A. L. ABBOTT & ASSOCIATES (PTY) LTD
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THE WATER & WASTE WATER SPECIALISTS

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Certificate of Analysis

HESSEQUA MUNICIPALITY - TENDER NO. HES-TECH 06/2526

Hessequa Final Effluents

24-ALBERTINIA

DATE SAMPLED : 2026/10/05
DATE RECEIVED : 2026/10/06
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OUR REF. : 2026/10/05/34216
REPORT NO . : 7241

	Sample Number	34216		
Mthd ALA No.	**Analyses**	**Results**	**General Limit (Full)**	**% Uncertainty of Measurement**
19	pH (at 25 °C)	7.41	5.5-9.5	1.5
9	Conductivity (mS/m) (at 25 °C)	185	70.0 Above Intake - 150 Max	4.5
6A	Total Suspended Solids (mg/l)	17	25	18
95	Ammonia Nitrogen (mg/l as N)	48.3	6.0	6
100	Nitrate & Nitrite Nitrogen (mg/l as N)	0.43	15.0	10.2
Calc	Nitrate Nitrogen (mg/l as N)	<0.20	N/A	3.4
99	Nitrite Nitrogen (mg/l as N)	0.30	15.0 (sum of NO2 & NO3-N)	4
101	Ortho Phosphate (mg/l as P)	7.5	10.0	4.8
2	Chemical Oxygen Demand (mg/l)	140	75.0 After Removal of Algae	6.8
66	Free Chlorine (mg/l)	<0.05	N/A	-
84	E.coli (count per 100 ml)	272	N/A	4.9
86	Faecal Coliforms (count per 100 ml)	345	1000	7

Sampler : JACQUES MOUTON(ALA)

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Notes:

1. Test marked with an asterisk (*) on attached Appendix 1 (Doc. 7.8#3) are SANAS Accredited and are included in the SANAS Schedule of Accreditation for this laboratory.
2. Schedule of Accreditation excludes sampling. Where applicable pH and Free & Total Chlorine Residual results are supplied by the sampling officer and will be indicated on the Certificate of Analysis. This is marked as "Field".
3. Sampling plans are as requested by the customer. Sampling is done according to A.L. Abbott and Associates (Pty) Ltd sampling procedures which are available on request.
4. Uncertainty of Measurement and Method Description will be provided upon request.
5. Results are reported at the 95% Confidence Interval with a Coverage Factor K = 2.
6. The laboratory does not normally issue any statement of conformity, unless by prior arrangement.
   Decision Rule: Results reflecting on the Certificate of Analysis are actual results as obtained at the time of testing and do not include any uncertainty consideration.
7. The quality and integrity of samples submitted has a direct correlation on the results reported. Results reflected on this report therefore relate only to the sample as received.
8. In the absence of customer specified limits, SANS 241-1:2015 or General Limits will appear, as applicable.
9. This report may not be reproduced, except in full, without the prior written approval of the laboratory.
10. Opinions and interpretations are not included in the Certificate of Analysis.

N. VAN BINSBERGEN (Pr.Sci.Nat.)
DIRECTOR
13 October 2026 (Date Issued)

TO: HESSEQUA MUNICIPALITY
PO BOX 29
RIVERSDALE
6670

Att: C. BARNES-SEPTEMBER (septemberc@hantam.gov.za)

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APPENDIX 1 : SPECIFIC METHODS USED FOR THE ANALYSES OF PARAMETERS INDICATED IN THIS REPORT

ALA Method No.	Parameter	Method	Limit of Detection	Limit of Quantification
45	Acidity (mg/l)	STD Method 2310 B (1992)	-	-
94	Alkalinity (mg/l as $CaCO_3$) *	Discrete Analyzer using the Gallery	5.0	11.0
N/A	Algae Identification and Count (per ml)	*(Outsourced)*	-	-
92	Aluminium (µg/l as Al) *	Based on SANS 11885 (ICP)	9.8	40.0
92a	Aluminium (µg/l as Al) *	Based on SANS 11885 (ICP)	1.9	40.0
3	Ammonia (mg/l as N) *	STD Method 4500-NH_3:C (1992)	0.14	0.15
95	Ammonia (mg/l as N) *	Discrete Analyzer using the Gallery	0.09	0.10
92	Antimony (µg/l as Sb) *	Based on SANS 11885 (ICP)	3.6	20.0
92a	Antimony (µg/l as Sb) *	Based on SANS 11885 (ICP)	2.9	20.0
92	Arsenic (µg/l as As) *	Based on SANS 11885 (ICP)	2.7	10.0
92a	Arsenic (µg/l as As) *	Based on SANS 11885 (ICP)	8.0	10.0
92	Barium (µg/l) *	Based on SANS 11885 (ICP)	0.08	20.0
92a	Barium (µg/l) *	Based on SANS 11885 (ICP)	1.07	20.0
92	Beryllium µg/l as Be) *	Based on SANS 11885 (ICP)	0.05	20.0
92a	Beryllium µg/l as Be) *	Based on SANS 11885 (ICP)	0.34	20.0
Calc	Bicarbonate (mg/l)	Calculation	-	-
N/A	Biochemical Oxygen Demand (mg/l O_2)	*(Outsourced)*	-	-
92	Boron (mg/l as B) *	Based on SANS 11885 (ICP)	1.5	100
92a	Boron (µg/l as B) *	Based on SANS 11885 (ICP)	1.2	100
N/A	Bromine (mg/l as Br)	*(Outsourced)*	-	-
N/A	Bromide (mg/l as Br-)	*(Outsourced)*	-	-
92	Cadmium (µg/l as Cd) *	Based on SANS 11885 (ICP)	0.11	3.0
92a	Cadmium (µg/l as Cd) *	Based on SANS 11885 (ICP)	0.67	3.0
92	Calcium (mg/l as Ca) *	Based on SANS 11885 (ICP)	0.06	1.0
92a	Calcium (mg/l as Ca) *	Based on SANS 11885 (ICP)	0.37	1.0
Calc	Calcium (meq/l as Ca)	Calculation	-	-
Calc	Calcium Carbonate Precipitation Potential	Calculation	-	-
Calc	Calcium Hardness *	Calculation	-	-
Calc	Carbonate (mg/l)	Calculation	-	-
2	Chemical Oxygen Demand (mg/l) *	SANS 6048	7.8	8.0
Calc	Chloride (meq/l as Cl^-)	Calculation	-	-
25	Chloride (mg/l as Cl) *	SABS 202	1.0	2.0
96	Chloride (mg/l as Cl) *	Discrete Analyzer using the Gallery	0.20	10.0
69	Chlorine Demand (mg/l)	STD Method 2350 B (1992)	-	0.05
N/A	Chlorophyll-a (µg/l)	*(Outsourced)*	-	-
92	Chromium (µg/l as Cr) *	Based on SANS 11885 (ICP)	1.6	20.0
92a	Chromium (µg/l as Cr) *	Based on SANS 11885 (ICP)	0.72	20.0

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ALA Method No.	Parameter	Method	Limit of Detection	Limit of Quantification
N/A	Clostridium Perfringens (cfu/100 ml)	*(Outsourced)*	-	-
92	Cobalt (µg/l as Co) *	Based on SANS 11885 (ICP)	0.49	20.0
92a	Cobalt (µg/l as Co) *	Based on SANS 11885 (ICP)	0.57	20.0
N/A	Colony Count (cfu/ml)	*(Outsourced)*	-	-
97	Colour (mg/l as Pt) *	Discrete Analyzer using the Gallery	4.0	4.0
Calc.	Combined Nitrate & Nitrate (mg/l as N)	Calculation	-	-
Calc.	Combined Trihalomethanes	Calculation	-	-
Calc	Corrosivity Ratio *	Calculation	-	-
92	Copper (µg/l as Cu) *	Based on SANS 11885 (ICP)	1.4	20.0
92a	Copper (µg/l as Cu) *	Based on SANS 11885 (ICP)	1.3	20.0
N/A	Cryptosporidium (per 10 litres)	*(Outsourced)*	-	-
51	Cyanide (µg/l as CN^-)	Discrete Analyzer using the Gallery	-	20.0
N/A	Cytopathic Viruses (count per 10 litres)	*(Outsourced)*	-	-
125	D-Glucose (mg/l)	Discrete Analyzer using the Gallery	-	-
105	Dissolved Organic Carbon (mg/l as C)	Hach 10129	-	0.10
68	Dissolved Oxygen (mg/l)	STD Method 4500 O-G	-	1.0
78	Dissolved Solids (mg/l)	STD Method 2501 A (1992)	-	6.0
84	E.coli (count per 100 ml) *	Colilert - 18 / Quanti-Tray Method	1.0	1.0
9	Electrical Conductivity (mS/m) (at 25 ºC) *	STD Method 2501 A	0.32	5.0
87	Enterococci (count per 100 ml) *	Enterolert-24 / Quanti-Tray Method	1.0	1.0
86	Faecal Coliforms (count per 100 ml) *	Colilert - 18 / Quanti-Tray Method	1.0	1.0
N/A	Faecal Streptococcus (count per 100 ml) *	*(Outsourced)*	-	-
N/A	Formaldehyde	*(Outsourced)*	-	-
29	Fluoride (mg/l as F) *	*Hach 8029*	0.08	0.50
98	Fluoride (mg/l as F) *	*Discrete Analyzer using the Gallery*	0.10	0.50
66	Free Chlorine (mg/l)	*Lovibond Method 3*	-	0.05
N/A	Giardia (per 10 litres)	*(Outsourced)*	-	-
N/A	Helminth Ova (Total & Viable) (per 4 g dry weight)	*(Outsourced)*	-	-
88	Heterotrophic Plate Count (count per ml) *	*MC-Media Pad*	1.0	1.0
N/A	Hexavalent Chromium (mg/l)	*Hach 8023*	-	1.0
N/A	Hydrocarbons	*(Outsourced)*	-	-
46	Hydrogen Sulphide (mg/l)	*Hach 8051*	-	0.01
92	Iron (µg/l as Fe) *	*Based on SANS 11885 (ICP)*	2.5	20.0
92a	Iron (µg/l as Fe) *	*Based on SANS 11885 (ICP)*	1.4	20.0
Calc	Langelier Saturation Index (at 25 ºC) *	*Calculation*	-	Calc
92	Lead (µg/l as Pb) *	*Based on SANS 11885 (ICP)*	1.9	10.0
92a	Lead (µg/l as Pb) *	*Based on SANS 11885 (ICP)*	2.9	10.0
N/A	Legionella (cfu/l)	*(Outsourced)*	-	-
92a	Lithium (mg/l as Li)	*Based on SANS 11885 (ICP)*	2.0	7.0

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ALA Method No.	Parameter	Method	Limit of Detection	Limit of Quantification
N/A	Listeria Monocytogenes (per 100 ml)	*(Outsourced)*	-	-
Calc	Magnesium (meq/l as Mg)	*Calculation*	-	-
92	Manganese (µg/l as Mn) *	*Based on SANS 11885 (ICP)*	0.53	20.0
92a	Manganese (µg/l as Mn) *	*Based on SANS 11885 (ICP)*	0.73	20.0
92	Magnesium (mg/l as Mg) *	*Based on SANS 11885 (ICP)*	0.05	1.1
92a	Magnesium (mg/l as Mg) *	*Based on SANS 11885 (ICP)*	0.25	1.1
Calc	Magnesium Hardness *	*Calculation*	-	-
92	Mercury (µg/l as Hg)	*Based on SANS 11885 (ICP)*	-	5.0
N/A	Monochloramine (mg/l)	*Lovibond Method*	-	-
92	Molybdenum (µg/l as Mo) *	*Based on SANS 11885 (ICP)*	0.58	20.0
92a	Molybdenum (µg/l as Mo) *	*Based on SANS 11885 (ICP)*	0.99	20.0
N/A	Mould (cfu/100 ml)	*(Outsourced)*	-	-
92	Nickel (µg/l as Ni) *	*Based on SANS 11885 (ICP)*	1.3	20.0
92a	Nickel (µg/l as Ni) *	*Based on SANS 11885 (ICP)*	0.47	20.0
4	Nitrate Nitrogen (mg/l as N) *	*Hach 8039 (Applicable to Sewage Analysis)*	0.19	0.20
4B	Nitrate & Nitrite Nitrogen (mg/l as N) *	*Lovibond Method using Brucine (Applicable to Water Analysis)*	0.05	0.20
100	Nitrate Nitrogen (mg/l as N) *	*Discrete Analyzer using the Gallery*	0.04	0.20
5	Nitrite Nitrogen (mg/l as N) *	*Lovibond (Griess-Ilosvay's Reagent)*	0.08	0.20
99	Nitrlte Nitrogen (mg/l as N) *	*Discrete Analyzer using the Gallery*	0.01	0.20
Calc	Nitrate Nitrogen (mg/l as N) *	*Calculation*	-	-
18	Oil & Grease (mg/l)	*SABS 1051 (Nov. 1982)*	-	1.0
76	Odour (Threshold Odour Number)	*STD Method 2150 (B)*	-	1.0
N/A	Organochlorine Pesticides (OCP)	*(Outsourced)*	-	-
N/A	Organophosphorus Pesticides (OPP)	*(Outsourced)*	-	-
10	Ortho Phosphate (mg/l as P) *	*Hach 8114*	0.19	0.20
101	Ortho Phosphate (mg/l as P) *	*Discrete Analyzer using the Gallery*	0.10	0.20
1	Oxygen Absorbed (mg/l as O)	*SANS 5220*	-	-
N/A	Pesticides (µg/kg)	*(Outsourced)*	-	-
Calc	Potassium (meq/l as K)	*Calculation*	-	-
92a	Potassium (mg/l as K) *	*Based on SANS 11885 (ICP)*	0.40	1.0
N/A	Pseudomonas Aeroginosa (cfu/100 ml)	*(Outsourced)*	-	-
127	pH (at 25 °C) – Lab *	*SABS 11*	0.09	2.0
N/A	pH (at 25 °C) – Field	*SABS 11*	-	-
Calc	pHs (at 25 °C) *	*Calculation*	-	-
52	Phenols (mg/l)	*Discrete Analyzer using the Gallery*	-	0.01
N/A	Polychlorinated Biphenyls (PCB's)	*(Outsourced)*	-	-
92	Potassium (mg/l as K) *	*Based on SANS 11885 (ICP)*	0.04	1.0
Calc	Ryznar Index *	*Calculation*	-	-
N/A	Salmonella (per 100 ml)	*(Outsourced)*	-	-

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ALA Method No.	Parameter	Method	Limit of Detection	Limit of Quantification
92	Selenium (µg/l as Se) *	*Based on SANS 11885 (ICP)*	4.1	10.0
92a	Selenium (µg/l as Se) *	*Based on SANS 11885 (ICP)*	2.6	10.0
67	Settleable Solids (ml/l)	*STD Method 2540 F (1992)*	-	0.10
N/A	Shingella (per 100 ml)	*(Outsourced)*	-	-
Cal	Silica (mg/l) *	*Calculation*	-	-
92	Silicon (µg/l)	*Based on SANAS 11885 (ICP)*	4.1	20.0
92a	Silicon (µg/l) *	*Based on SANAS 11885 (ICP)*	4.9	20.0
Calc.	Silica (µg/l) *	*Calculation*	58.0	58.0
Calc	% Sodium *	*Calculation*	1.0	-
Calc	Sodium Absorption Ratio *	*Calculation*	1.0	-
Calc	Sodium (meq/l as Na)	*Calculation*	1.0	-
92	Sodium (mg/l as Na) *	*Based on SANS 11885 (ICP)*	0.07	1.0
92a	Sodium (mg/l as Na) *	*Based on SANS 11885 (ICP)*	0.45	1.0
Calc	% Solids	*Calculation*	-	-
N/A	Somatic Coliphages (count per 10 ml)	*Fast Phage Somatic Presence/Absence*	-	-
92	Strontium (mg/l) *	*Based on SANS 11885 (ICP)*	0.22	40.0
92a	Strontium (mg/l) *	*Based on SANS 11885 (ICP)*	0.88	40.0
126	Sucrose (mg/l)	*Discrete Analyzer using the Gallery*	0.02	-
24	Sulphate (mg/l as SO4) *	*Hach 8051 (SulfaVer 4 Method)*	4.0	4.0
102	Sulphate (mg/l as SO4) *	*Discrete Analyzer using the Gallery*	0.20	2.0
46	Sulphide (mg/l as S2-)	*STD Method 4500-S2D (1992)*	0.01	-
N/A	Taste	*(Outsourced)*	-	-
92	Tin (µg/l as Sn) *	*Based on SANS 11885 (ICP)*	1.0	20.0
92a	Tin (µg/l as Sn) *	*Based on SANS 11885 (ICP)*	0.96	20.0
92	Titanium (mg/l as Ti)	*(Outsourced)*	-	-
92a	Titanium (µg/l as Ti)	*Based on SANS 11885 (ICP)*	-	5.0
28	Total Alkalinity (mg/l as CaCO3)	*STD Methods 2320*	1.0	1.0
Calc	Total Carbonate Species (mg/l)	*Calculation*	-	-
66	Total Chlorine	*Lovibond Method 3*	0.01	0.05
85	Total Coliforms Bacteria (count per 100 ml) *	*Colilert - 18 / Quanti-Tray Method*	1.0	1.0
7	Total Dissolved Solids	*STD Method 2501 A (1992)*	1.0	1.0
124	Total Glucose (mg/l)	*Discrete Analyzer using the Gallery*	-	-
Calc	Total Hardness (mg/l as CaCO3) *	*Calculation*	1.0	1.0
15	Total Kjeldahl Nitrogen (mg/l)	*Hach 8075*	-	0.15
20	Total Microcystin (µg/l as LR)	*Algal Toxin Strip Test*	-	0.15
105	Total Organic Carbon (mg/l as C)	*Hach 10129*	-	0.10
N/A	Total Petroleum Hydrocarbons (TPH)	*(Outsourced)*	-	-
11	Total Phosphorous (mg/l as P)	*STD Method 4500-PB (1992) / Hach 8114*	-	0.20
13	Total Plate Count (count per ml) *	*Petrifilm TM*	1.0	1.0

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N/A	Total Trihalomethanese (µg/l)	*Gas Chromatography*	1.0	10.0
N/A	Trihalomethane (Chloroform) (µg/l)	*Gas Chromatography*	1.0	10.0
N/A	Trihalomethane (Bromodichloromethane) (µg/l)	*Gas Chromatography*	1.0	10.0
N/A	Trihalomethane (Dibromochloromethane) (µg/l)	*Gas Chromatography*	1.0	10.0
N/A	Trihalomethane (Bromoform) (µg/l)	*Gas Chromatography*	1.0	10.0
27	Turbidity (NTU) *	*Hach 8237*	0.07	0.08
6A	Total Suspended Solids (mg/l) *	*STD Method 2540 D*	3.7	4.0
N/A	TOX (mg/l)	*(Outsourced)*	-	-
92	Uranium (µg/l as U)	*Based on SANS 11885 (ICP)*	15.0	15.0
92a	Uranium (µg/l as U)	*Based on SANS 11885 (ICP)*	7.8	15.0
N/A	UV Absorption (nm)	*(Outsourced)*	-	-
92	Vanadium (µg/l as V) *	*Based on SANS 11885 (ICP)*	0.61	10.0
92a	Vanadium (µg/l as V) *	*Based on SANS 11885 (ICP)*	0.56	10.0
N/A	Viable Helminths	*(Outsourced)*	-	-
N/A	Vibrio Cholerae (per 100 ml)	*(Outsourced)*	-	-
17	Volatile Fatty Acids (mg/l)	*Hach 8196 (Esterification Method)*	-	1.0
Calc	Volatile Fraction (%)	*Calculation*	-	-
6B	Volatile Suspended Solids (mg/l)	*STD Method 2540 E (1992)*	4.0	4.0
N/A	Yeast (cfu/100 ml)	*(Outsourced)*	-	-
92	Zinc (mg/l as Zn) *	*Based on SANS 11885 (ICP)*	0.003	0.01
92a	Zinc (µg/l as Zn) *	*Based on SANS 11885 (ICP)*	4.9	10.0

NOTE : **-Tests marked with (*) in this Appendix are included in the SANAS Schedule of Accreditation for this laboratory.**
-All bacteriological analyses carried out by Colilert Method unless otherwise indicated on the Certificate of Analysis.
-Bacteriological results reported as <1, by the Colilert/Quanti-Tray method is equivalent to "Not Detected" Standard Limit of SANS 241-1:2015.

Sampler : JACQUES MOUTON(ALA)

This report relates only to the samples tested and is issued subject to the company's standard terms and conditions of business.

A. L. ABBOTT & ASSOCIATES (PTY) LTD
Reg. No. 1982/004379/07 Established 1964
THE WATER & WASTE WATER SPECIALISTS

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sanas Testing Laboratory
T0276

Certificate of Analysis

HESSEQUA MUNICIPALITY - TENDER NO. HES-TECH 06/2526

Hessequa Final Effluents

24-ALBERTINIA

DATE SAMPLED : 2026/10/05
DATE RECEIVED : 2026/10/06
DATE ANALYSIS COMMENCED : 2026/10/06

OUR REF. : 2026/10/05/34216
REPORT NO . : 7241

TERMS AND CONDITIONS OF BUSINESS

All work is undertaken by A.L. Abbott and Associates (Pty) Ltd, (hereinafter called "the Company") on the following conditions :

(i) That the total liability of the Company, its officers, servants, agents or sub-contractors for any loss or damage caused by or resulting from improper or negligent performance, purported performance or non-performance of such work shall not exceed the sum equal to fifteen times the fee payable by the customer or R6000, whichever is the lesser sum.

(ii) That the person with whom the Company shall have contracted to have performed the said work will indemnify the Company, its said officers, servants, agents and sub-contractors against all claims made by the third parties consequent upon the performance, purported performance or non-performance of such work to the extent to which the aggregate of such claims exceeds the maximum liability specified in paragraph (i) above.

(iii) Without the prejudice to the foregoing every person who is or becomes an officer, servant, agent or sub-contractor of the Company shall have the benefit of the limitation of liability and indemnity contained in these conditions as if they were expressly made for his benefit and so far as relates to such conditions any contract entered into by the Company is entered into not only on its own benefit but also as agent and trustee for every such person as aforesaid.

(iv) No employee, agent or representative of the Company (other than a Director) has authority to alter or waive or make any representation which will in any way conflict with or override any of the terms of these conditions.

(v) The present conditions shall be governed by South African law and all disputes arising in relation thereto and/or in connection therewith shall be determined by the South African courts.

Sampler : JACQUES MOUTON(ALA)

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