49% Very poor
INPUT DATA	Population	375 821
	Households	129 798
	Metered Connections	59 306
	Unmetered Connections	45 137
	Length of mains (km)	2 080
	Average System Pressure (m)	32
	2014 Water Use Targets (Water Balance Targets)	27.69 million
	System Input Volume (kl/annum)	30.33 million
	Billed Metered Authorised Use (kl/annum)	18.62 million
	Billed Unmetered Authorised Use (kl/annum)	0
	Unbilled Authorised Use (kl/annum)	3.48 million
	Assumed Commercial Losses (%)	7%
	Authorised Use – billed & unbilled (kl/annum)	22.10 million
WATER BALANCE DATA	Water Losses (kl/annum)	8.22 million
	Apparent losses (kl/annum)	0.58 million
	Real Losses (kl/annum)	7.65 million
	Revenue Water (kl/annum)	18.62 million
	Non-Revenue Water (kl/annum)	11.70 million
	Infrastructure Leakage Index (ILI)	5.41 Average
KPIs	Apparent/ Commercial Losses (%)	1.90%
	Non-Revenue Water (%)	38.60% Poor
	Water Use Efficiency (l/cap/day)	221.1 Average
	Authorised Use (l/cap/day)	161.12
OTHER	Real Losses (l/cap/day)	55.76
	% Water Losses	27%

2012/13 IWA Water Balance (million m³/annum)



Regulatory Impression

The No Drop score of 49% indicates that Mogale City does not have a sound knowledge base from where to monitor its water losses. The required processes and systems are not in place to plan, monitor and report against targets, and various improvement opportunities could be identified. The Regulator notes that the monthly and annual water balance submitted was linked to the assessment period in question. The historic water balance trend data was used to verify and adjust the data set accordingly. A WCWDM Strategy is not in place and not informing the IDP.

The Regulator notes the high NRW (38.6%) with concern, and urges Mogale City to address this situation as a matter of urgency.

No Drop Findings

- No proof provided indicating a WCWDM Strategy in place. Components of a WCWDM Strategy and Business Plan are included in the IDP.
- Some minor indication of WCWDM implementation with reference to a meter reading contract and related budgets.
- The ILI of 5.41 is demonstrating average water loss management with potential for marked improvement.
- The water use efficiency performance is average at 221.1 l/c/d with potential for marked improvement.
- The NRW (38.6%) is demonstrating poor non-revenue management.

Sustainability pathway

The municipality should endeavour to implement the findings and recommendations of the No Drop assessment, which will lead to improved sustainability, and security of water services.

Randfontein Local Municipality

2013 Municipal No Drop Score		9%
Key Performance Area	Status and Performance	
WATER USE EFFICIENCY & WATER LOSS MANAGEMENT (3% weight)	0.27%	
No Drop Score (2013)	9% Critical	

Regulatory Impression

Limited evidence was provided during the No Drop assessment. Also, credibility of data could not be confirmed during the audit process. No 2012/13 IWA water balance diagram reflected.

The Regulator impresses on the municipality that the first and most important step to ensure water security is to know your status. Randfontein is urged to establish its Water Balance as a matter of priority.

No Drop findings

- No monthly and annual water balances in place
- WCWDM and Business Plan are in place - partial compliance received a marginal score
- No evidence of WCWDM implementation
- Compliance and performance evidence could not be provided
- Insufficient evidence to award a bonus.

Sustainability Pathway

The municipality is encouraged to address the No Drop Findings as a first course of action on the road to No Drop conformance, improved performance and sustainable water loss management.

Westonaria Local Municipality

2013 Municipal No Drop Score		10%
Key Performance Area		Status and Performance
WATER USE EFFICIENCY & WATER LOSS MANAGEMENT (3% weight)		0.30%
No Drop Score (2013)		10% Critical

Regulatory Impression

Limited evidence was provided during the No Drop assessment. Also, credibility of data could not be confirmed during the audit process. No 2012/13 IWA water balance diagram reflected.

The Regulator impresses on the municipality that the first and most important step to ensure water security is to know your status. Randfontein is urged to establish its Water Balance as a matter of priority.

No Drop findings

- No monthly and annual water balances in place
- No WCWDM Strategy and Business Plan in place – partial compliance was scored
- No evidence of WCWDM implementation
- Compliance and performance evidence could not be provided
- Insufficient evidence to award a bonus.

Sustainability Pathway

The municipality is encouraged to address the No Drop Findings as a first course of action on the road to No Drop conformance, improved performance and sustainable water loss management.