

**7.
WRITING OFF OF 2020/21 NON-TECHNICAL WATER AND ELECTRICITY LOSSES**

5/17/1

S Müller

Director : Infrastructure & Planning

10 August 2021

(028) 313 8019

1. Executive Summary

National Treasury issued guidelines (MFMA Circular No. 70, December 2013) on how to deal with non-revenue water and electricity. Annexure B of Circular No. 70 provides guidance on the accounting treatment of non-technical losses and mentions that a council resolution is required to write off the losses. The purpose with this report is to obtain Council's approval for writing off the water and electricity losses for 2020/21.

2. Service Delivery and Budget Implementation Plan - IGNITE

Directorate Finance
Department Financial Services

3. Compliance with Strategic Priorities

Provision of democratic, accountable and ethical governance
Provision and maintenance of municipal services

4. Delegated Authority

None

5. Legal Requirements

Local Government: Municipal Finance Management Act, Act 56 of 2003

6. Background/Discussion/Evaluation/Conclusion**Background**

National Treasury issued guidelines (MFMA Circular No. 70, December 2013) on how to deal with non-revenue water and electricity. Annexure B of the Circular provides guidance on the accounting treatment of non-technical losses and mentions that a council resolution is required to write off the losses.

Discussion

Losses occur in every water and electricity distribution system. Losses are divided into technical losses and non-technical losses. Technical losses are authorised, unmetered uses, or unavoidable internal system losses, whereas

non-technical losses are unauthorised, unmetered uses and avoidable system losses.

In the case of electricity:

- Technical losses are losses caused by the physical properties of the components of the power system. The most obvious example is the power lost in the distribution lines and transformers due to unavoidable internal electrical resistance,
- Non-technical losses are losses caused by illegal connections, inaccurate meters, incorrect meter readings, incorrect billing, etc.

In the case of water:

- Technical losses are losses caused by unmetered, authorised water uses such as fire fighting, cleaning of reservoirs, and flushing of pipelines;
- Non-technical losses are losses caused by leaks, pipe bursts, illegal connections, inaccurate meters, incorrect meter readings, incorrect billing, etc.

Evaluation

Electricity (refer to Annexure A for details)

The Municipality purchased 256 572 652 kWh of energy from Eskom during the period under review (1 July 2020 to 30 June 2021) at a total cost of R233 310 763.20. The unit cost of electricity is therefore R 0.909336 per kWh.

During the same period, the Municipality sold 237 717 614.70 kWh of energy to its customers. This equated to a total loss of 18 855 037.30 kWh (7.349%). The National Treasury norm for electricity losses is between 7% and 10%.

It is estimated that the technical electrical losses for the entire Overstrand system is 5.0%.

The non-technical losses are therefore 2.349%, or 6 026 404.7 kWh. At a unit cost of R 0.909336 / kWh this equates to an amount of R 5 480 026.74.

Water (refer to Annexure B for details)

The Municipality produced 7 350 903 kl of potable water during the period under review (1 July 2020 to 30 June 2021).

During the same period, the Municipality sold 5 273 591 kl of potable water to its customers. This equated to a total loss of 2 077 312 kl. The technical water losses were calculated to be 134 146 kl (1.82%).

The non-technical losses are therefore 26.43% or 1 943 166 kl, and this equates to an amount of R 2 438 768.70. The National Treasury norm for water losses is between 15% and 30%.

7. Financial Implications

None (disclosed in the notes to the Annual Financial Statements)

8. Staff Implications

None

9. Comments from other Departments, Divisions and Administrations

None

10. Annexures

Annexure A: Details of Electricity Losses

Annexure B: Details of Water Losses

RECOMMENDATION TO THE COUNCIL:

1. that the non-technical electricity losses to the value of R 5 480 026.74 for the 2020/21 financial year be written off; and
2. that the non-technical water losses to the value of R 2 438 768.70 for the 2020/21 financial year be written off.

RESPONSIBLE OFFICIAL :**BA KING****TARGET DATE FOR IMPLEMENTATION :****1 SEPTEMBER 2021**

JUL 20 - JUN 21

Table for KLERMOND 2016012028996 with columns: HIGH/LOW SEASON, OFF PEAK RATE, OFF PEAK PEAK UNITS, OFF PEAK TOTAL, PEAK RATE, PEAK UNITS, PEAK TOTAL, STANDARD RATE, STANDARD UNITS, STANDARD TOTAL, TOTAL UNITS, ADMIN CHARGES, TOTAL.

Table for HERMANUS / HAWSTON 2016012028997 with columns: HIGH / LOW SEASON, OFF PEAK RATE, OFF PEAK PEAK UNITS, OFF PEAK TOTAL, PEAK RATE, PEAK UNITS, PEAK TOTAL, STANDARD RATE, STANDARD UNITS, STANDARD TOTAL, TOTAL UNITS, ADMIN CHARGES, TOTAL.

Table for STAMFORD 2016012028998 with columns: HIGH / LOW SEASON, OFF PEAK RATE, OFF PEAK PEAK UNITS, OFF PEAK TOTAL, PEAK RATE, PEAK UNITS, PEAK TOTAL, STANDARD RATE, STANDARD UNITS, STANDARD TOTAL, TOTAL UNITS, ADMIN CHARGES, TOTAL.

Table for GANSBAU 2016012028999 with columns: HIGH / LOW SEASON, OFF PEAK RATE, OFF PEAK PEAK UNITS, OFF PEAK TOTAL, PEAK RATE, PEAK UNITS, PEAK TOTAL, STANDARD RATE, STANDARD UNITS, STANDARD TOTAL, TOTAL UNITS, ADMIN CHARGES, TOTAL.

Table for 2020/2021 MONTHLY TOTALS with columns: HIGH / LOW SEASON, OFF PEAK RATE, OFF PEAK PEAK UNITS, OFF PEAK TOTAL, PEAK RATE, PEAK UNITS, PEAK TOTAL, STANDARD RATE, STANDARD UNITS, STANDARD TOTAL, TOTAL UNITS, ADMIN CHARGES, TOTAL, % INCREASE, R VALUE OF UNITS.

ELECTRICITY LOSSES : 12 Months Moving Average : June 2021

Table with columns: Administration, Suburb, July 2020, August 2020, September 2020, October 2020, November 2020, December 2020, January 2021, February 2021, March 2021, April 2021, May 2021, June 2021, TOTAL kWh. Includes sub-sections for Kleinmond and Hawtson.

Table with columns: Administration, Suburb, July 2020, August 2020, September 2020, October 2020, November 2020, December 2020, January 2021, February 2021, March 2021, April 2021, May 2021, June 2021, TOTAL kWh. Includes sub-sections for Hawtson and Kleinmond.

Table with columns: Administration, Suburb, July 2020, August 2020, September 2020, October 2020, November 2020, December 2020, January 2021, February 2021, March 2021, April 2021, May 2021, June 2021, TOTAL kWh. Includes sub-sections for Greater Hermanus and Kleinmond.

Table with columns: Administration, Suburb, July 2020, August 2020, September 2020, October 2020, November 2020, December 2020, January 2021, February 2021, March 2021, April 2021, May 2021, June 2021, TOTAL kWh. Includes sub-sections for Hermanus, Kleinmond, and Hawtson.

Table with columns: Administration, Suburb, July 2020, August 2020, September 2020, October 2020, November 2020, December 2020, January 2021, February 2021, March 2021, April 2021, May 2021, June 2021, TOTAL kWh. Includes sub-sections for Stanford and Kleinmond.

Table with columns: Administration, Suburb, July 2020, August 2020, September 2020, October 2020, November 2020, December 2020, January 2021, February 2021, March 2021, April 2021, May 2021, June 2021, TOTAL kWh. Includes sub-sections for Gansbaai and Stanford.

Table with columns: Administration, Suburb, July 2020, August 2020, September 2020, October 2020, November 2020, December 2020, January 2021, February 2021, March 2021, April 2021, May 2021, June 2021, TOTAL kWh. Includes sub-sections for Gansbaai and Stanford.

Table with columns: Administration, Suburb, July 2020, August 2020, September 2020, October 2020, November 2020, December 2020, January 2021, February 2021, March 2021, April 2021, May 2021, June 2021, TOTAL kWh. Includes sub-sections for Overstrand and Kleinmond.

Metered consumption since 1 July 2018

Streetlights adjusted w.e.f. 1 Jan 2012

5% operational/technical losses (per email from Duppie) Net/Non-technical losses

Table with columns: Unit Cost R/kWh, kWh, R. Includes rows for Total general losses, Technical losses, and Non-technical losses.

WATER CONSUMPTION vs BULK - 12 MONTHS MOVING AVERAGE AS AT JUNE 2021

Annexure 3 1/4

Administration	Suburb	Jul 2020	Aug 2020	Sep 2020	Oct 2020	Nov 2020	Dec 2020	Jan 2021	Feb 2021	Mar 2021	Apr 2021	May 2021	Jun 2021	TOTAL
KLEINMOND		Ke	Ke	Ke	Ke	Ke	Ke	Ke	Ke	Ke	Ke	Ke	Ke	Ke
Metered	Kleinmond	34,098	29,493	30,467	35,187	37,165	31,546	55,547	46,272	41,617	45,453	41,629	28,891	457,165
	Overhills	1,661	1,857	1,899	1,755	1,639	974	884	3,069	2,036	2,471	1,768	2,082	22,095
	Proteadorp	1,793	1,997	2,150	1,829	2,185	1,013	2,197	1,868	1,949	2,096	1,861	1,472	22,410
	Uitbreiding 6	1,111	1,107	1,080	1,198	1,250	783	1,138	1,778	1,134	956	1,276	1,270	14,081
Subtotal		38,663	34,454	35,596	39,969	42,239	34,316	59,766	52,987	46,736	50,976	46,534	33,515	515,751
Bulk Water		62,429	61,171	62,551	63,026	68,361	81,491	77,002	67,323	68,064	68,900	62,548	62,257	805,123
Water Losses		23,766	26,717	26,955	23,057	26,122	47,175	17,236	14,336	21,328	17,924	16,014	28,742	289,372
% Water Losses		38	44	43	37	38	58	22	21	31	26	26	46	36
BUFFELSRIVIER														
	Bettysbaai	14,546	13,946	10,683	14,240	13,213	15,042	28,600	24,979	19,913	18,112	19,428	11,988	204,690
	Pringlebaai	9,228	7,378	7,825	7,606	8,151	13,075	16,305	17,812	9,889	12,680	10,035	7,739	127,703
	Hangklip Kleinhoeves	435	385	565	876	462	1,133	722	2,279	800	2,956	617	404	11,634
	Rooiels	1,865	1,322	1,505	2,503	1,546	3,380	4,685	4,041	3,203	2,033	3,132	1,093	30,308
Subtotal		26,074	23,031	20,578	25,225	23,372	32,630	50,312	49,111	33,805	35,761	33,212	21,224	374,335
Bulk Water		53,682	53,399	49,113	77,636	60,222	77,240	76,780	71,363	65,211	63,138	54,870	55,138	757,792
Water Losses		27,608	30,368	28,535	52,411	36,850	44,610	26,468	22,252	31,406	27,377	21,658	33,914	383,457
% Water Losses		51	57	58	68	61	58	34	31	48	43	39	62	51
GREATER HERMANUS														
Metered	De Bos	23	17	17	15	17	28	59	38	35	72	36	25	382
	Eastcliff	16,698	13,372	13,711	16,794	26,168	22,936	33,060	27,351	28,042	23,916	22,838	15,280	260,166
	Fisherhaven	5,093	4,434	4,923	4,765	5,308	6,311	8,573	6,758	7,117	5,614	7,622	4,522	71,040
	Group Development	152	183	201	286	290	4,305	7,489	4,412	661	7,484	3,419	2,191	31,073
	Hermanus Heights	2,900	3,421	3,815	3,884	4,424	4,564	6,059	5,777	6,268	4,692	4,802	2,914	53,520
	Hawston	17,756	13,242	16,474	16,589	15,466	16,896	51,870	25,542	22,007	19,492	15,864	15,465	246,663
	Industria	2,618	2,243	2,653	2,906	5,455	3,237	3,664	2,296	3,508	3,161	2,476	3,127	37,344
	Kleinrivier	64	99	69	100	95	33	74	57	35	41	48	28	743
	Mount Pleasant	10,400	9,180	10,079	10,356	11,321	13,035	11,471	12,113	12,214	11,122	13,361	9,907	134,559
	Mooisig	4,373	4,181	3,850	4,230	5,422	6,051	7,590	8,022	8,553	5,684	6,253	3,615	87,824
	Northcliff	9,429	8,718	10,705	11,357	12,646	11,586	13,518	16,181	12,375	12,680	13,737	10,317	143,249
	Onrus	25,082	24,060	25,532	25,576	29,410	33,089	49,098	44,091	33,411	31,665	35,094	23,771	379,879
	Sandbaai	27,757	23,266	27,011	24,883	29,013	30,105	37,888	38,923	36,285	31,586	31,791	28,994	367,502
	Voëlklip	18,985	13,264	16,007	18,771	18,616	22,916	43,106	23,435	27,974	25,266	21,230	15,103	264,673
	Vermont	15,778	16,718	15,927	17,969	18,618	21,502	32,341	27,681	22,738	25,680	23,676	15,258	253,886
	Westcliff	19,192	22,808	18,588	22,044	22,538	26,487	25,353	27,071	25,420	21,882	22,673	20,105	274,161
	Zwellihle	36,312	28,094	26,557	33,230	29,857	32,347	36,318	28,300	30,389	32,507	28,227	24,333	366,471
	Benguella Cove	0	0	0	0	0	0	0	0	0	0	0	0	0
	Caledon Distrik	7,625	5,057	2,726	15,396	7,252	8,458	14,124	15,860	11,896	8,653	4,862	8,280	110,169
Subtotal		220,237	192,357	198,845	229,151	241,916	263,886	381,655	313,908	288,928	271,197	258,009	203,215	3,063,304
Bulk Water		287,760	288,340	291,310	322,750	331,100	409,040	429,620	352,190	359,060	347,410	308,490	297,220	4,024,290
Water Losses		67,523	95,983	92,465	93,599	89,184	145,154	47,965	38,282	70,132	76,213	50,481	94,005	960,986
% Water Losses		23	33	32	29	27	35	11	11	20	22	16	32	24
STANFORD														
Metered	Stanford North	1,813	1,923	2,308	2,078	-21	0	0	0	0	0	0	0	8,101
	Stanford South	15	14	27	4	-15	0	0	0	0	0	0	0	45
	Stanford	14,938	12,944	15,475	16,207	15,178	18,829	27,892	19,925	17,937	21,506	18,773	15,604	215,208
Subtotal		16,766	14,881	17,810	18,289	15,142	18,829	27,892	19,925	17,937	21,506	18,773	15,604	223,354
Bulk Water		23,104	23,948	25,335	29,398	26,402	27,796	28,707	25,510	25,935	27,784	19,838	19,210	302,967
Water Losses		6,338	9,067	7,525	11,109	11,260	8,967	815	5,585	7,998	6,278	1,065	3,606	79,613
% Water Losses		27	38	30	38	43	32	3	22	31	23	5	19	26
GANSBAAI														
Metered	Blompark	5,577	5,298	5,473	5,378	6,258	6,001	7,105	5,877	6,172	5,294	6,060	5,418	69,911
	De Kelders	19,815	8,678	10,298	10,580	10,687	12,696	17,557	13,921	16,681	13,471	12,209	9,485	158,078
	Franskraal	8,589	8,490	9,999	9,744	9,321	11,907	21,522	13,943	14,921	11,498	13,521	8,181	141,636
	Gansbaai	24,799	25,638	22,985	24,284	28,749	24,433	34,174	28,128	32,351	27,180	32,281	26,623	331,625
	GB Industrie Park	1,031	890	1,056	1,151	1,268	1,243	1,165	1,515	1,289	1,705	746	1,440	13,166
	Kleinbaai	4,654	3,584	4,987	5,495	4,781	6,230	10,064	8,499	9,021	5,899	7,405	4,757	75,376
	Masakhane	3,838	3,815	3,388	3,529	3,199	2,755	2,782	2,823	3,597	3,512	3,540	3,399	40,177
	Bredasdorp Distrik	747	673	564	605	698	220	1,844	2,382	2,529	150	3,225	974	14,611
	Caledon Distrik	16,571	13,449	10,810	9,214	5,701	9,113	20,689	10,656	11,545	9,157	10,103	11,744	138,752
Subtotal		85,621	70,515	69,560	69,980	70,662	74,598	117,074	87,394	98,332	77,460	90,049	71,327	982,572
Bulk Water		99,401	97,406	98,549	102,282	99,849	122,467	131,027	117,128	114,373	112,176	101,805	94,601	1,291,064
Water Losses		13,780	26,891	28,989	32,302	29,187	47,869	13,953	29,734	16,041	34,716	11,756	23,274	308,492
% Water Losses		14	28	29	32	29	39	11	25	14	31	12	25	24
Metered	B/bos	421	457	537	422	461	689	951	589	789	611	723	570	7,220
Bulk Water		1060	1140	1056	1370	1310	1288	1940	1857	1158	1178	977	804	15,138
Water Losses		639	683	519	948	849	599	989	1,268	369	567	254	234	7,918
% Water Losses		60	60	49	69	65	47	51	68	32	48	26	29	52
Metered	Buffeljags	171	226	258	230	225	269	302	197	240	201	219	185	2,723
Bulk Water		427	421	472	494	493	603	691	542	476	423	377	460	5,879
Water Losses		256	195	214	264	268	334	389	345	236	222	158	275	3,156
% Water Losses		60	46	45	53	54	55	56	64	50	52	42	60	54
Metered	Pearly Beach	6,531	6,715	6,937	8,287	7,278								

Overstrand Municipality Water Distribution Losses 2020/2021 per Distribution Area

Water Scheme	Bulk Water per Town and Scheme	Water Metered (excl Grey & Raw water)	Losses per Town	Operational Losses	Water Metered plus Operational Losses	Non-Technical Water Losses	Cost per Kℓ Purified	Cost of Non-Tech Water Losses	Cost of Tech Water Losses	Cost of Gen Water Losses	Total Cost of Bulk Water
	Kℓ	Kℓ	Kℓ	Kℓ	Kℓ	Kℓ	R	R	R	R	R
Water: Kleinmond	805,123	515,751	289,372	12,423	528,174	276,949	R 0.74	R 206,050.06	R 9,242.71	R 215,292.77	R 599,011.51
Water: Buffelsrivier	757,792	374,335	383,457	58,177	432,512	325,280	R 1.15	R 374,397.28	R 66,961.73	R 441,359.01	R 872,218.59
Water: Preekstoel De Bos Dam	2,733,588	2,080,817	652,771	28,328	2,110,145	623,443	R 0.30	R 187,032.90	R 8,798.40	R 195,831.30	R 820,076.40
Gateway Borehole	425,708	324,050	101,658	4,567	328,617	97,091	R 4.55	R 441,761.96	R 20,779.85	R 462,541.81	R 1,936,971.40
Hemel & Aarde Boreholes	864,994	658,437	206,557	9,280	667,717	197,277	R 0.46	R 90,155.80	R 4,240.96	R 94,396.76	R 395,302.26
Greater Hermanus Total	4,024,290	3,063,304	960,986	43,175	3,106,479	917,811		R 718,950.66	R 33,819.21	R 752,769.87	R 3,152,350.06
Water: Stanford	302,967	223,354	79,613	3,796	227,150	75,817	R 0.48	R 36,316.34	R 1,818.28	R 38,134.63	R 145,121.19
Water: Franskraal	1,024,085	830,322	193,763	11,477	841,799	182,286	R 5.36	R 976,506.10	R 61,482.29	R 1,037,988.39	R 5,486,023.35
De Kelders	266,979	152,250	114,729	2,892	155,242	111,737	R 0.35	R 38,884.48	R 1,041.22	R 39,925.69	R 92,908.69
Greater Gansbaai Total	1,291,064	982,572	308,492	14,469	997,041	294,023		R 1,015,390.58	R 62,523.51	R 1,077,914.08	R 5,578,932.04
Water: Baardskeedersbos	15,138	7,220	7,918	165	7,385	7,753	R 5.59	R 43,347.02	R 922.52	R 44,269.54	R 84,636.56
Water: Buffeljagsbaai	5,879	2,723	3,156	72	2,795	3,084	R 0.00	R 0.00	R 0.00	R 0.00	R 0.00
Water: Pearly Beach	148,650	104,332	44,318	1,868	106,201	42,449	R 1.04	R 44,316.76	R 1,951.24	R 46,267.99	R 155,190.60
Overstrand Totals	7,350,903	5,273,591	2,077,312	134,146	5,407,737	1,943,166		R 2,438,768.70	R 177,239.19	R 2,616,007.89	R 10,587,460.55
	%	Kℓ	R								
Total / General water losses	28.26%	2,077,312	2,616,007.89								
Operational / Technical Losses	1.82%	134,146	177,239.19								
Nett / Non-technical water losses	26.43%	1,943,166	2,438,768.70								

Unit Cost per Water Scheme:

Water Scheme Name	Variable cost per Bulk O&M Contract (R/Kℓ)
Buffelsrivier Bulk	R 1.15
Kleinmond Bulk	R 0.74
Greater Hermanus Preekstoel De Bos Dam	R 0.30
Greater Hermanus Gateway Well Field	R 4.55
Greater Hermanus Preekstoel Groundwater	R 0.46
Stanford	R 0.48
Greater Gansbaai - Franskraal	R 5.36
Greater Gansbaai - De Kelders	R 0.35
Pearly Beach Bulk	R 1.04
Buffeljagsbaai Bulk	R 0.00
Baardskeedersbos Bulk	R 5.59



MEMORANDUM

KANTOOR VAN DIE ADJUNK DIREKTEUR: OPERASIONELE DIENSTE
OFFICE OF THE DEPUTY DIRECTOR: OPERATIONAL SERVICES

To : CFO

Date : 07 July 2021

From : Theo Steenberg

Re : Water losses due to operational requirements for the period:

1 July 2020 to 30 June 2021

The operational requirements for purified water for the Overstrand during the 2020/21 financial year can be summarized as follows.

1. Fire fighting

Firefighting required 908.35 kl for Overstrand (Annex "A")

2. Cleaning of reservoirs.

Reservoirs are cleaned (flushed) once a year to avoid sludge settling in the reservoirs from being distributed in the water network. To avoid "contaminated" water entering the system the reservoirs are allowed to drain into the network to approx. 30% of its capacity.

The balance of the water is flushed out with the sludge when cleaning the reservoirs

The total capacity of Overstrand reservoirs is 72 404 kl (Annex "B")

Total amount flushed water is 21721.2 kl

3. Flushing of pipelines after the repair of burst pipes.

When burst pipes in the distribution networks occur, a certain amount of "debris" (mud etc.) enters the system. In order to avoid contaminated water being supplied to consumers, the pipelines are flushed through fire hydrants for approx. 1 hour at a time at a rate of 50kl/hr.

Due to the long pipelines, lack of valves and fire hydrants in the Betty's Bay network, the flushing time is 6 hours at a time (conservative estimate)

During 2020/21 Betty's Bay, Pringlebay and Rooi Els experienced 169 burst pipes and in the rest of Overstrand 131 pipe bursts occurred. (Annex "C")

Therefore 50700 kl ($169 \times 50 \text{kl} \times 6 \text{hrs}$) for Betty's Bay, Pringle Bay and Rooiels and 6550 kl ($131 \times 50 \text{kl} \times 1 \text{hr}$) for the rest of Overstrand was flushed, totalling 57250 kl.

4. Water used by contractors (metered standpipes)

Private contractors appointed to execute municipal contract use potable water during the execution of their contracts. This consumption is accounted for by means of metered standpipes. (Annex "D") Contractors were billed for operational usage.

5. Water meter audit (accuracy of domestic water meters)

Worley Parsons Consulting Engineers audited all water meters in the Overstrand during 2011.

With age, the accuracy of the domestic water meters deteriorates and according to this report, meters older than 10 years are reading 8% less than the actual consumption.

According to a report (Annex "E") extracted from DB4 4624 meters were older than 10 years on 30 June 2021.

The total consumption (billed) for 2020/21 was 5 273 591 kl, with an average annual consumption of 145 kl per consumer (36281 meters in total).

Thus 4624 meters were "under reading" by 8% on an average annual consumption of 145 kl.

53 638 kl consumption was therefore not accounted for, due to the "under reading" of the individual water meters, due to their age.

6. Replacement of water meters.

A contract for the replacement of water meters is currently under way. To limit inconvenience to consumers these replacements are done "live". During this operation 0.25kl is lost per meter replaced.

2515 Water meters were replaced (Annexure "F") totalling 629 kl in the process.

Total losses due to operational requirements during 2020/21 is 134 146 .55 kl

Yours sincerely,



T STEENBERG

DEPUTY DIRECTOR: OPERATIONAL SERVICES