



July 2014

LAND OWNERS BOREHOLE INFORMATION: VOLUME III

Development for the Vaal Gamagara Pipeline Scheme - SD2 Area

Submitted to:

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Report Number: 11613568-12709-5

Distribution:

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REPORT





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APPENDICES

APPENDIX A

Document Limitations



1.0 REPORT VOLUME III – INFORMATION

An extensive hydrocensus was conducted within the SD2 investigation area during groundwater investigation period. During the hydrocensus, 142 boreholes and fountains were surveyed in SD2 area with the co-operation of the land owners.

The hydrocensus survey could not be conducted on some private land areas as some farmers were not allowing access. To maintain good relationships with landowners access was not forced as alternative options were available.

The land owners participating with the groundwater study, existing borehole information as captured on the groundwater data base are listed in this volume III of the report, together with the exploration borehole info (If any). DWAF remains the owner of the exploration boreholes.

Borehole information consists of the following where relevant:

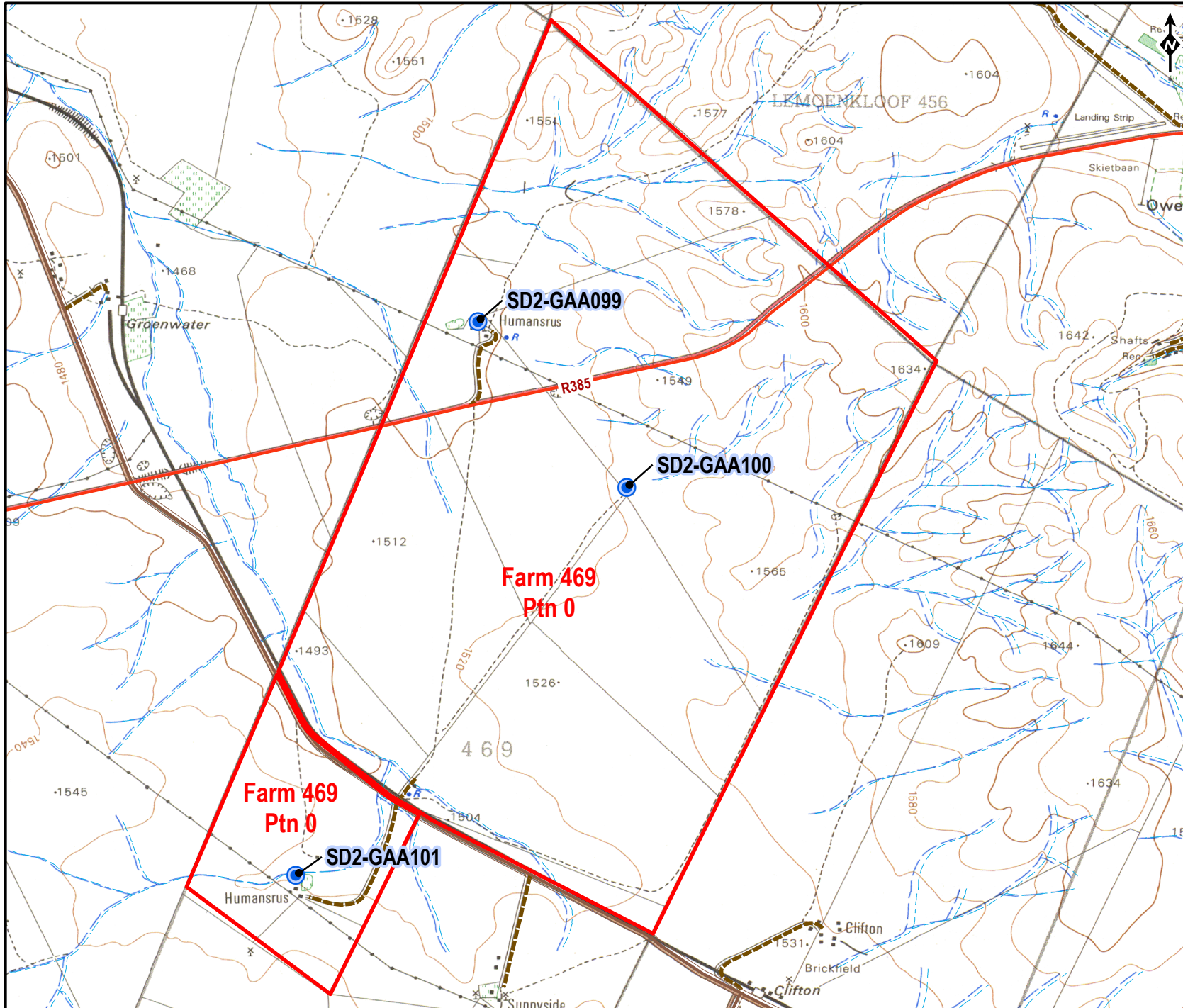
- Locality map and land owner;
- Basic existing borehole information;
- Analytical results of existing boreholes sampled;
- Test pumping results of tested exiting boreholes;
- Positions of newly drilled exploration boreholes;
- Borehole logs of newly drilled exploration boreholes;
- Analytical results of newly drilled exploration boreholes;
- Test pumping results of newly drilled exploration boreholes; and
- Management recommendation of well field exploration boreholes.

2.0 LAND OWNERS

The following landowners/lawful occupiers of land at the time of survey who participated during the groundwater study in SD2 area, borehole information is enclosed in this Volume III:

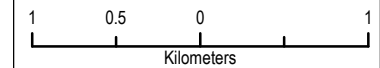


2.1 Alan Scholtz



LEGEND

- Existing borehole survey
- Farm 469 Ptn 0
- Arterial road
- Secondary road
- - - Other
- - - Rivers - Non perennial



RESOURCES/NOTES

Coordinate System: GCS WGS 1984
Datum: WGS 1984

PROJECT

GW ASSESSMENT VGG SCHEME

TITLE

FARM 469 PTN 0
ALAN SCHOLTZ

PROJECT No. 11613568	REV 0
SCALE 1:45 000	A4
GIS MB	02/07/2014
CHECK DB	02/07/2014
REVIEW FW	02/07/2014



ASLAN SCHOLTZ - BASIC SITE INFORMATION

SITE LOCATION										GEOHYDROLOGY				MANAGEMENT RECOMMEND.			
Site Identifier:	Number:	District	Site name/Description	Site type:	Latitude [°]	Longitude [°]	Altitude [m]	Col. ht. [m]	Diam. [mm]	Depth [m]	Water l. [m]	Yield[l/s]	Rec. abs.[l/s]	Depth to Intk. [m]	Dis. rate[l/s]	Duty c. [hrs/d]	Daily abs. [m³/d]
2823ADX0053	SD2-GAA099	469	FARM 469 PTN. HUMANSRUS	B	28.27899967	23.364090001	1499.43		165	50.00	27.27				1.60	0	
2823ADX0054	SD2-GAA100	469	FARM 469 PTN. HUMANSRUS	B	28.29152967	23.375330001	1524.74	0.73	165	74.00	32.63	0.30		51.00	0.05	24	4.32
2823ADX0055	SD2-GAA101	469	FARM 469 PTN. HUMANSRUS	B	28.32082967	23.350340001	1516.98	0.18	165	20.33	18.27	1.80					
SUMMARY:										Maximum:	74.00	32.63	1.80	51.00	1.60		4.32
										Minimum:	20.33	18.27	0.30	51.00	0.05		4.32
										Sum:			2.10		1.65		4.32
										Average:	48.11	26.06	1.05	51.00	0.83		4.32
Nr. of sites: 3																	

Site Type:
B = Borehole

NOTE:
"Yield" represents cumulative blow yield
The recommended abstraction ("Rec. abs.")
is based on a 24 hour duty cycle
(based on test pumping result)



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ALAN SCHOLTZ - TIME DEPENDENT CHEMISTRY REPORT

Site Identifier: 2823ADX0054 **Number:** SD2-GAA100 **Site Name:** FARM 469 PTN. HUMANSRUS

Samp. Nr./Type	Date/Time samp.	pH	EC	TDS	Ca	Mg	Na	K	Si	T. Alk.	Cl	SO4	NO3 as N	F
HS4	20110930 0800	7.3	50	278	35	25	16	2.5	5.31	195	24	12.9	1.24	0.6

Chemistry Standard: SABS for human consumption
† Value exceeds recommended maximum limit
‡ Value exceeds maximum allowable limit
! Value exceeds recommended minimum limit
j Value exceeds minimum allowable limit

Concentrations in [mg/l] where applicable
EC [mS/m]
Nitrate as N

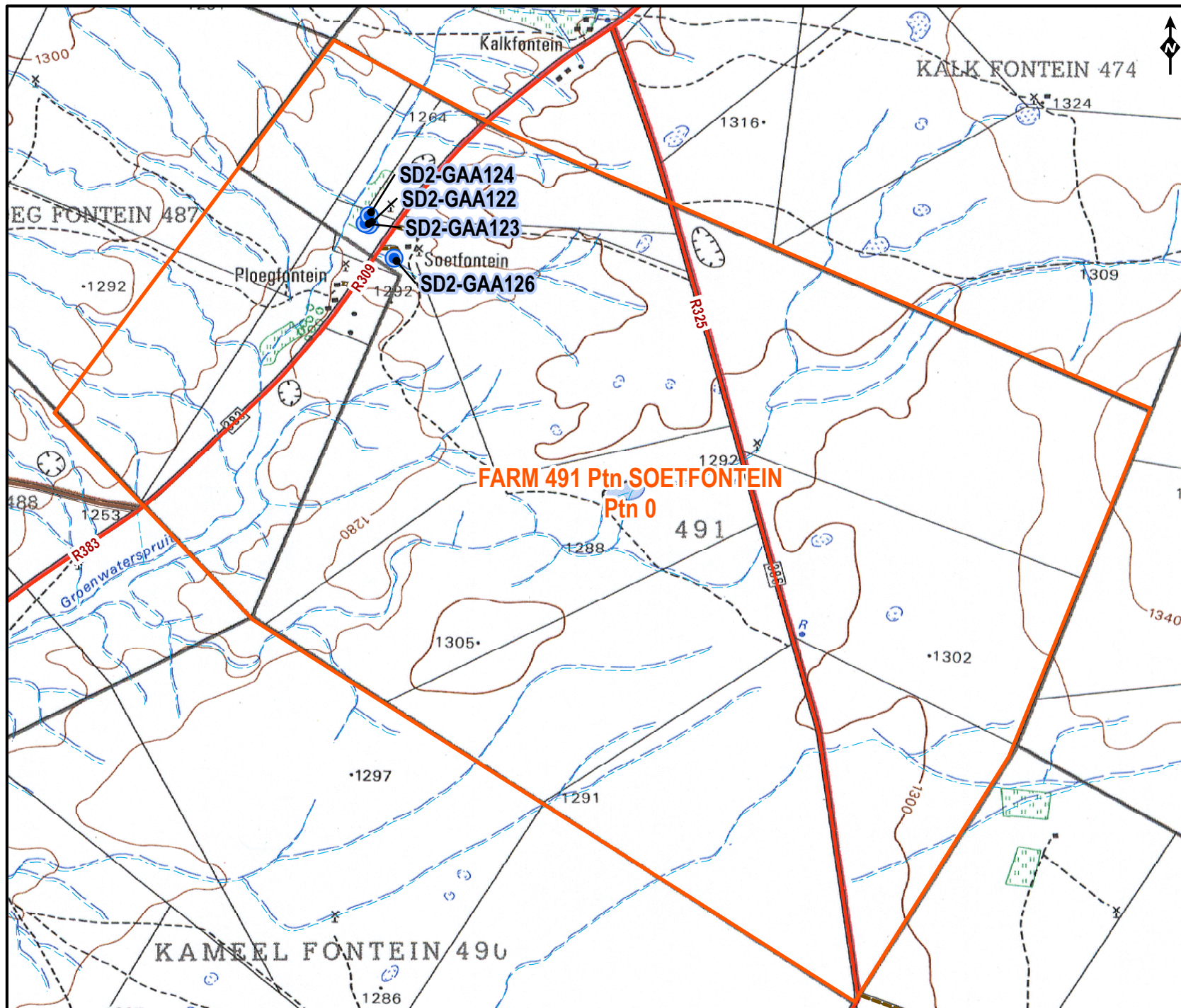
Sample Type Code Explanation:
D: Drinking water
E: Effluent
K: Sewage
O: Organic
P: Pressed or pellet
R: Rock
S: Soil
X: Other source



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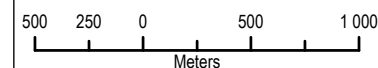


2.2 Albertus Viljoen



LEGEND

- Existing borehole survey
- Farm 491 Ptn 0
- Arterial road
- Secondary road
- - - Other
- - - Rivers - Non perennial



RESOURCES/NOTES

Coordinate System: GCS WGS 1984
Datum: WGS 1984

PROJECT

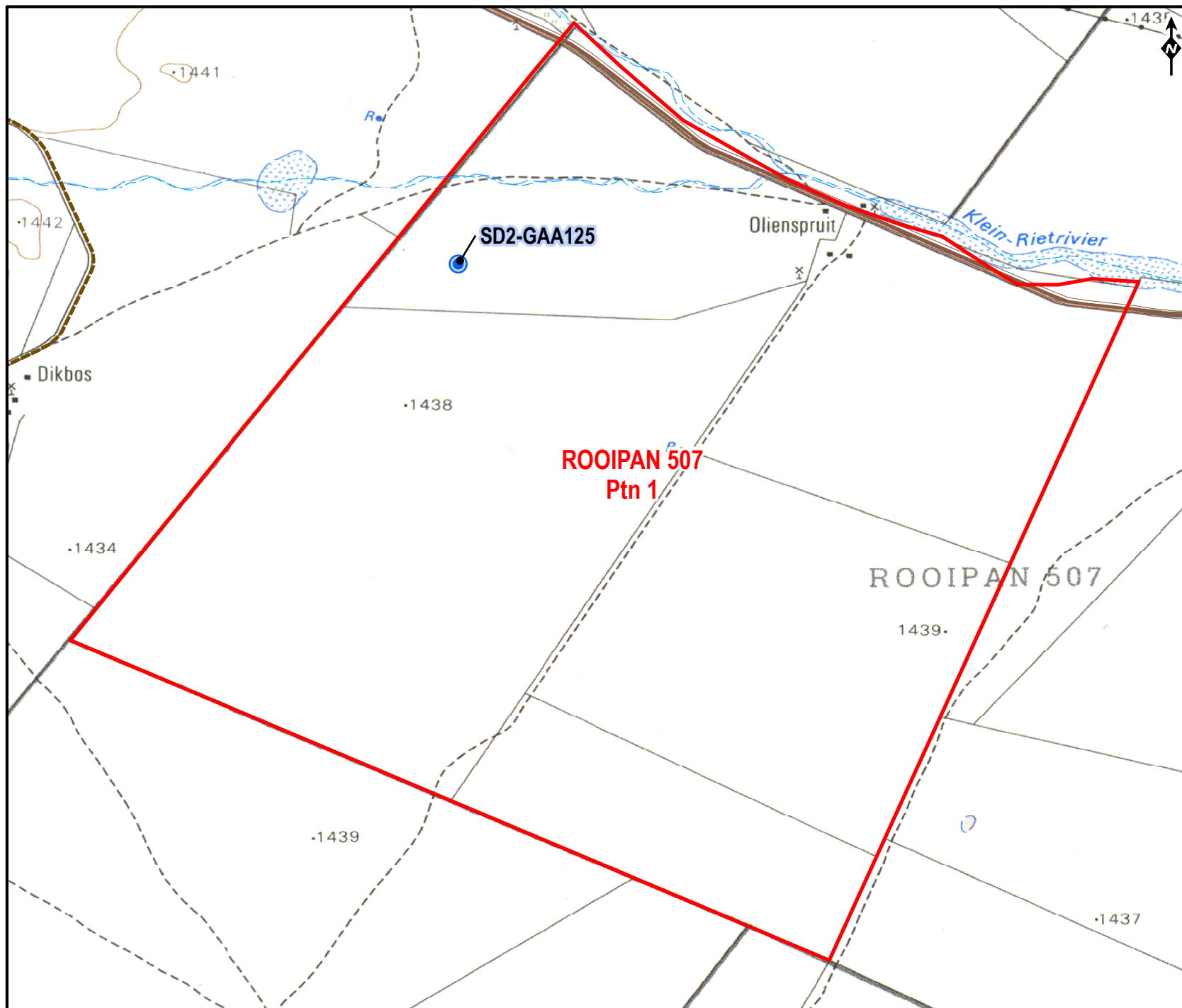
GW ASSESSMENT VGG SCHEME

TITLE

**FARM 491
PTN SOETFONTEIN PTN 0
ALBERTUS VILJOEN**

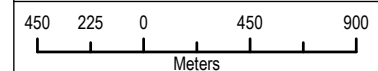
PROJECT No.	11613568	REV 0
SCALE	1:35 000	A4
GIS	MB	15/07/2014
CHECK	DB	15/07/2014
REVIEW	FW	15/07/2014





LEGEND

- Existing borehole survey
- Rooipan
- Secondary road
- Other
- Rivers - Non perennial



RESOURCES/NOTES

Coordinate System: GCS WGS 1984
Datum: WGS 1984

PROJECT

GW ASSESSMENT VGG SCHEME

TITLE

ROOIPAN 507 PTN 1
ALBERTUS VILJOEN

PROJECT No. 11613568	REV 0
SCALE 1:32 000	A4
GIS MB	15/07/2014
CHECK DB	15/07/2014
REVIEW FW	15/07/2014



ALBERTUS VILJOEN - BASIC SITE INFORMATION

SITE LOCATION										GEOHYDROLOGY				MANAGEMENT RECOMMEND.			
Site Identifier:	Number:	District	Site name/Description	Site type:	Latitude [°]	Longitude [°]	Altitude [m]	Col. ht. [m]	Diam. [mm]	Depth [m]	Water l. [m]	Yield[l/s]	Rec. abs.[l/s]	Depth to Intk. [m]	Dis. rate[l/s]	Duty c. [hrs/d]	Daily abs. [m³/d]
2823AC00092	SD2-GAA122	491	FARM 491 PTN. SOETFONTEIN	B	28.37204967	23.034450001	1269.51	0.35	165	128.00	9.14				3.00	24	259.20
2823ACX0051	SD2-GAA123	491	FARM 491 PTN. SOETFONTEIN	B	28.37196967	23.034210001	1268.36	0.18	165		8.28						
2823ACX0052	SD2-GAA124	606	SOETFONTEIN	B	28.37149967	23.034440001	1267.50	0.32	165		5.73						
2823BCX0205	SD2-GAA125	507	ROOIPAN	B	28.37154967	23.634610001	1440.10	0.30	165		5.50						
2823BCX0206	SD2-GAA126	491	FARM 491 PTN. SOETFONTEIN	B	28.37400967	23.035910001	1270.03	0.31	165		5.50						
SUMMARY:										Maximum:	128.00	9.14			3.00		259.20
										Minimum:	128.00	5.50			3.00		259.20
										Sum:					3.00		259.20
										Average:	128.00	6.83			3.00		259.20

Site Type:
B = Borehole

Nr. of sites: 5

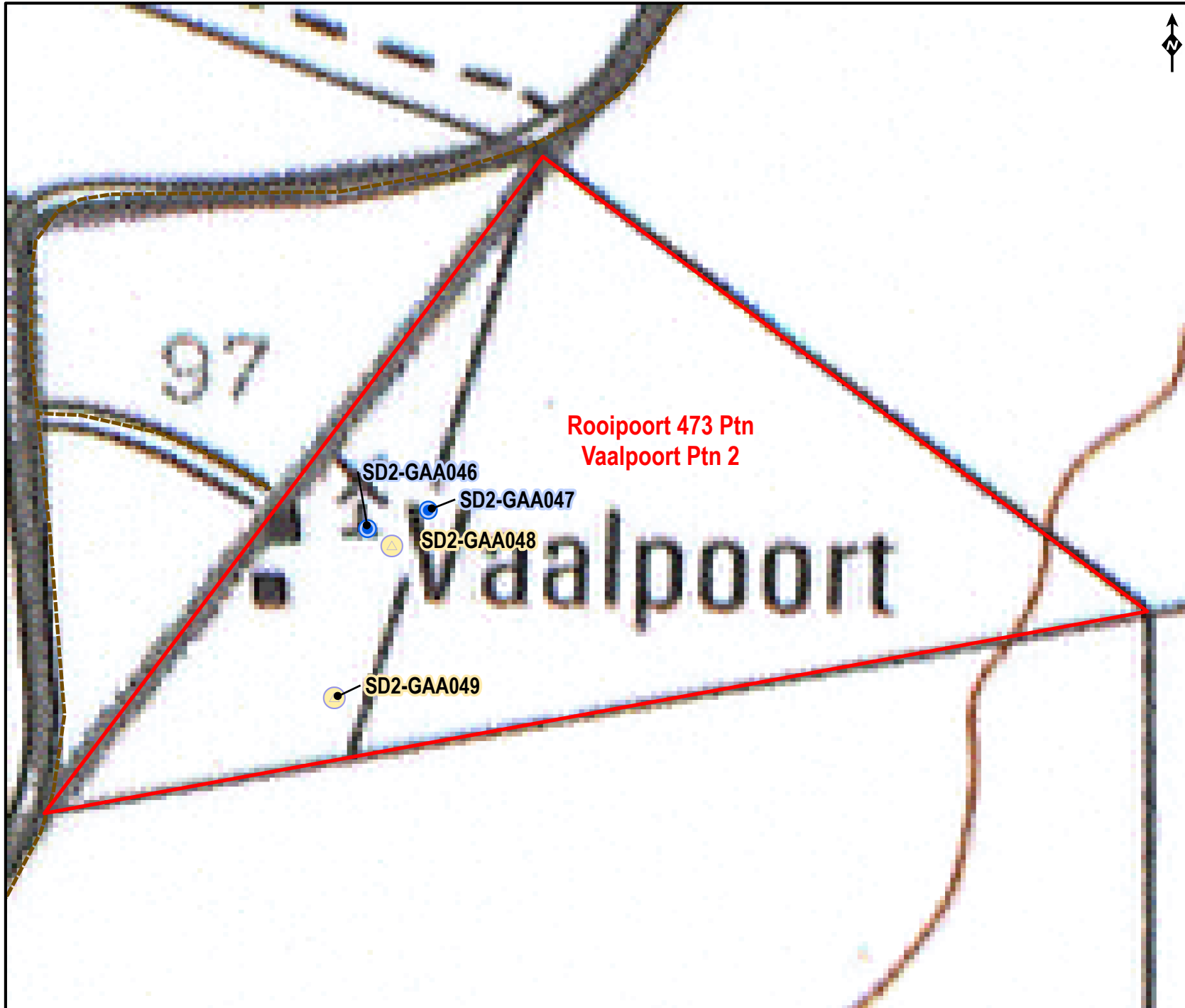
NOTE:
"Yield" represents cumulative blow yield
The recommended abstraction ("Rec. abs.")
is based on a 24 hour duty cycle
(based on test pumping result)



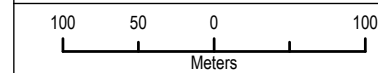
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2.3 Andries Cordier



- LEGEND**
- Existing borehole survey
 - Well
 - AndriesCordier
 - Other



RESOURCES/NOTES
Coordinate System: GCS WGS 1984
Datum: WGS 1984

PROJECT
GW ASSESSMENT VGG SCHEME

TITLE
METSEATEN 444
ANDRIES CORDIER

PROJECT No. 11613568	REV 0
SCALE 1:5 000	A4
GIS MB	18/07/2014
CHECK DB	18/07/2014
REVIEW FW	18/07/2014



ANDRIES CORDIER - BASIC SITE INFORMATION

SITE LOCATION										GEOHYDROLOGY				MANAGEMENT RECOMMEND.			
Site Identifier:	Number:	District	Site name/Description	Site type:	Latitude [°]	Longitude [°]	Altitude [m]	Col. ht. [m]	Diam. [mm]	Depth [m]	Water l. [m]	Yield[l/s]	Rec. abs.[l/s]	Depth to Intk. [m]	Dis. rate[l/s]	Duty c. [hrs/d]	Daily abs. [m³/d]
2823AC00141	SD2-GAA047	473	ROOIPOORT PTN. VAALPOORT	B	28.31949967	23.156250001	1354.64	0.69	165	51.80	19.96						
2823AC00142	SD2-GAA046	473	ROOIPOORT PTN. VAALPOORT	B	28.31965967	23.155740001	1354.32		165	30.48	21.35						
2823ACX0017	SD2-GAA048	473	ROOIPOORT PTN. VAALPOORT	W	28.31980967	23.155980001	1354.43	0.23			24.69						
2823ACX0018	SD2-GAA049	473	ROOIPOORT PTN. VAALPOORT	W	28.32106967	23.155470001	1354.36				23.74						
SUMMARY:										Maximum:	51.80	24.69					
										Minimum:	30.48	19.96					
										Sum:							
Nr. of sites: 4										Average:	41.14	22.43					

Site Type:
B = Borehole
W = Well point

NOTE:
"Yield" represents cumulative blow yield
The recommended abstraction ("Rec. abs.")
is based on a 24 hour duty cycle
(based on test pumping result)



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ANDRIES CORDIER - TIME DEPENDENT CHEMISTRY REPORT

Site Identifier: 2823ACX0018 **Number:** SD2-GAA049 **Site Name:** ROOIPOORT PTN. VAALPOORT

Samp. Nr./Type	Date/Time samp.	pH	EC	TDS	Ca	Mg	Na	K	Si	T. Alk.	Cl	SO4	NO3 as N	F
SD2-	20120402 1610	7.81	55.7	392	86	16	19.4	3.69	18.4	269	27.9	19.4	2.41	0.142

Chemistry Standard: SABS for human consumption
† Value exceeds recommended maximum limit
‡ Value exceeds maximum allowable limit
! Value exceeds recommended minimum limit
j Value exceeds minimum allowable limit

Concentrations in [mg/l] where applicable
EC [mS/m]
Nitrate as N

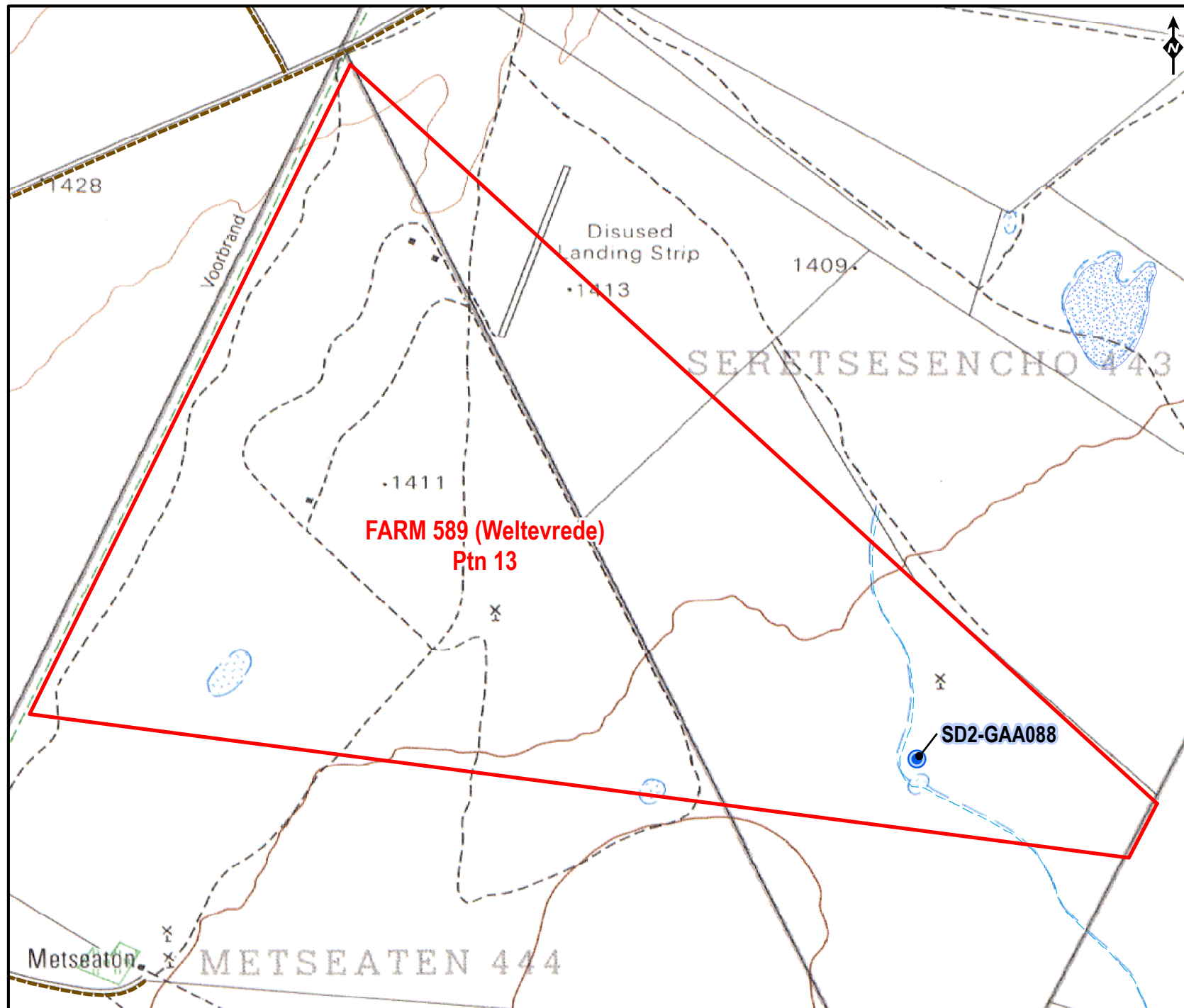
Sample Type Code Explanation:
D: Drinking water
E: Effluent
K: Sewage
O: Organic
P: Pressed or pellet
R: Rock
S: Soil
X: Other source



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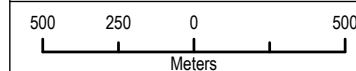


2.4 Andries Willemse



LEGEND

- Existing borehole survey
- Farm589Ptn13
- Other
- Pan
- Rivers - Non perennial



RESOURCES/NOTES

Coordinate System: GCS WGS 1984
Datum: WGS 1984

PROJECT

GW ASSESSMENT VGG SCHEME

TITLE

**FARM 589 (WELTEVREDE)
PTN 13
ANDRIES WILLEMSE**

PROJECT No. 11613568	REV 0
SCALE 1:25 000	A4
GIS MB	18/07/2014
CHECK DB	18/07/2014
REVIEW FW	18/07/2014



ANDRIES WILLEMSE - BASIC SITE INFORMATION

SITE LOCATION										GEOHYDROLOGY				MANAGEMENT RECOMMEND.			
Site Identifier:	Number:	District	Site name/Description	Site type:	Latitude [°]	Longitude [°]	Altitude [m]	Col. ht. [m]	Diam. [mm]	Depth [m]	Water l. [m]	Yield[l/s]	Rec. abs.[l/s]	Depth to Intk. [m]	Dis. rate[l/s]	Duty c. [hrs/d]	Daily abs. [m³/d]
2823AAX0023	SD2-GAA088	443	SERETSESENCHO PTN. WELTEVREDEN	B	28.19295967	23.171010001	1394.00	0.37									

SUMMARY:

Site Type:
B = Borehole

Maximum:

Minimum:

Sum:

Average:

Nr. of sites: 1

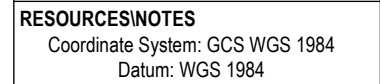
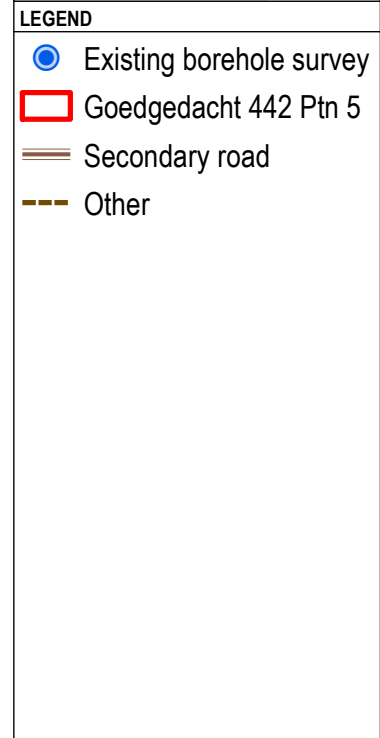
NOTE:
"Yield" represents cumulative blow yield
The recommended abstraction ("Rec. abs.")
is based on a 24 hour duty cycle
(based on test pumping result)



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Project No.: 11613568



2.5 Attie Brits



TITLE	GOEDGEDACHT 442 PTN 5 ATTIE BRITS
-------	--------------------------------------

PROJECT No. 11613568		REV 0
SCALE 1:10 000		A4
GIS	MB	07/07/2014
CHECK	DB	07/07/2014
REVIEW	FW	07/07/2014



ATTIE BRITS - BASIC SITE INFORMATION

SITE LOCATION										GEOHYDROLOGY				MANAGEMENT RECOMMEND.			
Site Identifier:	Number:	District	Site name/Description	Site type:	Latitude [°]	Longitude [°]	Altitude [m]	Col. ht. [m]	Diam. [mm]	Depth [m]	Water l. [m]	Yield[l/s]	Rec. abs.[l/s]	Depth to Intk. [m]	Dis. rate[l/s]	Duty c. [hrs/d]	Daily abs. [m³/d]
2823ACX0034	SD2-GAA059	442/5	FARM 442 PORTION 5 KLEIN	B	28.25611967	23.191020001	1369.35	0.02	130		33.36						
2823ACX0035	SD2-GAA060	445/5	FARM 445 PORTION 5 KLEIN	B	28.26127967	23.191610001	1366.74		165	83.00					1.39	0	
SUMMARY:										Maximum:	83.00	33.36			1.39		
										Minimum:	83.00	33.36			1.39		
										Sum:					1.39		
										Average:	83.00	33.36			1.39		
Nr. of sites: 2																	

Site Type:
B = Borehole

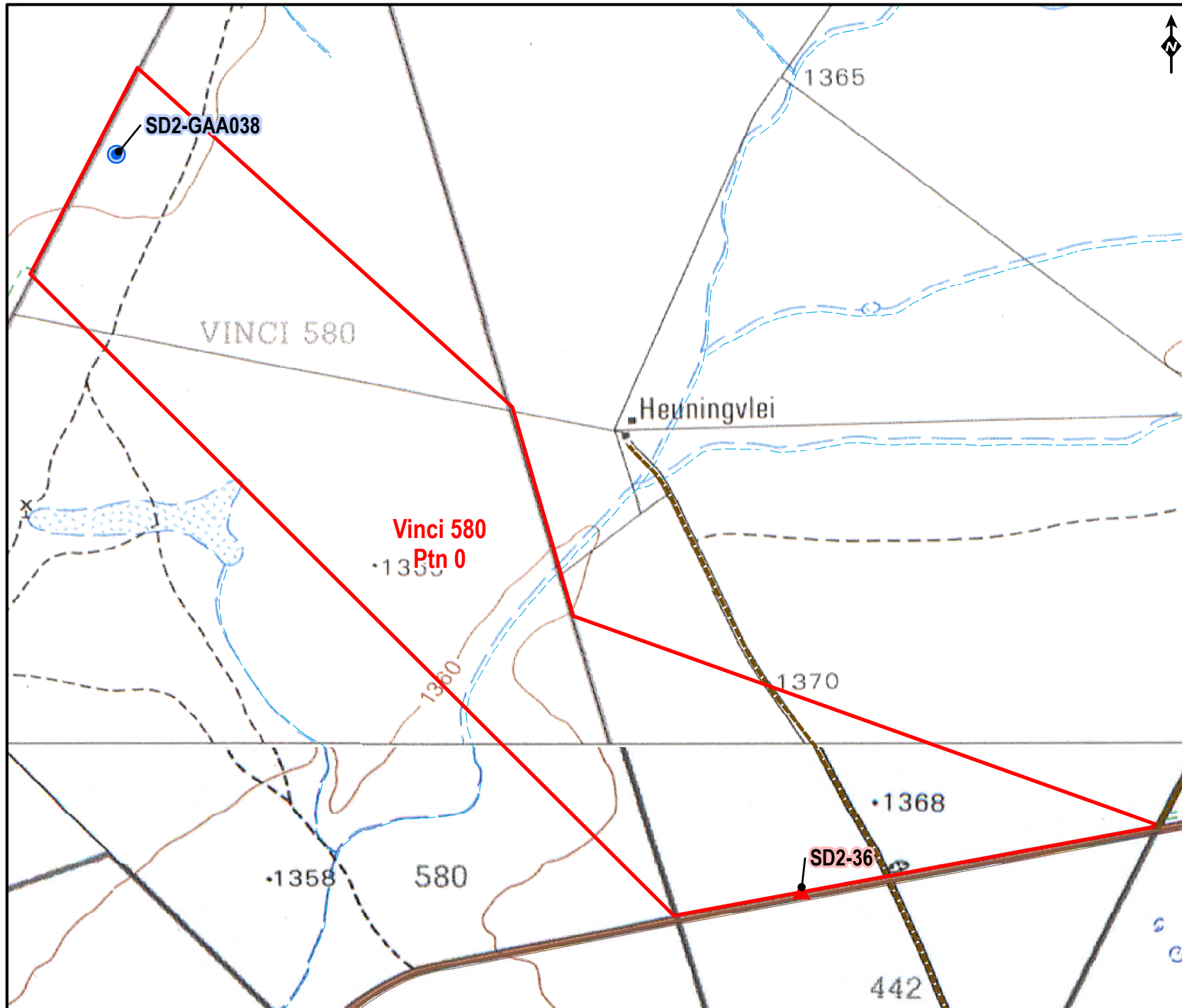
NOTE:
"Yield" represents cumulative blow yield
The recommended abstraction ("Rec. abs.")
is based on a 24 hour duty cycle
(based on test pumping result)



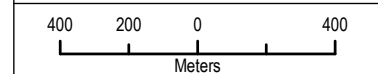
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Project No.: 11613568



2.6 Auther Olivier (Jen Haven Community- 400ha)



- LEGEND**
- ▲ Newly drilled borehole
 - Existing borehole survey
 - Vinci 580 Ptn 0
 - Secondary road
 - - - Other
 - - - Rivers - Non perennial



RESOURCES/NOTES
Coordinate System: GCS WGS 1984
Datum: WGS 1984

PROJECT
GW ASSESSMENT VGG SCHEME

TITLE
VINCI 580 PTN 0
AUTHOR OLIVIER

PROJECT No. 11613568	REV 0
SCALE 1:22 000	A4
GIS MB	14/07/2014
CHECK DB	14/07/2014
REVIEW FW	14/07/2014



MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823ACX0089 Number: SD2-36 Site type: Borehole

Distr./Farm No.: 442 Site Name/Descr.: FARM 442 WELLFIELD

Latitude [°]:	28.255740	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	33.92
Longitude [°]:	23.189400	Alt. No. 2:		Depth [m]:	97.50	WL status:	Static
Altitude [m]:	1367.00	Rep. inst.:	GOLD	Col. ht. [m]:	0.59	Date WL meas.:	20140115

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:

Type of Inst.: Pulley Diam. [mm]:
Manufacturer: Depth to Intk. [m]:

Engine:

Manufacturer: Power Rating [kW]
Type of Power: Pulley Diam. [mm]:

USE APPLICATION:

Site Status: Unused

Purpose: Observation

Consumer: Non-urban

Application:

WATER CHEMISTRY:

Sample No.: SD2-36 Date sampled: 20131202 Depth sampl. [m]: 88.50 Comment:

Main Parameters:

pH: 8.16 Na: 12.8 Cl: 25.4
EC: [mS/m] 47.3 K: 2.57 NO₃ as N: 5.04
TDS: 412 Si: 17.9 SO₄: 15.6
T. Alk.: 259 Al: F: 0.176
Ca: 71.8 Fe: < 0.05
Mg: 44.9 Mn:

Calculated Parameters:

Langel.: 0.78
Aggr-Ind: 12.83
Ion-bal: 9.03 †
CaCO₃: 363.81

Bacteriol. Parameters:

E.Coli:
Faec. co:
Total Co:
SPC:

Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption
† Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit
! Value exceeds recommended minimum limit ‡ Value exceeds minimum allowable limit

AQUIFER INFORMATION:

Depth to Top [m]	Depth to Bot. [m]	Yield[l/s]	Method meas.	Aquifer type	Comment
83.00	83.50	8.00	Notch (V- or U-notch)		
95.00	95.50	12.00	Notch (V- or U-notch)		

CASING DETAILS:

Depth to Top [m]	to Bot. [m]	Diam. [mm]	Material	Thickn. [mm]	Type of openings	Openings [mm]: Length Width	Hor. Dist.	Vert. Dist.
0.00	35.00	254	Steel		Plain casing			
0.00	66.00	216	Steel		Plain casing			
0.00	78.00	165	Steel		Plain casing			
78.00	97.00	165	Steel		Perforated or slotted			

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery [m] %	[min]	T [m ² /d]	Storage	Comment
STEP TEST STEP 1	20131205	60	88.50	5.24	0.26					
STEP TEST STEP 2	20131205	60	88.50	10.68	0.92					
STEP TEST STEP 3	20131205	60	88.50	15.08	1.68					
STEP STEP STEP 4	20131205	60	88.50	20.09	2.29	100	80			
CONSTANT	20131206	1440	88.50	15.02	1.54	100	480			

RECOMMENDATIONS:

Prior.	Rec. equipm.	Depth to intk. [m]	Type of power	Duty cyc. [hrs]	Disch. rate [l/s]	Water quality	Dyn. water level [m]	Crit. water level [m]
1	Mono-type pump	60.00	Electric motor	24	10.00	CLASS 0	35.00	42.00

Note: 1. Production borehole
2. Install water level monitoring facility in borehole



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Project No.: 11613568

PUMPING TEST REPORT

Date compiled: 31/03/2014

BASIC SITE INFORMATION:

Site Identifier: 2823ACX0089 Number: SD2-36

Site type: Borehole

Distr./Farm No.: 442

Site Name/Des.: FARM 442

Latitude [°] 28.255740
Longitude [°] 23.189400
Altitude [m]: 1367.00

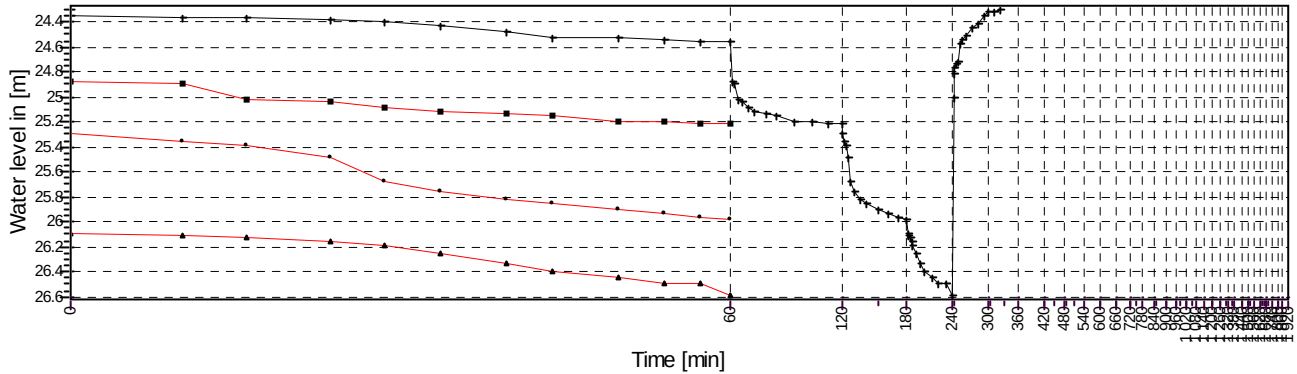
Alt. No. 1:
Alt. No. 2:
Rep. inst.: GOLD

Diam. [mm]: 165
Depth [m]: 97.50
Col. ht. [mm]: 0.59

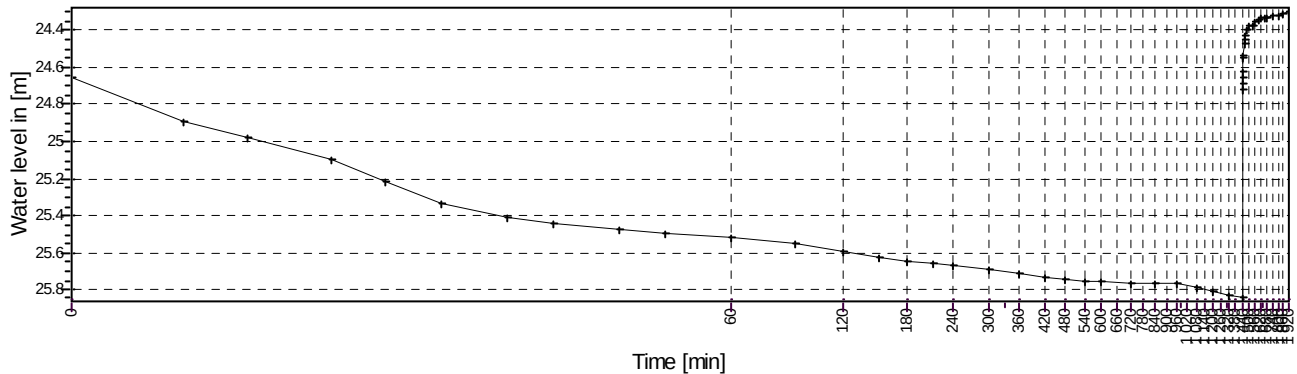
Water lev. [m]: 33.92
Piezometer: 0
Date WL meas.: 20140115

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



Constant Rate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	88.50	20131205	1430	20131205	1950			
GOLD	Constant rate test	88.50	20131206	0700	20131207	1500			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	1430	60	88.50	5.24	0.26							20.15
STEP TEST STEP 2	1530	60	88.50	10.68	0.92							11.61
STEP TEST STEP 3	1630	60	88.50	15.08	1.68							8.98
STEP STEP STEP 4	1730	60	88.50	20.09	2.29		100	80				8.77
CONSTANT	0700	1440	88.50	15.02	1.54		100	480				9.75



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Project No.: 11613568

AUTHER OLIVIER - BASIC SITE INFORMATION

SITE LOCATION										GEOHYDROLOGY				MANAGEMENT RECOMMEND.			
Site Identifier:	Number:	District	Site name/Description	Site type:	Latitude [°]	Longitude [°]	Altitude [m]	Col. ht. [m]	Diam. [mm]	Depth [m]	Water l. [m]	Yield[l/s]	Rec. abs.[l/s]	Depth to Intk. [m]	Dis. rate[l/s]	Duty c. [hrs/d]	Daily abs. [m³/d]
2823AAX0008	SD2-GAA038	580	VINCI	B	28.22852967	23.164110001	1383.54		165								
SUMMARY: Nr. of sites: 1 Site Type: B = Borehole Maximum: Minimum: Sum: Average:																	

AUTHER OLIVIER - TIME DEPENDENT CHEMISTRY REPORT

Site Identifier: 2823AAX0018 **Number:** SD2-GAA083 **Site Name:** SERETSESENCHO PTN. SION

Samp. Nr./Type	Date/Time samp.	pH	EC	TDS	Ca	Mg	Na	K	Si	Al	Fe	Mn	Cl	SO4	NO3 as N	F	T. Alk.
SD2-	20130528 1052	7.8	88.8 †	654 †	95.5	74 †	14.6	1.22	19.6	< 0.05	< 0.05	< 0.05	33.3	36.3	< 0.3	0.127	498

Chemistry Standard: SABS for human consumption
† Value exceeds recommended maximum limit
‡ Value exceeds maximum allowable limit
! Value exceeds recommended minimum limit
j Value exceeds minimum allowable limit

Concentrations in [mg/l] where applicable
EC [mS/m]
Nitrate as N

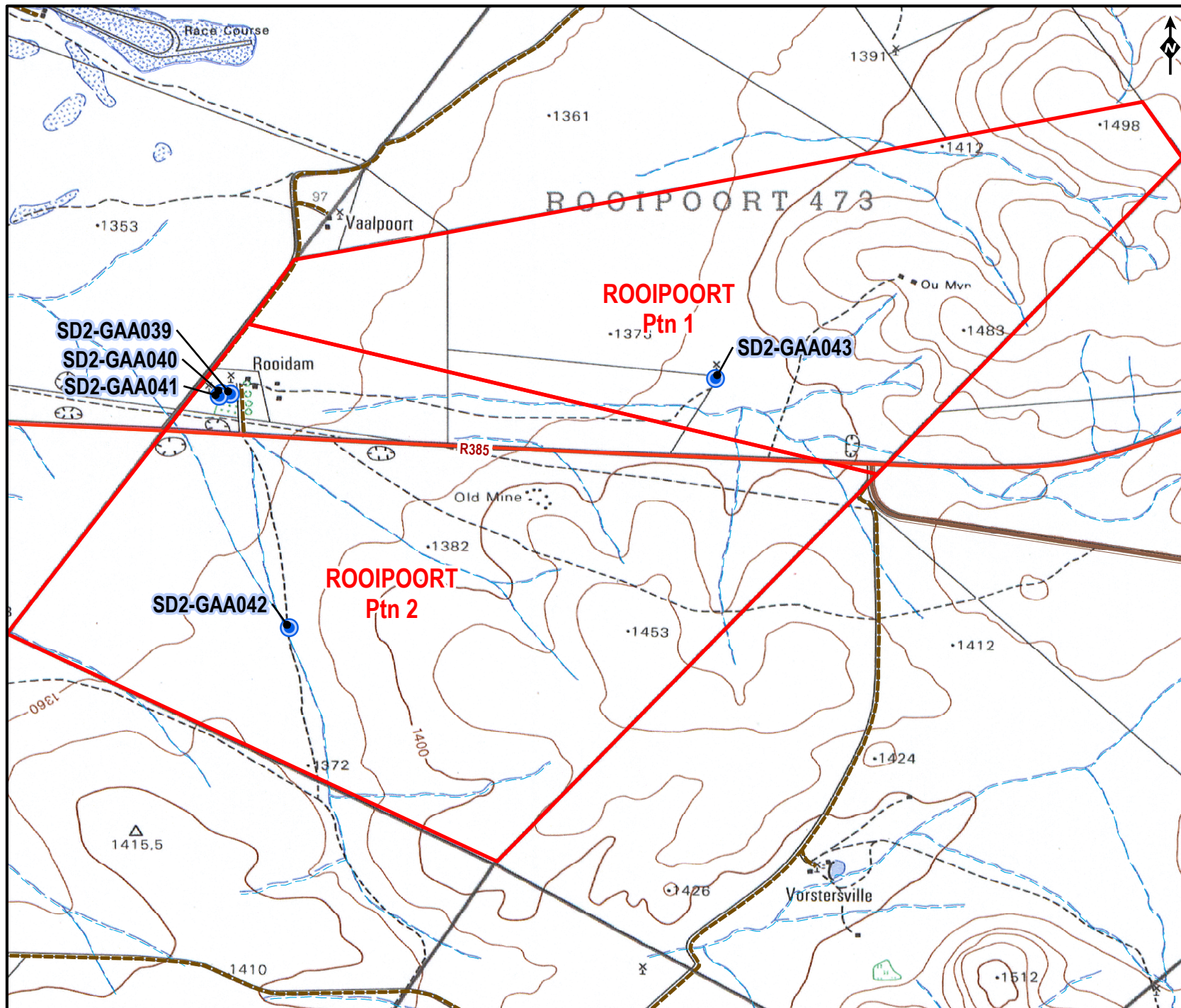
Sample Type Code Explanation:
D: Drinking water
E: Effluent
K: Sewage
O: Organic
P: Pressed or pellet
R: Rock
S: Soil
X: Other source



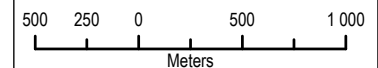
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2.7 Bennie Bredenkamp



- LEGEND**
- Existing borehole survey
 - Rooipoort 473 Ptn 1 & 2
 - Arterial road
 - Secondary road
 - Other
 - Pan
 - Rivers - Non perennial



RESOURCES/NOTES
Coordinate System: GCS WGS 1984
Datum: WGS 1984

PROJECT
GW ASSESSMENT VGG SCHEME

TITLE
ROOIPOORT 473 PTN 1 & 2
BENNIE BREDEKAMP

PROJECT No.	11613568	REV 0
SCALE	1:36 500	A4
GIS	MB	14/07/2014
CHECK	DB	14/07/2014
REVIEW	FW	14/07/2014



BENNIE BREDEKAMP - BASIC SITE INFORMATION

SITE LOCATION										GEOHYDROLOGY				MANAGEMENT RECOMMEND.			
Site Identifier:	Number:	District	Site name/Description	Site type:	Latitude [°]	Longitude [°]	Altitude [m]	Col. ht. [m]	Diam. [mm]	Depth [m]	Water l. [m]	Yield[l/s]	Rec. abs.[l/s]	Depth to Intk. [m]	Dis. rate[l/s]	Duty c. [hrs/d]	Daily abs. [m³/d]
2823AC00017	SD2-GAA039	473	ROOIPOORT PTN. ROOIDAM	B	28.33044967	23.148970001	1353.77	0.30	165		19.65						
2823AC00120	SD2-GAA040	473	ROOIPOORT PTN. ROOIDAM	B	28.33036967	23.148400001	1353.43	0.14	165	51.81	19.54						
2823AC00121	SD2-GAA041	473	ROOIPOORT PTN. ROOIDAM	B	28.33055967	23.148270001	1353.47		165	36.57	16.12						
2823AC00122	SD2-GAA043	473	ROOIPOORT PTN. ROOIDAM	B	28.32946967	23.178710001	1386.50	0.37	165	71.62	48.47						
2823AC00123	SD2-GAA042	473	ROOIPOORT PTN. ROOIDAM	B	28.34477967	23.152570001	1368.12	0.48	165	51.81	28.43						
SUMMARY:										Maximum:	71.62	48.47					
Nr. of sites: 5										Minimum:	36.57	16.12					
										Sum:							
										Average:	52.95	26.44					

SUMMARY:

Site Type:
B = Borehole

Nr. of sites: 5

Maximum: 71.62 48.47
Minimum: 36.57 16.12
Sum:
Average: 52.95 26.44

NOTE:
 "Yield" represents cumulative blow yield
 The recommended abstraction ("Rec. abs.")
 is based on a 24 hour duty cycle
 (based on test pumping result)



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BENNIE BREDEKAMP - TIME DEPENDENT CHEMISTRY REPORT

Date compiled: 21/07/2014

Site Identifier: 2823AC00017 **Number:** SD2-GAA039 **Site Name:** ROOIPOORT PTN. ROOIDAM

Samp. Nr./Type	Date/Time samp.	pH	EC	TDS	Ca	Mg	Na	K	Si	T. Alk.	Cl	SO4	NO3 as N	F
SD2-	20120402 1120	8.09	71.4 †	472	74	62.3	17.1	3.3	12.6	366	29.8	33.3	3.84	0.662

Site Identifier: 2823AC00123 **Number:** SD2-GAA042 **Site Name:** ROOIPOORT PTN. ROOIDAM

Samp. Nr./Type	Date/Time samp.	pH	EC	TDS	Ca	Mg	Na	K	Si	T. Alk.	Cl	SO4	NO3 as N	F
SD2-	20120402 0800	7.92	56.9	442	52	35.5	25.7	2.2	15.9	203	35.2	18.4	15.3 †	0.208

Chemistry Standard: SABS for human consumption

† Value exceeds recommended maximum limit

‡ Value exceeds maximum allowable limit

! Value exceeds recommended minimum limit

j Value exceeds minimum allowable limit

Concentrations in [mg/l] where applicable

EC [mS/m]

Nitrate as N

Sample Type Code Explanation:

D: Drinking water

E: Effluent

K: Sewage

O: Organic

P: Pressed or pellet

R: Rock

S: Soil

X: Other source



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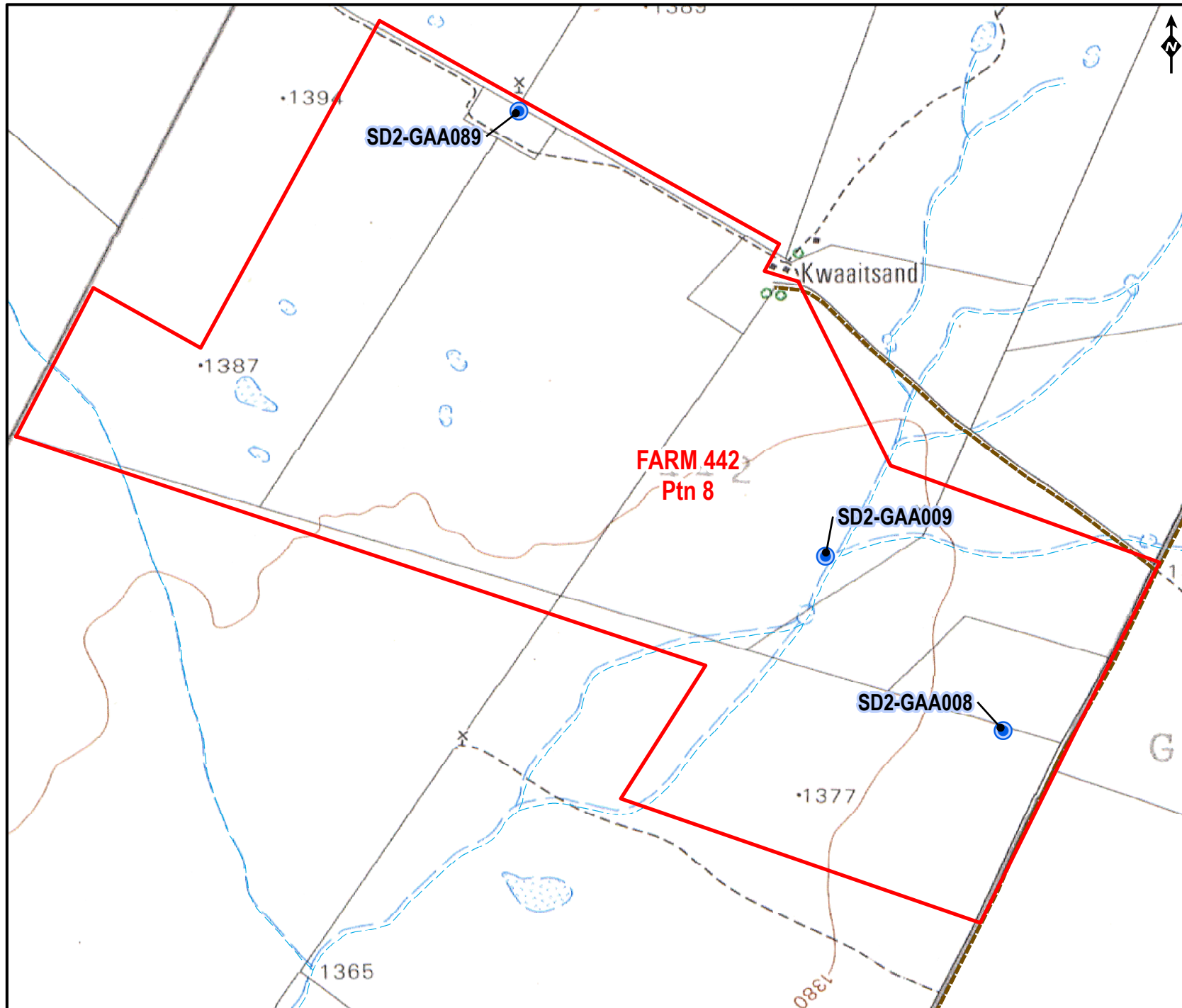
Tel: 012 - 364 4000

Fax: 012 - 364 4001

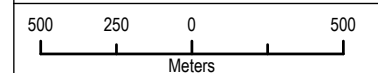
Project No.: 11613568



2.8 Christo Olivier



- LEGEND**
- Existing borehole survey
 - Farm 589P tn 8
 - Other
 - Rivers - Non perennial



RESOURCES/NOTES
 Coordinate System: GCS WGS 1984
 Datum: WGS 1984

PROJECT
 GW ASSESSMENT VGG SCHEME

TITLE
FARM 442 PTN 8
CHRISTO OLIVIER

PROJECT No. 11613568		REV 0
SCALE 1:25 000		A4
GIS	MB	18/07/2014
CHECK	DB	18/07/2014
REVIEW	FW	18/07/2014



CHRISTO OLIVIER - BASIC SITE INFORMATION

SITE LOCATION										GEOHYDROLOGY				MANAGEMENT RECOMMEND.			
Site Identifier:	Number:	District	Site name/Description	Site type:	Latitude [°]	Longitude [°]	Altitude [m]	Col. ht. [m]	Diam. [mm]	Depth [m]	Water l. [m]	Yield[l/s]	Rec. abs.[l/s]	Depth to Intk. [m]	Dis. rate[l/s]	Duty c. [hrs/d]	Daily abs. [m³/d]
2823AA00119	SD2-GAA008	442	FARM 442 PTN. GELUK	B	28.21556967	23.218150001	1382.51		165	60.96							
2823AA00120	SD2-GAA009	442	FARM 442 PTN. GELUK	B	28.20825967	23.210690001	1377.07	0.34	165		12.65						
2823AA00121	SD2-GAA089	442	FARM 442 PTN. (8) GELUK	B	28.18956967	23.197830001	1388.00	0.53			5.75						
SUMMARY:										Maximum:	60.96	12.65					
										Minimum:	60.96	5.75					
										Sum:							
Nr. of sites: 3										Average:	60.96	9.20					

NOTE:
 "Yield" represents cumulative blow yield
 The recommended abstraction ("Rec. abs.")
 is based on a 24 hour duty cycle
 (based on test pumping result)



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 Project No.: 11613568

CHRISTO OLIVIER - TIME DEPENDENT CHEMISTRY REPORT

Site Identifier: 2823AA00120 **Number:** SD2-GAA009 **Site Name:** FARM 442 PTN. GELUK

Samp. Nr./Type	Date/Time samp.	pH	EC	TDS	Ca	Mg	Na	K	Si	Al	Fe	Mn	Cl	SO4	NO3 as N	F	T. Alk.
	19941101 0000		55														

Chemistry Standard: SABS for human consumption
† Value exceeds recommended maximum limit
‡ Value exceeds maximum allowable limit
! Value exceeds recommended minimum limit
j Value exceeds minimum allowable limit

Concentrations in [mg/l] where applicable
EC [mS/m]
Nitrate as N

Sample Type Code Explanation:
D: Drinking water
E: Effluent
K: Sewage
O: Organic
P: Pressed or pellet
R: Rock
S: Soil
X: Other source



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Project No.: 11613568



2.9 Gatkoppies Land Owners

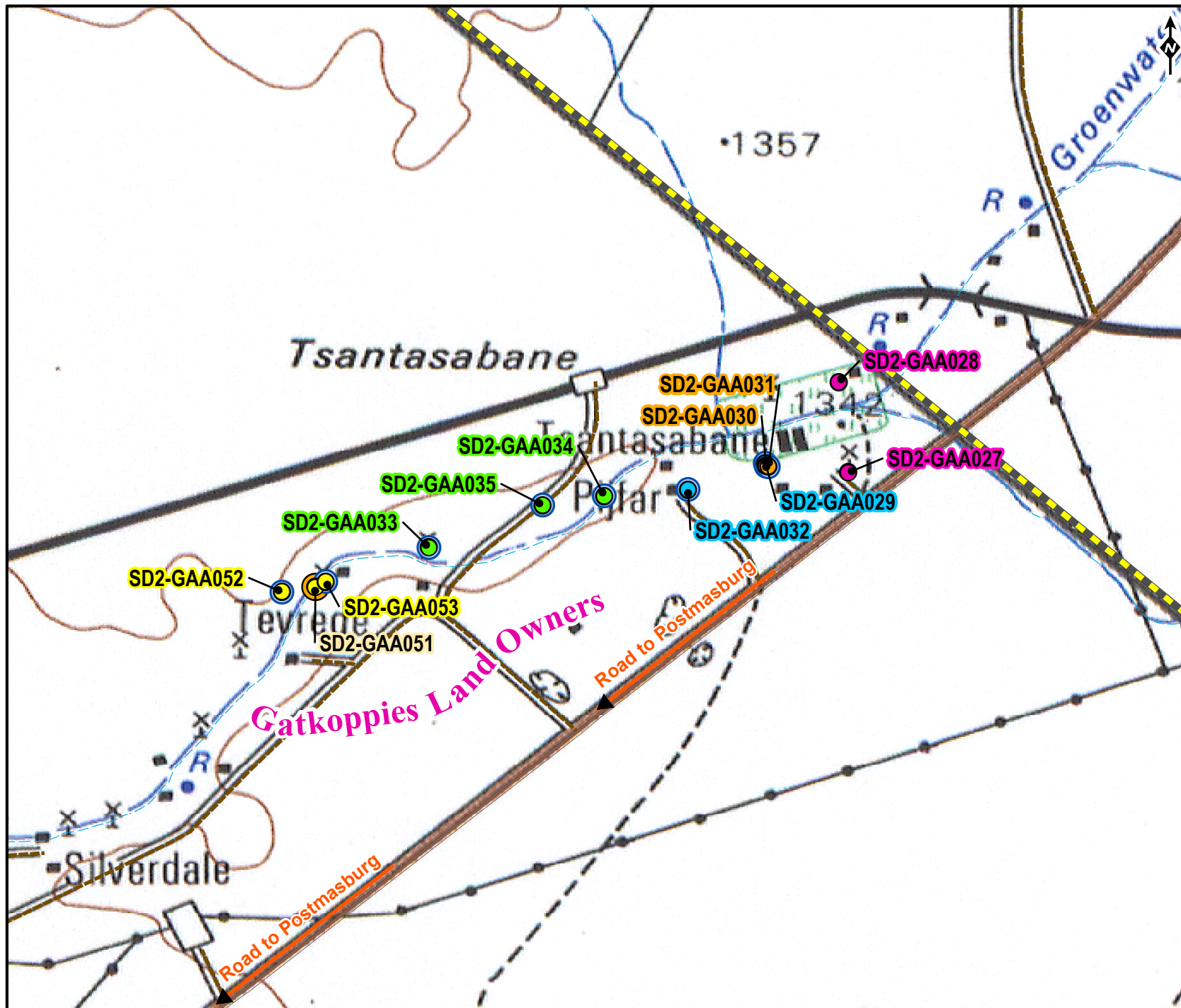
Bertie Muller

Piet le Roux

Johan Greef

Noenoe Fourie

Marianna Mathee



LEGEND

- Existing borehole survey
- ▲ Well

Land owners

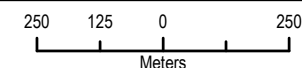
- Bertie Muller
- Johan Greeff
- Marianna Mathee
- Noenoe Fourie
- Piet Le Roux

 Postmasburg Municipality

Secondary road

Other

--- Rivers - Non perennial



RESOURCES/NOTES

Coordinate System: GCS WGS 1984
Datum: WGS 1984

PROJECT

GW ASSESSMENT VGG SCHEME

TITLE

GATKOPPIES LAND OWNERS

PROJECT No. 11613568	REV 0
SCALE 1:15 000	A4
GIS MB	18/07/2014
CHECK DB	18/07/2014
REVIEW FW	18/07/2014



GATKOPPIES - BASIC SITE INFORMATION

SITE LOCATION										GEOHYDROLOGY				MANAGEMENT RECOMMEND.			
Site Identifier:	Number:	District	Site name/Description	Site type:	Latitude [°]	Longitude [°]	Altitude [m]	Col. ht. [m]	Diam. [mm]	Depth [m]	Water l. [m]	Yield[l/s]	Rec. abs.[l/s]	Depth to Intk. [m]	Dis. rate[l/s]	Duty c. [hrs/d]	Daily abs. [m³/d]
2823ACX0004	SD2-GAA027		POSTMASBURG	B	28.28232967	23.152310001	1345.03		165						0	0	
2823ACX0005	SD2-GAA028		POSTMASBURG	B	28.28004967	23.152070001	1343.12		165	12.00	6.35						
2823ACX0006	SD2-GAA029		POSTMASBURG PTN. KLEIN SION	B	28.28209967	23.150220001	1344.64	0.42	165	100.00					0	0	
2823ACX0007	SD2-GAA030		POSTMASBURG PTN. DIE NAWEEK	B	28.28216967	23.150240001	1344.83	0.43	165	36.00	8.11				0	0	
2823ACX0008	SD2-GAA031		POSTMASBURG PTN. DIE NAWEEK	B	28.28217967	23.150300001	1344.93		165	176.00							
2823ACX0009	SD2-GAA032		POSTMASBURG PTN. KLEIN SION	B	28.28275967	23.148270001	1345.27	0.28	165	50.00	8.67						
2823ACX0010	SD2-GAA033		POSTMASBURG PTN. DIE GREWE	B	28.28421967	23.141740001	1338.50	0.16	165	30.00	7.63				0	0	
2823ACX0011	SD2-GAA034		POSTMASBURG PTN. DIE GREWE	B	28.28291967	23.146160001	1339.79	0.64	165		4.20						
2823ACX0012	SD2-GAA035		POSTMASBURG PTN. DIE GREWE	B	28.28314967	23.144610001	1339.28	0.71	165		6.11						
2823ACX0020	SD2-GAA051		POSTMASBURG PTN. GATKOPPIES	W	28.28521967	23.138880001	1337.62				0.32						
2823ACX0021	SD2-GAA052		POSTMASBURG PTN. GATKOPPIES	B	28.28533967	23.138040001	1339.26	0.68	155		5.32						
2823ACX0022	SD2-GAA053		POSTMASBURG PTN. GATKOPPIES	B	28.28507967	23.139140001	1338.18	0.57	165		5.96				0	0	
SUMMARY:										Maximum:		176.00	8.67				
Nr. of sites: 12										Minimum:		12.00	0.32				
										Sum:							
										Average:		67.33	5.85				

Site Type:
B = Borehole
W = Well point

NOTE:
"Yield" represents cumulative blow yield
The recommended abstraction ("Rec. abs.")
is based on a 24 hour duty cycle
(based on test pumping result)



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GATKOPPIES - TIME DEPENDENT CHEMISTRY REPORT

Site Identifier: 2823ACX0004 **Number:** SD2-GAA027 **Site Name:** POSTMASBURG

Samp. Nr./Type	Date/Time samp.	pH	EC	TDS	Ca	Mg	Na	K	Si	T. Alk.	Cl	SO4	NO3 as N	F
SD2-	20120331 0945	8.14	97.7 †	680 †	79.5	70.7 †	42	4.95	15.7	340	106	50.1	15.3 †	0.176

Site Identifier: 2823ACX0022 **Number:** SD2-GAA053 **Site Name:** POSTMASBURG PTN. GATKOPPIES

Samp. Nr./Type	Date/Time samp.	pH	EC	TDS	Ca	Mg	Na	K	Si	T. Alk.	Cl	SO4	NO3 as N	F
SD2-	20120403 0800	7.55	94.5 †	640 †	109	59.9	27.3	1.84	17	443	51.4	54.9	3.97	0.161

Chemistry Standard: SABS for human consumption
 † Value exceeds recommended maximum limit
 ‡ Value exceeds maximum allowable limit
 ! Value exceeds recommended minimum limit
 j Value exceeds minimum allowable limit

Concentrations in [mg/l] where applicable
 EC [mS/m]
 Nitrate as N

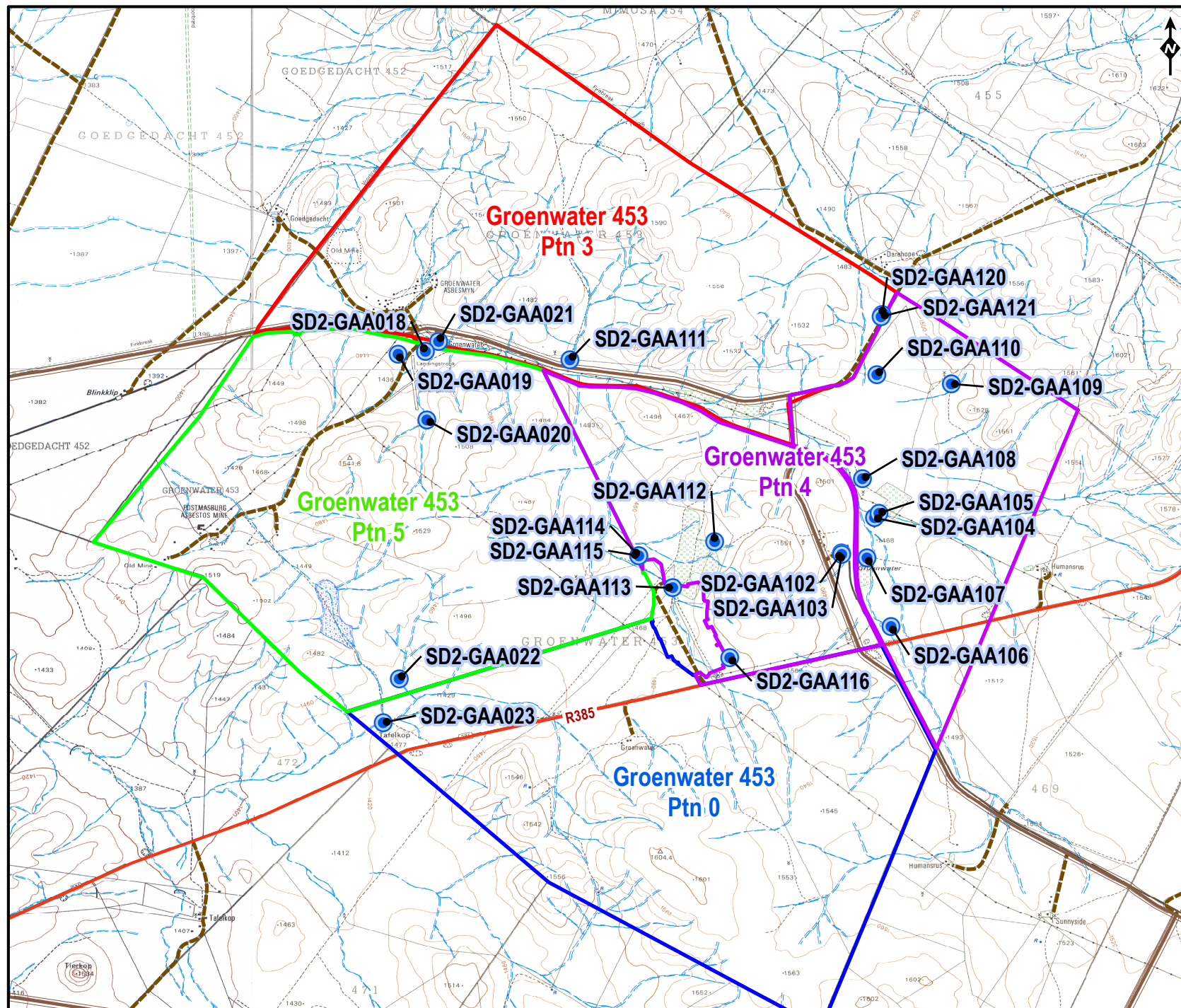
Sample Type Code Explanation:
 D: Drinking water
 E: Effluent
 K: Sewage
 O: Organic
 P: Pressed or pellet
 R: Rock
 S: Soil
 X: Other source



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 Project No.: 11613568

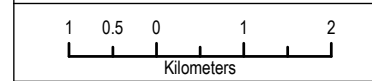


2.10 Groenwater Community



LEGEND

- Existing borehole survey
- Groenwater 453 Ptn 0
- Groenwater 453 Ptn 3
- Groenwater 453 Ptn 4
- Groenwater 453 Ptn 5
- Arterial road
- Secondary road
- Other
- Pan
- Rivers - Non perennial



RESOURCES/NOTES
Coordinate System: GCS WGS 1984
Datum: WGS 1984

PROJECT
GW ASSESSMENT VGG SCHEME

TITLE
GROENWATER 453 PTN 0, 3, 4 & 5
GROENWATER COMMUNITY

PROJECT No. 11613568	REV 0
SCALE 1:86 500	A4
GIS MB	14/07/2014
CHECK DB	14/07/2014
REVIEW FW	14/07/2014



GROENWATER COMMUNITY - BASIC SITE INFORMATION

SITE LOCATION										GEOHYDROLOGY				MANAGEMENT RECOMMEND.			
Site Identifier:	Number:	District	Site name/Description	Site type:	Latitude [°]	Longitude [°]	Altitude [m]	Col. ht. [m]	Diam. [mm]	Depth [m]	Water l. [m]	Yield[l/s]	Rec. abs.[l/s]	Depth to Intk. [m]	Dis. rate[l/s]	Duty c. [hrs/d]	Daily abs. [m³/d]
2823AD00169	SD2-GAA112	453	GROENWATER	B	28.27538967	23.316780001	1482.82	0.64	165	54.86	28.13	0.30					
2823AD00170	SD2-GAA113	453	GROENWATER	B	28.28210967	23.310660001	1471.03	0.10	165	64.00	24.00	3.50			0	0	
2823AD00173	SD2-GAA104	453	GROENWATER	B	28.27187967	23.340010001	1467.97	0.68	165	79.24	5.20						
2823AD00174	SD2-GAA105	453	GROENWATER	B	28.27121967	23.340660001	1468.08	0.37	165	27.43	6.14						
2823AD00175	SD2-GAA103	453	GROENWATER	B	28.27718967	23.335260001	1472.02	0.25	165	15.00	4.00						
2823AD00176	SD2-GAA109	453	GROENWATER	B	28.25239967	23.351180001	1488.62	0.53	165	51.81	25.48						
2823AD00177	SD2-GAA108	453	GROENWATER	B	28.26625967	23.338270001	1464.40	0.27	165	8.53	3.63						
2823AD00178	SD-2GAA107	453	GROENWATER	B	28.27770967	23.338930001	1468.13	0.54	165	27.43	2.12	10.00					
2823AD00179	SD2-GAA110	453	GROENWATER	B	28.25110967	23.340340001	1467.79	0.38	165	48.76	11.34						
2823AD00186	SD2-GAA023	453	GROENWATER	B	28.30172967	23.268530001	1420.41	0.43	165		18.10						
2823AD00193	SD2-GAA116	453	GROENWATER PTN. 4	B	28.29227967	23.318970001	1489.15	0.28	165	73.00	4.30	4.00			0	0	
2823ADX0051	SD2-GAA020	453	GROENWATER	B	28.25768967	23.274900001	1454.24	0.30	155		26.83						
2823ADX0052	SD2-GAA022	453	GROENWATER PTN. TAFELKOP	B	28.29535967	23.270860001	1432.14	0.35	165		19.75				0	0	
2823ADX0056	SD2-GAA102	453	GROENWATER	B	28.27702967	23.335200001	1472.06	0.25	165	11.00	6.64				0	0	
2823ADX0057	SD2-GAA106	453	GROENWATER	B	28.28773967	23.342420001	1478.00	0.50	105		7.05	20.00			0	0	
2823ADX0058	SD2-GAA114	453	GROENWATER	B	28.27741967	23.305730001	1463.88	0.27	165		14.96						
2823ADX0059	SD2-GAA115	453	GROENWATER GRAVE YARD	B	28.27739967	23.305710001	1463.92	0.19	165	50.00	17.60	4.10			0	0	
SUMMARY:			Site Type: B = Borehole						Maximum:		79.24	28.13	20.00				
									Minimum:		8.53	2.12	0.30				
Nr. of sites:			17						Sum:				41.90				
									Average:		42.59	13.25	6.98				

NOTE:
"Yield" represents cumulative blow yield
The recommended abstraction ("Rec. abs.")
is based on a 24 hour duty cycle
(based on test pumping result)



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Project No.: 11613568

GROENWATER COMMUNITY - BASIC SITE INFORMATION

SITE LOCATION										GEOHYDROLOGY				MANAGEMENT RECOMMEND.			
Site Identifier:	Number:	District	Site name/Description	Site type:	Latitude [°]	Longitude [°]	Altitude [m]	Col. ht. [m]	Diam. [mm]	Depth [m]	Water l. [m]	Yield[l/s]	Rec. abs.[l/s]	Depth to Intk. [m]	Dis. rate[l/s]	Duty c. [hrs/d]	Daily abs. [m³/d]
2823AB00046	SD2-GAA120	453	GROENWATER	B	28.24236967	23.341120001	1476.00	0.40	165	102.00	16.85						
2823AB00047	SD2-GAA121	453	GROENWATER	B	28.24258967	23.341000001	1477.00	0.40	165	150.00	19.90						
2823ABX0002	SD2-GAA018	453	GROENWATER	B	28.24768967	23.274660001	1425.77	0.30	155	110.00	44.64	3.33					
2823ABX0003	SD2-GAA019	453	GROENWATER	B	28.24811967	23.270690001	1431.66	0.12	155		54.22				0	0	
2823ABX0004	SD2-GAA021	453	GROENWATER	B	28.24603967	23.276550001	1423.86		165		39.43				0	0	
2823ABX0014	SD2-GAA111	453	GROENWATER	B	28.24886967	23.295720001	1435.85	0.43	165		13.92						
SUMMARY:		Site Type: B = Borehole							Maximum:	150.00	54.22	3.33					
									Minimum:	102.00	13.92	3.33					
Nr. of sites:		6							Sum:			3.33					
									Average:	120.67	31.49	3.33					

Site Type:
B = Borehole

NOTE:
"Yield" represents cumulative blow yield
The recommended abstraction ("Rec. abs.")
is based on a 24 hour duty cycle
(based on test pumping result)



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GROENWATER COMMUNITY - TIME DEPENDENT CHEMISTRY REPORT

Site Identifier: 2823AD00193 **Number:** SD2-GAA116 **Site Name:** GROENWATER PTN. 4

Samp. Nr./Type	Date/Time samp.	pH	EC	TDS	Ca	Mg	Na	K	Si	T. Alk.	Cl	SO4	NO3 as N	F
	20000223 1200	8.134	186 † 1214.476	72.692	139.586 ‡	90.704	12.68	18.431	302.15	274.114 †	237.258 †	4.237	0.206	

Site Identifier: 2823ADX0051 **Number:** SD2-GAA020 **Site Name:** GROENWATER

Samp. Nr./Type	Date/Time samp.	pH	EC	TDS	Ca	Mg	Na	K	Si	T. Alk.	Cl	SO4	NO3 as N	F
SD2-	20120329 0935	7.16	9.1	60	9.86	5.25	6.95	2.42	8.2	27.3	5.77	4.58	2.52	0.108

Site Identifier: 2823ADX0056 **Number:** SD2-GAA102 **Site Name:** GROENWATER

Samp. Nr./Type	Date/Time samp.	pH	EC	TDS	Ca	Mg	Na	K	Si	T. Alk.	Cl	SO4	NO3 as N	F
GR8	20110912 0800	7.1	67	362	51	32	19	1.4	9.58	227	19	19.29	10.7 †	0.62

Chemistry Standard: SABS for human consumption
 † Value exceeds recommended maximum limit
 ‡ Value exceeds maximum allowable limit
 ! Value exceeds recommended minimum limit
 j Value exceeds minimum allowable limit

Concentrations in [mg/l] where applicable
 EC [mS/m]
 Nitrate as N

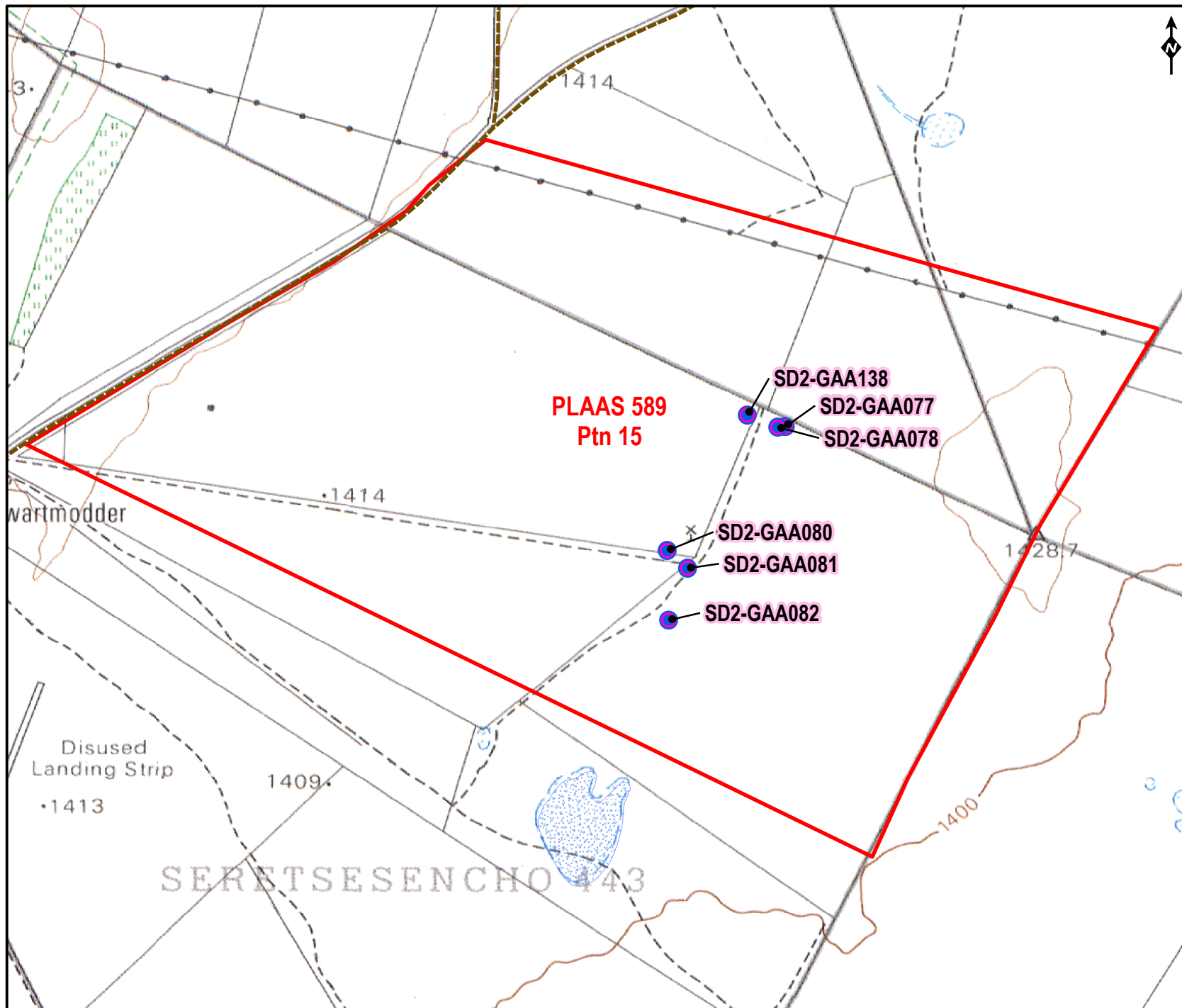
Sample Type Code Explanation:
 D: Drinking water
 E: Effluent
 K: Sewage
 O: Organic
 P: Pressed or pellet
 R: Rock
 S: Soil
 X: Other source



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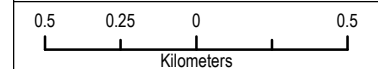


2.11 J. Steypleton



LEGEND

- Existing borehole tested
- Farm 589 Ptn 15
- Other
- Pan
- Rivers - Non perennial



RESOURCES/NOTES

Coordinate System: GCS WGS 1984
Datum: WGS 1984

PROJECT

GW ASSESSMENT VGG SCHEME

TITLE

FARM 589 PTN 15
J. STEYPELTON

PROJECT No. 11613568	REV 0
SCALE 1:25 000	A4
GIS MB	04/07/2014
CHECK DB	04/07/2014
REVIEW FW	04/07/2014



MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823AAX0012 Number: SD2-GAA077 Site type: Borehole

Distr./Farm No.: 443 Site Name/Descr.: SERETSESENCHO PTN. SION

Latitude [°]:	28.157340	Alt. No. 1:		Diam. [mm]:	140	Water lev. [m]:	12.46
Longitude [°]:	23.187570	Alt. No. 2:		Depth [m]:	138.38	WL status:	Static
Altitude [m]:	1409.88	Rep. inst.: GOLD		Col. ht. [m]:	0.37	Date WL meas.:	20140128

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:	
Type of Inst.:	Pulley Diam. [mm]:
Manufacturer:	Depth to Intk. [m]:
Engine:	
Manufacturer:	Power Rating [kW]
Type of Power:	Pulley Diam. [mm]:

USE APPLICATION:

Site Status: Unused
Purpose: Production (water supply)
Consumer: Non-urban
Application:

WATER CHEMISTRY:

Sample No.:	SD2-	Date sampled:	20140218	Depth sampl. [m]:	98.00	Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters.		
pH:	7.69	Na:	15.6	Cl:	72.7	Langel.:	0.07	E.Coli:
EC: [mS/m]	62.1	K:	1.58	NO3 as N:	< 0.3	Aggr-Ind:	12.11	Faec. co:
TDS:	470	Si:		SO4:	33.9	Ion-bal:	5.73 †	Total Co:
T. Alk.:	213	Al:	< 0.05	F:	< 0.1	CaCO3:	359.00	SPC:
Ca:	49.1	Fe:	< 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit § Value exceeds minimum allowable limit				
Mg:	57.5	Mn:	< 0.05					

CASING DETAILS:

Depth to Top [m]	to Bot. [m]	Diam. [mm]	Material	Thickn. [mm]	Type of openings	Openings [mm]: Length Width	Hor. Dist.	Vert. Dist.
0.00	107.50	140	Steel		Plain casing			

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery [m]	%	T [m²/d]	Storage	Comment
STEP TEST STEP 1	20140128	60	98.00	0.53	26.42					
STEP TEST STEP 2	20140128	30	98.00	1.01	85.17	60.02	29	120		



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PUMPING TEST REPORT

Date compiled: 09/07/2014

BASIC SITE INFORMATION: Site Identifier: 2823AAX0012 Number: SD2-GAA077 Site type: Borehole

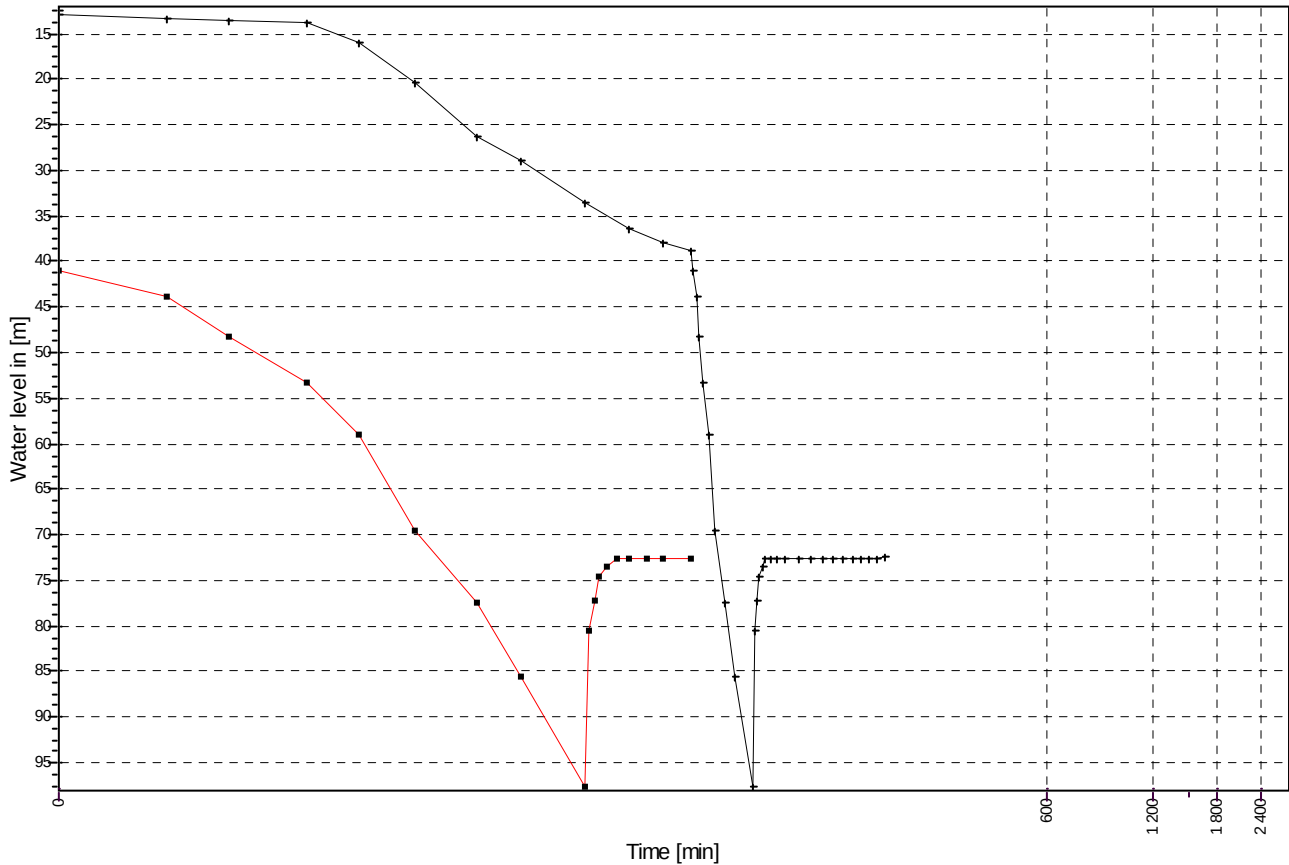
Distr./Farm No.: 443

Site Name/Des.: SERETSESENCHO PTN. SION

Latitude [°]	28.157340	Alt. No. 1:		Diam. [mm]:	140	Water lev. [m]:	12.46
Longitude [°]	23.187570	Alt. No. 2:		Depth [m]:	138.38	Piezometer:	0
Altitude [m]:	1409.88	Rep. inst.: GOLD		Col. ht. [mm]:	0.37	Date WL meas.:	20140128

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartbeesthoek94 (WGS 84)

Multirate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	98.00	20140128	1000	20140128	1330			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	1000	60	98.00	0.53	26.42							0.02
STEP TEST STEP 2	1100	30	98.00	1.01	85.17	60.02	29	120				0.01



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MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823AAX0013 Number: SD2-GAA078 Site type: Borehole

Distr./Farm No.: 443 Site Name/Descr.: SERETSESENCHO PTN. SION

Latitude [°]:	28.157350	Alt. No. 1:		Diam. [mm]:	140	Water lev. [m]:	16.36
Longitude [°]:	23.187250	Alt. No. 2:		Depth [m]:	81.76	WL status:	Static
Altitude [m]:	1408.75	Rep. inst.: GOLD		Col. ht. [m]:	0.47	Date WL meas.:	20140129

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:

Type of Inst.: Pulley Diam. [mm]:
Manufacturer: Depth to Intk. [m]:

Engine:

Manufacturer: Power Rating [kW]
Type of Power: Pulley Diam. [mm]:

USE APPLICATION:

Site Status: Unused

Purpose: Production (water supply)

Consumer: Non-urban

Application:

WATER CHEMISTRY:

Sample No.:	SD2-	Date sampled:	20140208	Depth sampl. [m]:	74.00	Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters.		
pH:	7.23	Na:	8.07	Cl:	14.1	Langel.:	-0.13	E.Coli:
EC: [mS/m]	55.7	K:	4.18	NO3 as N:	< 0.3	Aggr-Ind:	11.91	Faec. co:
TDS:	380	Si:		SO4:	11.7	Ion-bal:	3.06	Total Co:
T. Alk.:	301	Al:	< 0.05	F:	0.27	CaCO3:	333.06	SPC:
Ca:	63.1	Fe:	< 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit ¡ Value exceeds minimum allowable limit				
Mg:	42.7	Mn:	0.38 †					

CASING DETAILS:

Depth to Top [m]	to Bot. [m]	Diam. [mm]	Material	Thickn. [mm]	Type of openings	Openings [mm]: Length Width	Hor. Dist.	Vert. Dist.
0.00	18.64	140	Steel		Plain casing			

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery [m] %	[min]	T [m²/d]	Storage	Comment
STEP TEST STEP 1	20140129	60	74.00	0.54	50.74					
STEP TEST STEP 2	20140129	7	74.00	0.74	57.10	35.84	37	70		



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PUMPING TEST REPORT

Date compiled: 19/03/2014

BASIC SITE INFORMATION: Site Identifier: 2823AAX0013 Number: SD2-GAA078 Site type: Borehole

Distr./Farm No.: 443

Site Name/Des.: SERETSESENCHO PTN. SION

Latitude [°] 28.157350

Alt. No. 1:

Diam. [mm]: 140

Water lev. [m]: 16.36

Longitude [°] 23.187230

Alt. No. 2:

Depth [m]: 81.76

Piezometer: 0

Altitude [m]: 1411.00

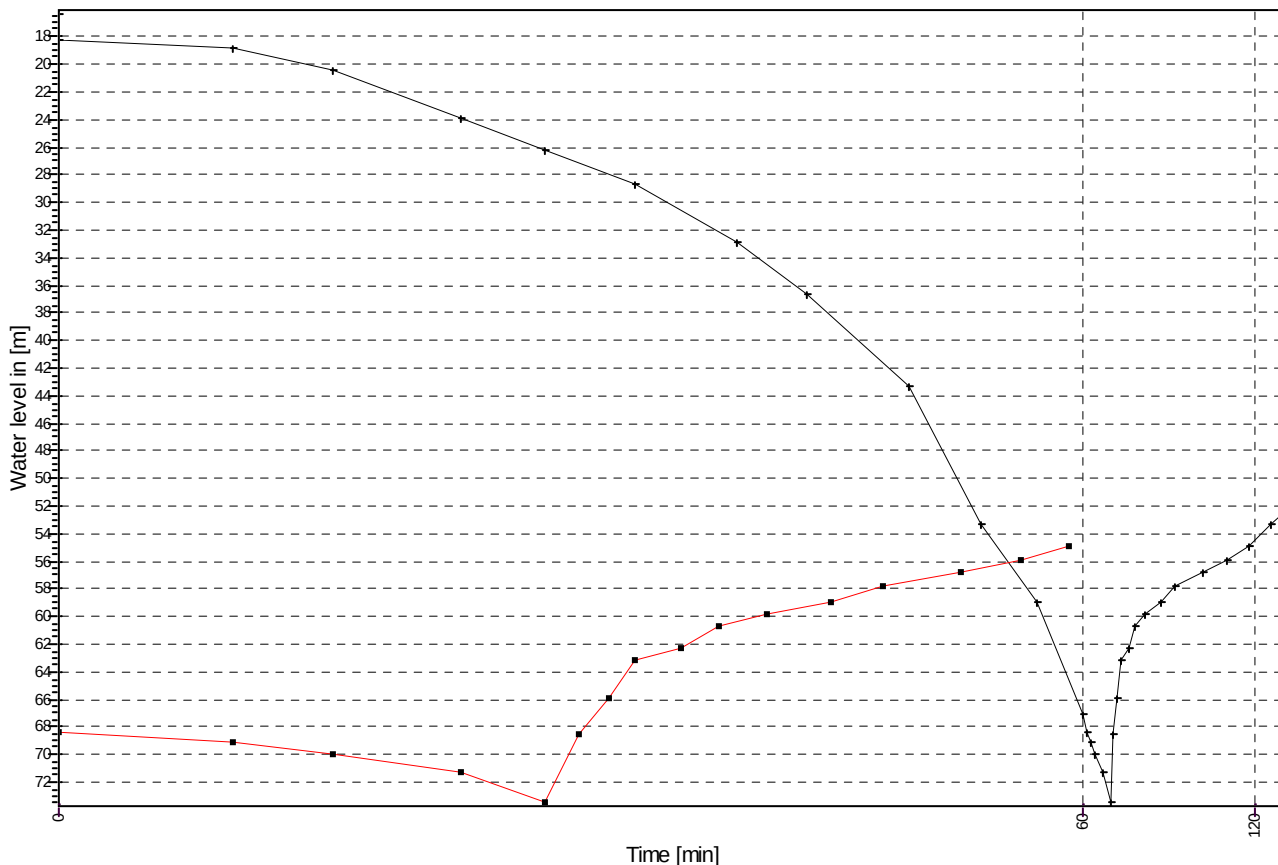
Rep. inst.: GOLD

Col. ht. [mm]: 0.47

Date WL meas.: 20140129

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	74.00	20140129	0855	20140129	1112			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate [l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
STEP TEST TSTEP 1	0855	60	74.00	0.54	50.74							0.01
STEP TEST STEP 2	0955	7	74.00	0.74	57.10	35.84	37	70				0.01



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MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823AAX0015 Number: SD2-GAA080 Site type: Borehole

Distr./Farm No.: 454 Site Name/Descr.: SERETSESENCHO PTN. SION

Latitude [°]:	28.162540	Alt. No. 1:		Diam. [mm]:	140	Water lev. [m]:	31.22
Longitude [°]:	23.182600	Alt. No. 2:		Depth [m]:	39.70	WL status:	Static
Altitude [m]:	1410.00	Rep. inst.: GOLD		Col. ht. [m]:	0.48	Date WL meas.:	20140202

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:		Pulley Diam. [mm]:	
Type of Inst.:		Depth to Intk. [m]:	
Manufacturer:			
Engine:		Power Rating [kW]	
Manufacturer:		Pulley Diam. [mm]:	
Type of Power:			

USE APPLICATION:

Site Status: Unused
Purpose: Production (water supply)
Consumer: Non-urban
Application:

WATER CHEMISTRY:

Sample No.:	SD2-	Date sampled:	20140218	Depth sampl. [m]:	38.00	Comment:		
Main Parameters:					Calculated Parameters:		Bacteriol. Parameters:	
pH:	7.85	Na:	52.2	Cl:	98.8	Langel.:	0.74	E.Coli:
EC: [mS/m]	141 †	K:	0.73	NO3 as N:	13.8 †	Aggr-Ind:	12.90	Faec. co:
TDS:	1070 †	Si:		SO4:	117	Ion-bal:	0.22	Total Co:
T. Alk.:	583	Al:	< 0.05	F:	< 0.1	CaCO3:	783.14	SPC:
Ca:	76.5	Fe:	< 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit ¡ Value exceeds minimum allowable limit				
Mg:	144 ‡	Mn:	0.14 †					

CASING DETAILS:

Depth to Top [m]	to Bot. [m]	Diam. [mm]	Material	Thickn. [mm]	Type of openings	Openings [mm]: Length Width	Hor. Dist.	Vert. Dist.
0.00	15.00	140	Steel		Plain casing			

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery [m]	%	[min]	T [m²/d]	Storage	Comment
STEP TEST STEP 1	20140202	60	38.00	0.40	6.28	0.25	96	60			



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PUMPING TEST REPORT

Date compiled: 13/03/2014

BASIC SITE INFORMATION: Site Identifier: 2823AAX0015 Number: SD2-GAA080 Site type: Borehole

Distr./Farm No.: 454

Site Name/Des.: SERETSESENCHO PTN. SION

Latitude [°] 28.162540
Longitude [°] 23.182600
Altitude [m]: 1410.00

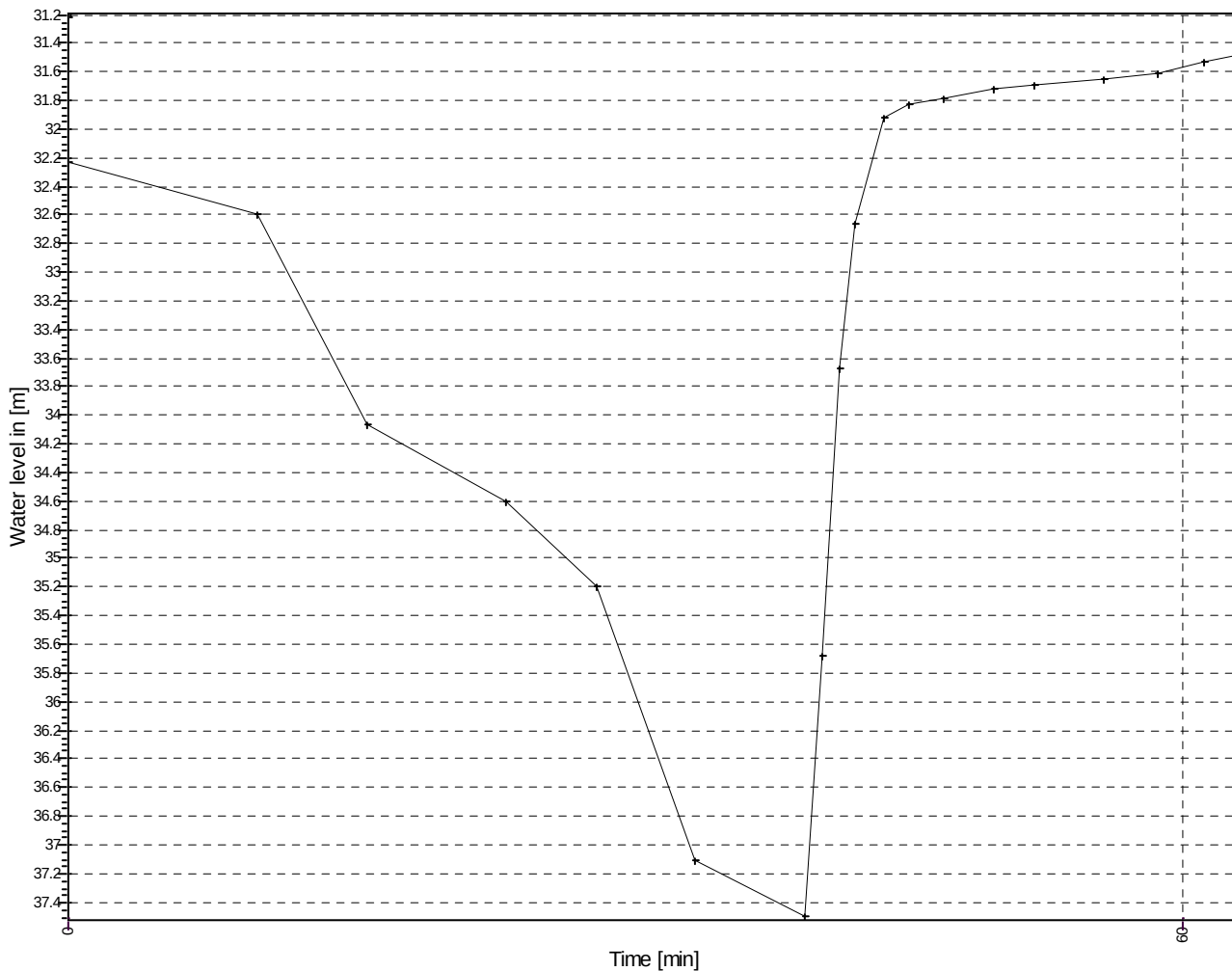
Alt. No. 1:
Alt. No. 2:
Rep. inst.: GOLD

Diam. [mm]: 140
Depth [m]: 39.70
Col. ht. [mm]: 0.48

Water lev. [m]: 31.22
Piezometer: 0
Date WL meas.: 20140202

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	38.00	20140202	1000	20140202	1115			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	1000	60	38.00	0.40	6.28	0.25	96	60				0.06



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MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823AAX0016 Number: SD2-GAA081 Site type: Borehole

Distr./Farm No.: 443 Site Name/Descr.: SERETSESENCHO PTN. SION

Latitude [°]:	28.163280	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	32.37
Longitude [°]:	23.183450	Alt. No. 2:		Depth [m]:	76.80	WL status:	Static
Altitude [m]:	1410.00	Rep. inst.: GOLD		Col. ht. [m]:	0.28	Date WL meas.:	20120131

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:			
Type of Inst.:	Windpump	Pulley Diam. [mm]:	
Manufacturer:	RECIPROCAL	Depth to Intk. [m]:	36.50
Engine:			
Manufacturer:		Power Rating [kW]	
Type of Power:	Wind	Pulley Diam. [mm]:	

USE APPLICATION:

Site Status: In use
Purpose: Production (water supply)
Consumer: Non-urban
Application: Agricultural - stock watering only

WATER CHEMISTRY:

Sample No.:	SD2-	Date sampled:	20140218	Depth sampl. [m]:	69.34	Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters:		
pH:	7.65	Na:	22.1	Cl:	80.7	Langel.:	0.50	E.Coli:
EC: [mS/m]	107 †	K:	1.2	NO3 as N:	17.4 †	Aggr-Ind:	12.61	Faec. co:
TDS:	806 †	Si:		SO4:	70.3	Ion-bal:	-0.60	Total Co:
T. Alk.:	392	Al:	< 0.05	F:	0.23	CaCO3:	584.44	SPC:
Ca:	93.3	Fe:	< 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit ¡ Value exceeds minimum allowable limit				
Mg:	85.5 †	Mn:	< 0.05					

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery [m]	%	[min]	T [m²/d]	Storage	Comment
STEP TEST STEP 1	20140131	60	69.34	0.73	7.31						
STEP TEST STEP 2	20140131	60	69.34	1.58	15.97						
STEP TEST STEP 3	20140131	60	69.34	2.66	29.92						
STEP TEST STEP 4	20140131	15	69.34	4.05	36.68	3.64	90	240			
PUMP INLET	20140131	3	69.34	3.31	36.69						



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PUMPING TEST REPORT

Date compiled: 13/03/2014

BASIC SITE INFORMATION: Site Identifier: 2823AAX0016 Number: SD2-GAA081 Site type: Borehole

Distr./Farm No.: 443

Site Name/Des.: SERETSESENCHO PTN. SION

Latitude [°] 28.163280

Alt. No. 1:

Diam. [mm]: 165

Water lev. [m]: 32.37

Longitude [°] 23.183450

Alt. No. 2:

Depth [m]: 76.80

Piezometer: 0

Altitude [m]: 1410.00

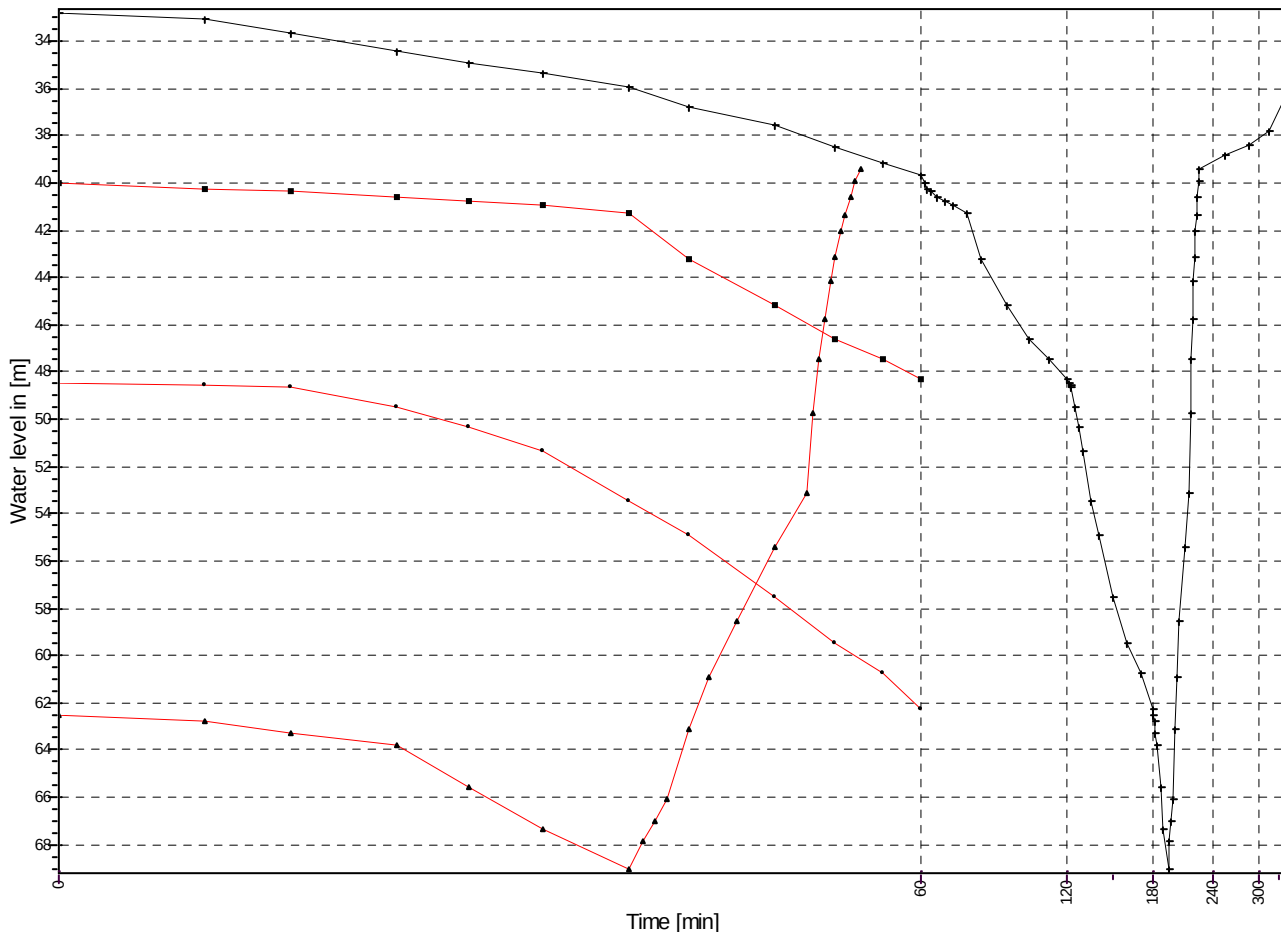
Rep. inst.: GOLD

Col. ht. [mm]: 0.28

Date WL meas.: 20120131

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	69.34	20140131	1210	20140131	1755			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate [l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	1210	60	69.34	0.73	7.31							0.10
STEP TEST STEP 2	1310	60	69.34	1.58	15.97							0.10
STEP TEST STEP 3	1410	60	69.34	2.66	29.92							0.09
STEP TEST STEP 4	1510	15	69.34	4.05	36.68	3.64	90	240				0.11
PUMP INLET	1755	3	69.34	3.31	36.69							0.09



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MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: *Site Identifier:* 2823AAX0017 *Number:* SD2-GAA082 *Site type:* Borehole

Distr./Farm No.: 443 *Site Name/Descr.:* SERETSESENCHO PTN. SION

<i>Latitude [°]:</i> 28.165460	<i>Alt. No. 1:</i>	<i>Diam. [mm]:</i> 165	<i>Water lev. [m]:</i>
<i>Longitude [°]:</i> 23.182690	<i>Alt. No. 2:</i>	<i>Depth [m]:</i>	<i>WL status:</i>
<i>Altitude [m]:</i> 1406.00	<i>Rep. inst.:</i> GOLD	<i>Col. ht. [m]:</i> 0.23	<i>Date WL meas.:</i>

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:

Type of Inst.: Mono-type pump *Pulley Diam. [mm]:*
Manufacturer: *Depth to Intk. [m]:* 28.00

Engine:

Manufacturer: *Power Rating [kW]*
Type of Power: Diesel engine *Pulley Diam. [mm]:*

USE APPLICATION:

Site Status: In use
Purpose: Production (water supply)
Consumer: Non-urban
Application: Domestic - all purposes

WATER CHEMISTRY:

Sample No.: SD2- *Date sampled:* 20130528 *Depth sampl. [m]:* 0 *Comment:*

Main Parameters:				Calculated Parameters:		Bacteriol. Parameters:	
<i>pH:</i> 7.62	<i>Na:</i> 24.4	<i>Cl:</i> 176		<i>Langel.:</i> 0.64		<i>E.Coli:</i>	
<i>EC: [mS/m]</i> 154 †	<i>K:</i> 0.64	<i>NO3 as N:</i> 71.5 ‡		<i>Aggr-Ind:</i> 12.81		<i>Faec. co:</i>	
<i>TDS:</i> 1260 †	<i>Si:</i> 23.2	<i>SO4:</i> 72.8		<i>Ion-bal:</i> -3.53		<i>Total Co:</i>	
<i>T. Alk.:</i> 378	<i>Al:</i> < 0.05	<i>F:</i> 0.15		<i>CaCO3:</i> 838.55		<i>SPC:</i>	
<i>Ca:</i> 163 †	<i>Fe:</i> < 0.05						
<i>Mg:</i> 105 ‡	<i>Mn:</i> < 0.05						

Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption
† Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit
! Value exceeds recommended minimum limit ; Value exceeds minimum allowable limit



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Project No.: 11613568

PUMPING TEST REPORT

Date compiled: 07/03/2014

BASIC SITE INFORMATION: Site Identifier: 2823AAX0017 Number: SD2-GAA082 Site type: Borehole

Distr./Farm No.: 443

Site Name/Des.: SERETSESENCHO PTN. SION

Latitude [°] 28.165460
Longitude [°] 23.182690
Altitude [m]: 1406.00

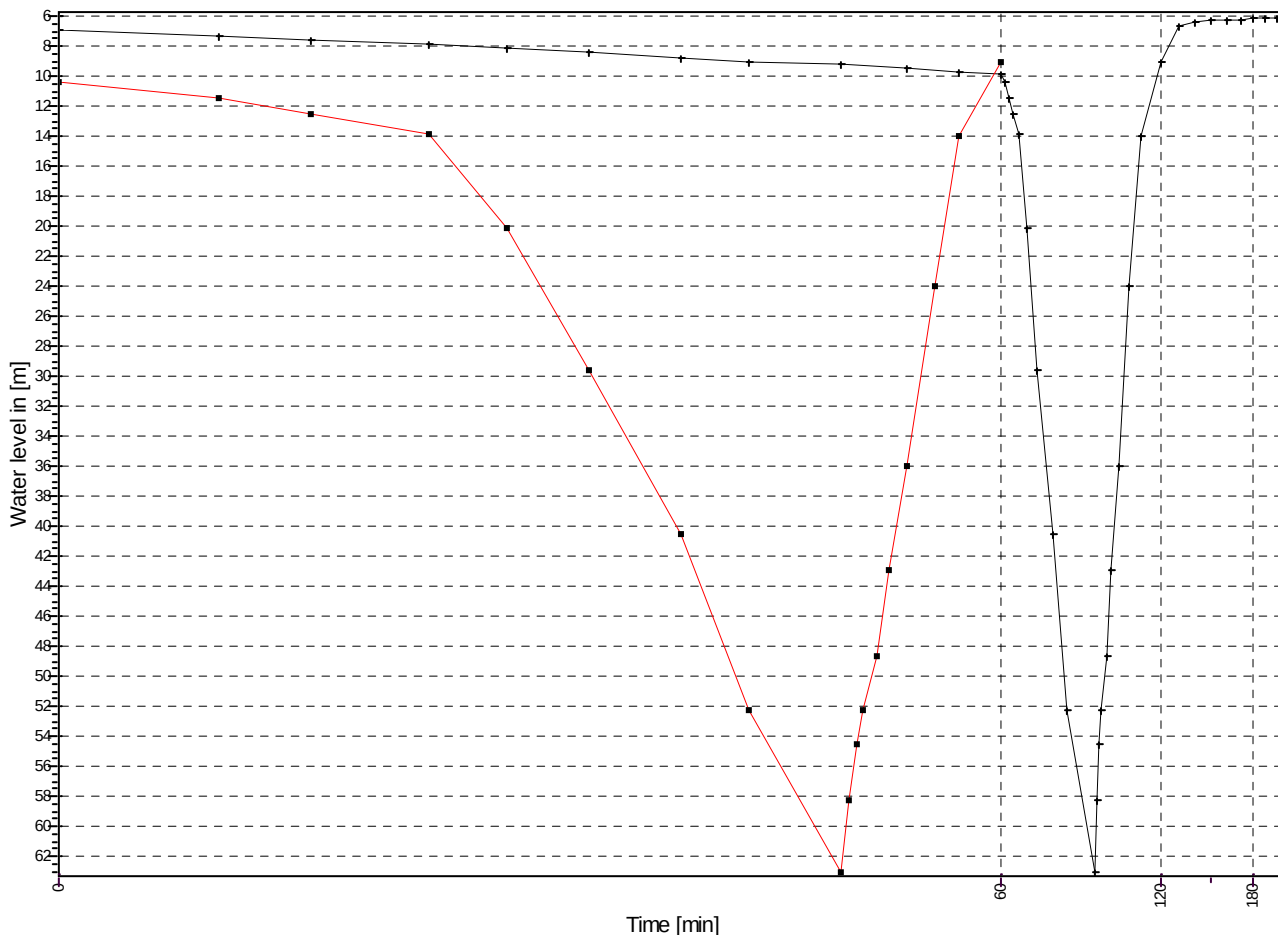
Alt. No. 1:
Alt. No. 2:
Rep. inst.: GOLD

Diam. [mm]: 165
Depth [m]: 68.56
Col. ht. [mm]: 0.25

Water lev. [m]: 5.95
Piezometer: 0
Date WL meas.: 20140203

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	63.34	20140203	1230	20140203	1600			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	1230	60	63.34	0.63	3.82							0.16
STEP TEST STEP 2	1330	30	63.34	1.23	57.14	0.11	100	120				0.02



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Fax: 012 - 364 4001
Project No.: 13615471

MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823AAX0014 Number: SD2-GAA138 Site type: Borehole

Distr./Farm No.: 443 Site Name/Descr.: SERETSESENCHO PTN. SION

Latitude [°]:	28.156870	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	6.57
Longitude [°]:	23.185940	Alt. No. 2:		Depth [m]:	119.80	WL status:	Static
Altitude [m]:	1411.00	Rep. inst.: GOLD		Col. ht. [m]:	0.33	Date WL meas.:	20140130

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:			
Type of Inst.:	Windpump	Pulley Diam. [mm]:	
Manufacturer:	RECIPROCAL	Depth to Intk. [m]:	48.60
Engine:			
Manufacturer:		Power Rating [kW]	
Type of Power:	Wind	Pulley Diam. [mm]:	

USE APPLICATION:

Site Status: In use
Purpose: Production (water supply)
Consumer: Non-urban
Application: Agricultural - stock watering only

WATER CHEMISTRY:

Sample No.:	SD2-	Date sampled:	20140218	Depth sampl. [m]:	93.34	Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters:		
pH:	7.68	Na:	18.1	Cl:	83.1	Langel.:	0.45	E.Coli:
EC: [mS/m]	101 †	K:	0.77	NO3 as N:	12.1 †	Aggr-Ind:	12.55	Faec. co:
TDS:	726 †	Si:		SO4:	42.9	Ion-bal:	-1.88	Total Co:
T. Alk.:	427	Al:	< 0.05	F:	0.23	CaCO3:	568.92	SPC:
Ca:	70.1	Fe:	< 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit ¡ Value exceeds minimum allowable limit				
Mg:	95.8 †	Mn:	< 0.05					

CASING DETAILS:

Depth to Top [m] to Bot. [m]		Diam. [mm]	Material	Thickn. [mm]	Type of openings	Openings [mm]: Length Width		Hor. Dist.	Vert. Dist.
0.00	18.00	165	Steel		Plain casing				

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery [m] %	T [m ² /d]	Storage	Comment
STEP TEST STEP 1	20140130	60	93.34	0.62	86.44	0.17 100	120		
PUMP INLET	20140130	10	93.34	0.29	86.44				

PUMPING TEST REPORT

Date compiled: 19/03/2014

BASIC SITE INFORMATION: Site Identifier: 2823AAX0014 Number: SD2-GAA138 Site type: Borehole

Distr./Farm No.: 443

Site Name/Des.: SERETSESENCHO PTN. SION

Latitude [°] 28.156870

Alt. No. 1:

Diam. [mm]: 165

Water lev. [m]: 6.57

Longitude [°] 23.185940

Alt. No. 2:

Depth [m]: 119.80

Piezometer: 0

Altitude [m]: 1411.00

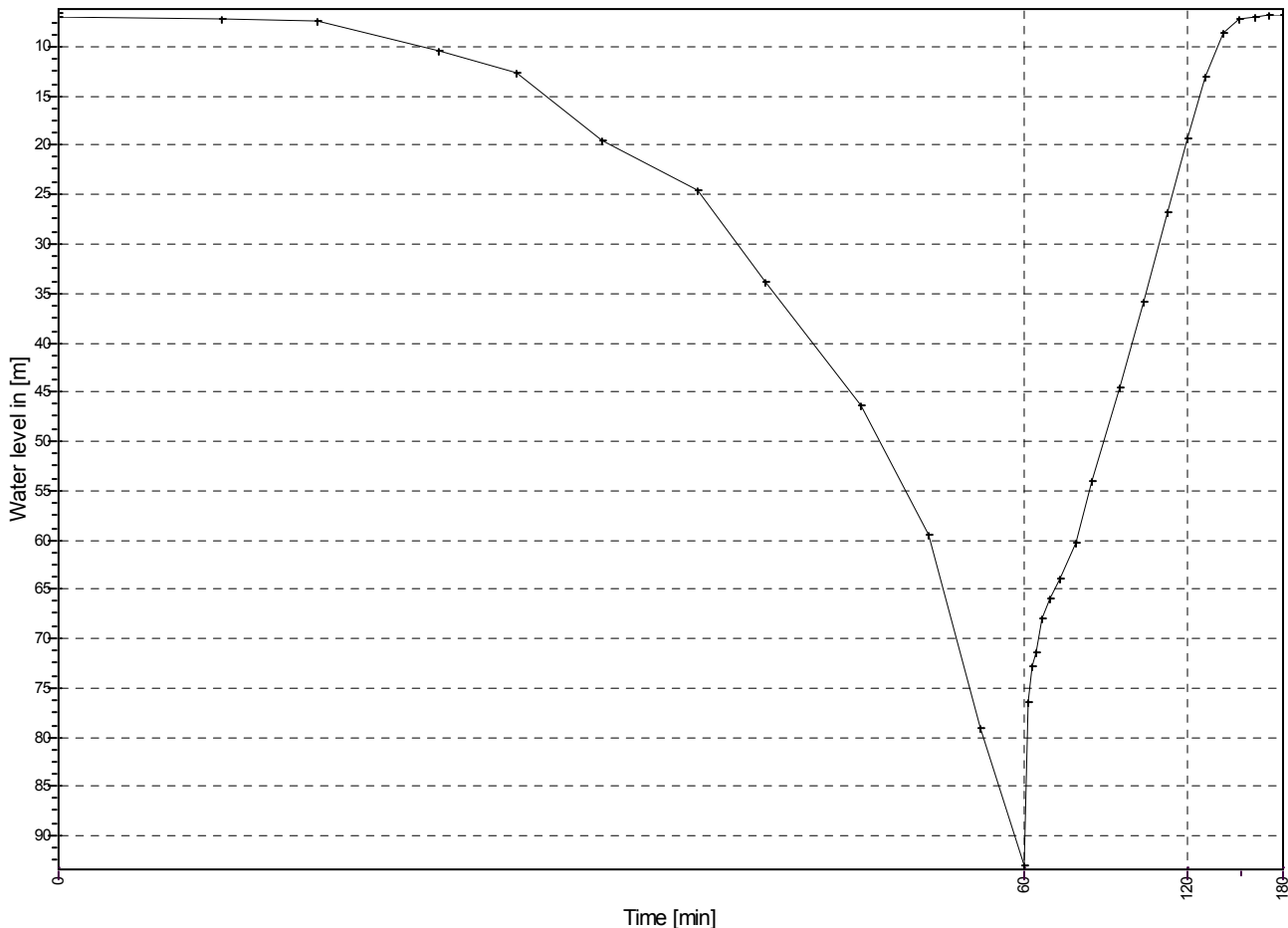
Rep. inst.: GOLD

Col. ht. [mm]: 0.33

Date WL meas.: 20140130

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	93.34	20140130	1220	20140130	1520			

TESTING DETAILS:

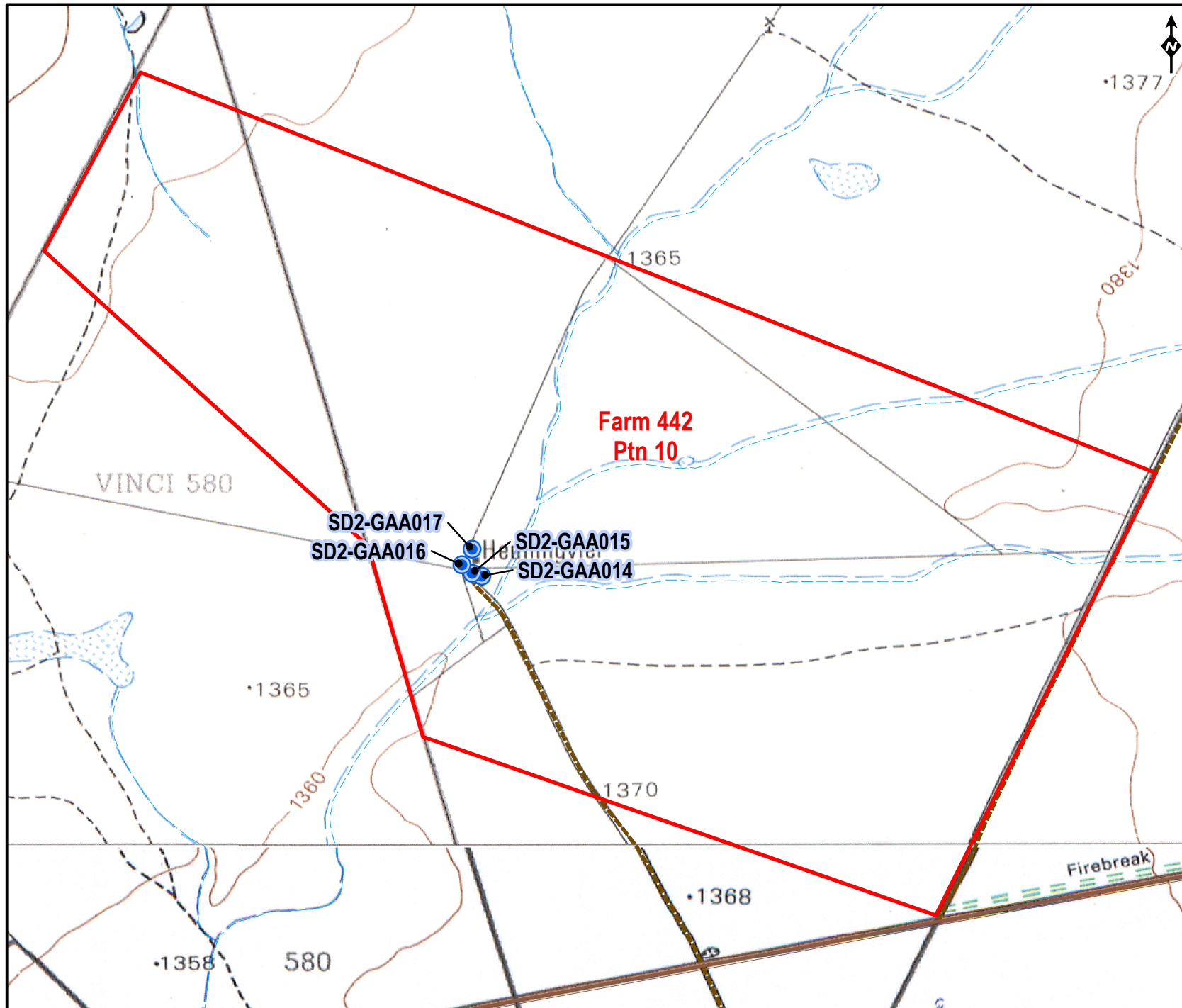
Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	1220	60	93.34	0.62	86.44	0.17	100	120				0.01
PUMP INLET	1320	10	93.34	0.29	86.44							0.00



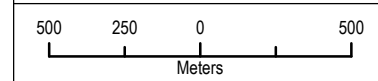
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Fax: 012 - 364 4001
Project No.: 11613568



2.12 J.A. Cloete



- LEGEND**
- Existing borehole survey
 - Farm 442 Ptn 9
 - Secondary road
 - Other
 - Rivers - Non perennial



RESOURCES/NOTES
Coordinate System: GCS WGS 1984
Datum: WGS 1984

PROJECT
GW ASSESSMENT VGG SCHEME

TITLE
FARM 442 PTN 10
JA CLOETE

PROJECT No. 11613568		REV 0
SCALE 1:25 000		A4
GIS	MB	04/07/2014
CHECK	DB	04/07/2014
REVIEW	FW	04/07/2014



J.A CLOETE - BASIC SITE INFORMATION

SITE LOCATION										GEOHYDROLOGY				MANAGEMENT RECOMMEND.			
Site Identifier:	Number:	District	Site name/Description	Site type:	Latitude [°]	Longitude [°]	Altitude [m]	Col. ht. [m]	Diam. [mm]	Depth [m]	Water l. [m]	Yield[l/s]	Rec. abs.[l/s]	Depth to Intk. [m]	Dis. rate[l/s]	Duty c. [hrs/d]	Daily abs. [m³/d]
2823AA00124	SD2-GAA015	442	FARM 442 PTN. HEUNINGVLEI	B	28.23890967	23.182990001	1363.34	0.32	165	75.00	7.44						
2823AA00125	SD2-GAA016	442	FARM 442 PTN. HEUNINGVLEI	B	28.23856967	23.182570001	1365.07	0.41	165	60.00	7.47						
2823AAX0006	SD2-GAA014	442	FARM 442 PTN. HEUNINGVLEI	B	28.23901967	23.183400001	1362.59	0.00	165								
2823AAX0007	SD2-GAA017	442	FARM 442 PTN. HEUNINGVLEI	B	28.23790967	23.182990001	1365.62		165								
SUMMARY:										Maximum:		75.00	7.47				
										Minimum:		60.00	7.44				
										Sum:							
Nr. of sites: 4										Average:		67.50	7.46				

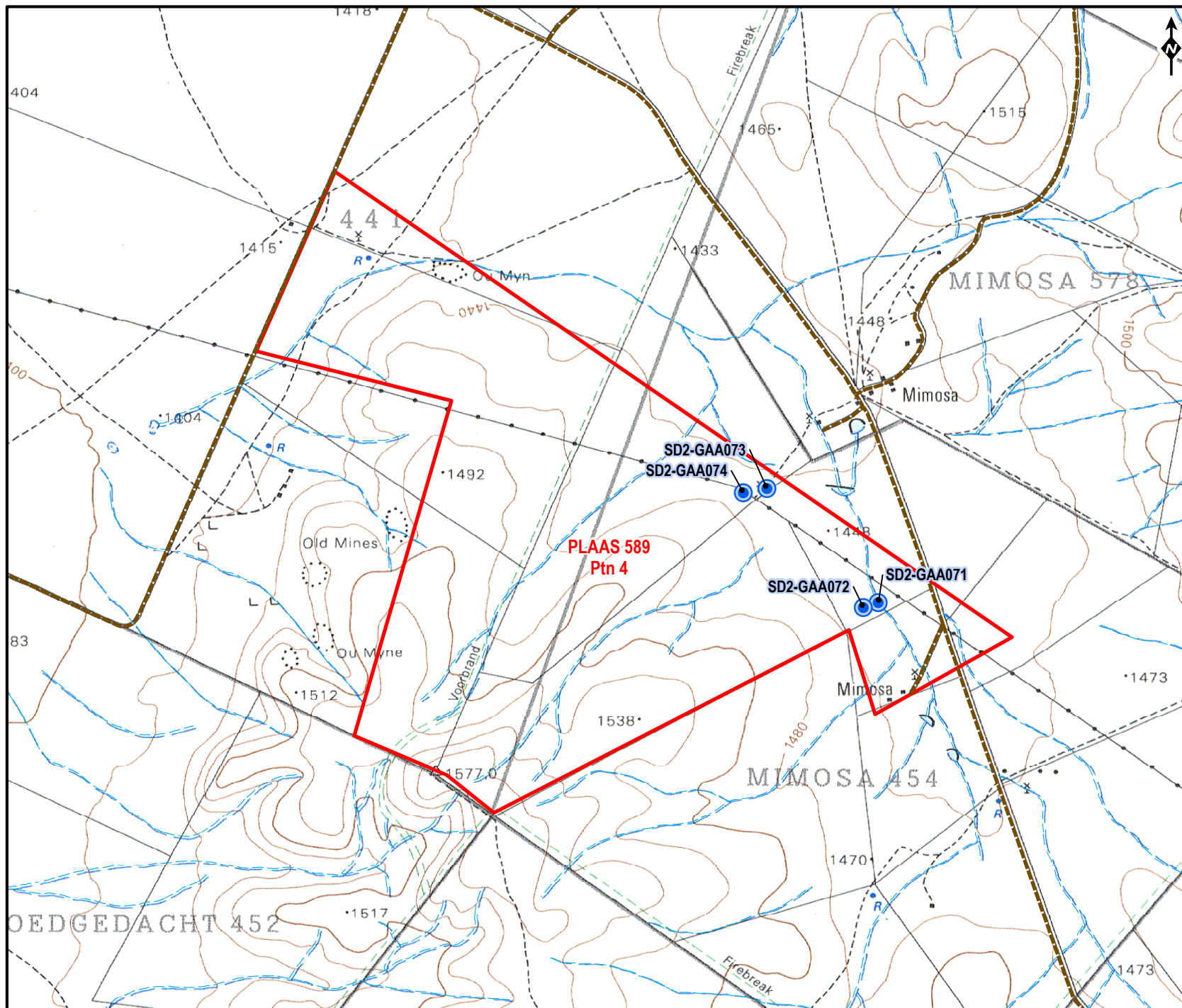
NOTE:
 "Yield" represents cumulative blow yield
 The recommended abstraction ("Rec. abs.")
 is based on a 24 hour duty cycle
 (based on test pumping result)



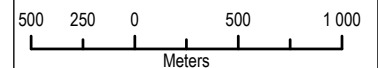
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 Fax: 012 - 364 4001
 Project No.: 11613568



2.13 Jacolien Mathys



- LEGEND**
- Existing borehole survey
 - Farm 589 Ptn 4
 - Other
 - Rivers - Non perennial



RESOURCES/NOTES
 Coordinate System: GCS WGS 1984
 Datum: WGS 1984

PROJECT
 GW ASSESSMENT VGG SCHEME

TITLE
FARM 589 PTN 4
JACOLIEN MATHYS

PROJECT No. 11613568	REV 0
SCALE 1:36 476	A4
GIS MB	07/07/2014
CHECK DB	07/07/2014
REVIEW FW	07/07/2014



JACOLIEN MATHYS - BASIC SITE INFORMATION

SITE LOCATION										GEOHYDROLOGY				MANAGEMENT RECOMMEND.			
Site Identifier:	Number:	District	Site name/Description	Site type:	Latitude [°]	Longitude [°]	Altitude [m]	Col. ht. [m]	Diam. [mm]	Depth [m]	Water l. [m]	Yield[l/s]	Rec. abs.[l/s]	Depth to Intk. [m]	Dis. rate[l/s]	Duty c. [hrs/d]	Daily abs. [m³/d]
2823AB00034	SD2-GAA073	454	MIMOSA PTN. KOEDOESHOEK	B	28.18025967	23.301690001	1448.00	0.30	165		10.46						
2823AB00036	SD2-GAA074	454	MIMOSA PTN. KOEDOESHOEK	B	28.18051967	23.300250001	1455.00	0.30	165								
2823ABX0012	SD2-GAA071	454	MIMOSA	B	28.18726967	23.308520001	1456.00	0.71	165								
2823ABX0013	SD2-GAA072	454	MIMOSA	B	28.18755967	23.307600001	1454.00	0.36	165								
SUMMARY: Nr. of sites: 4										Maximum: 10.46 Minimum: 10.46 Sum: Average: 10.46							

Site Type:
B = Borehole

NOTE:
"Yield" represents cumulative blow yield
The recommended abstraction ("Rec. abs.")
is based on a 24 hour duty cycle
(based on test pumping result)



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JACOLIEN MATHYS - TIME DEPENDENT CHEMISTRY REPORT

Site Identifier: 2823AB00036 **Number:** SD2-GAA074 **Site Name:** MIMOSA PTN. KOEDOSHOCK

Samp. Nr./Type	Date/Time samp.	pH	EC	TDS	Ca	Mg	Na	K	Si	Al	Fe	Mn	Cl	SO4	NO3 as N	F	T. Alk.
SD2-	19941102 0000 20130527 1300	6.83	20 17.5	142	14.5	9.64	9.61	2.67	8.72	< 0.05	< 0.05	< 0.05	14.1	10.6	1.73	< 0.1	59.9

Chemistry Standard: SABS for human consumption
† Value exceeds recommended maximum limit
‡ Value exceeds maximum allowable limit
! Value exceeds recommended minimum limit
j Value exceeds minimum allowable limit

Concentrations in [mg/l] where applicable
EC [mS/m]
Nitrate as N

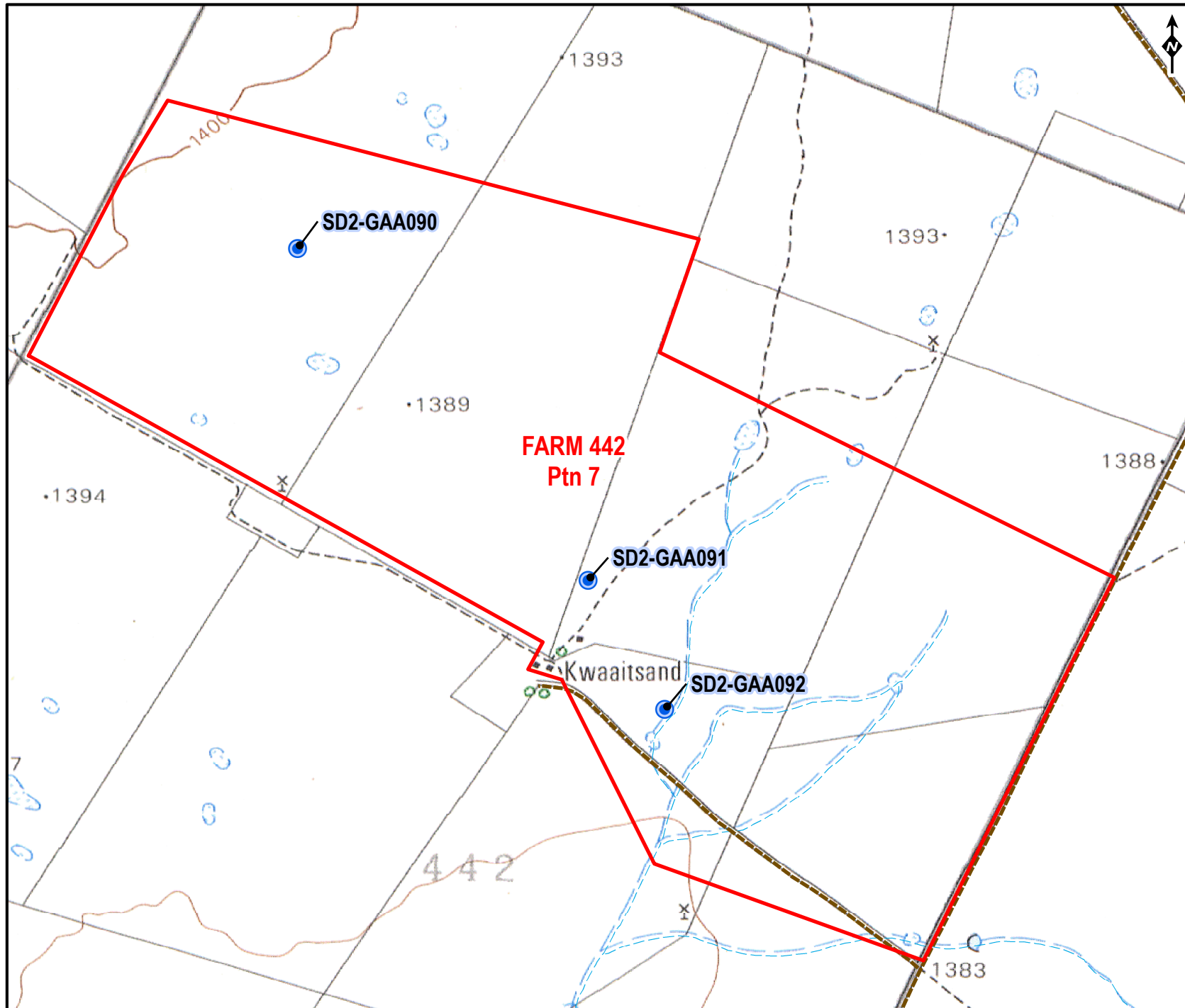
Sample Type Code Explanation:
D: Drinking water
E: Effluent
K: Sewage
O: Organic
P: Pressed or pellet
R: Rock
S: Soil
X: Other source



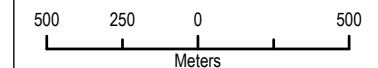
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Tel: 012 - 364 4000
Fax: 012 - 364 4001
Project No.: 11613568



2.14 Janie Neels



- LEGEND**
- Existing borehole survey
 - ▭ Farm 442 Ptn 7
 - Other
 - Rivers - Non perennial



RESOURCES/NOTES
 Coordinate System: GCS WGS 1984
 Datum: WGS 1984

PROJECT
 GW ASSESSMENT VGG SCHEME

TITLE
FARM 442 PTN 7
JANIE NEELS

PROJECT No. 11613568	REV 0
SCALE 1:25 000	A4
GIS MB	18/07/2014
CHECK DB	18/07/2014
REVIEW FW	18/07/2014



JANIE NEELS - BASIC SITE INFORMATION

SITE LOCATION										GEOHYDROLOGY				MANAGEMENT RECOMMEND.			
Site Identifier:	Number:	District	Site name/Description	Site type:	Latitude [°]	Longitude [°]	Altitude [m]	Col. ht. [m]	Diam. [mm]	Depth [m]	Water l. [m]	Yield[l/s]	Rec. abs.[l/s]	Depth to Intk. [m]	Dis. rate[l/s]	Duty c. [hrs/d]	Daily abs. [m³/d]
2823AA00111	SD2-GAA092	442	FARM 442 PTN. KWAAITSAND	B	28.19796967	23.213870001	1382.00	0.58	165		26.07						
2823AA00122	SD2-GAA091	442	FARM 442 PTN. KWAAITSAND	B	28.19254967	23.210650001	1385.00	0.42	165		11.46						
2823AAX0024	SD2-GAA090	442	FARM 442 PTN. KWAAITSAND	B	28.17861967	23.198470001	1397.00	0.53	165								
SUMMARY:		Site Type: B = Borehole							Maximum:		26.07						
									Minimum:		11.46						
Nr. of sites:		3							Sum:								
									Average:		18.77						

NOTE:
 "Yield" represents cumulative blow yield
 The recommended abstraction ("Rec. abs.")
 is based on a 24 hour duty cycle
 (based on test pumping result)



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JANIE NEELS - TIME DEPENDENT CHEMISTRY REPORT

Site Identifier: 2823AA00111 **Number:** SD2-GAA092 **Site Name:** FARM 442 PTN. KWAAITSAND

Samp. Nr./Type	Date/Time samp.	pH	EC	TDS	Ca	Mg	Na	K	Si	Al	Fe	Mn	Cl	SO4	NO3 as N	F	T. Alk.
SD2-	20130528 1315	7.37	65.7	430	88.7	40.8	10.1	2.55	21	< 0.05	< 0.05	< 0.05	20.1	12.5	4.76	0.118	353

Site Identifier: 2823AA00122 **Number:** SD2-GAA091 **Site Name:** FARM 442 PTN. KWAAITSAND

Samp. Nr./Type	Date/Time samp.	pH	EC	TDS	Ca	Mg	Na	K	Si	Al	Fe	Mn	Cl	SO4	NO3 as N	F	T. Alk.
	19941102 0000		58														

Chemistry Standard: SABS for human consumption
† Value exceeds recommended maximum limit
‡ Value exceeds maximum allowable limit
! Value exceeds recommended minimum limit
j Value exceeds minimum allowable limit

Concentrations in [mg/l] where applicable
EC [mS/m]
Nitrate as N

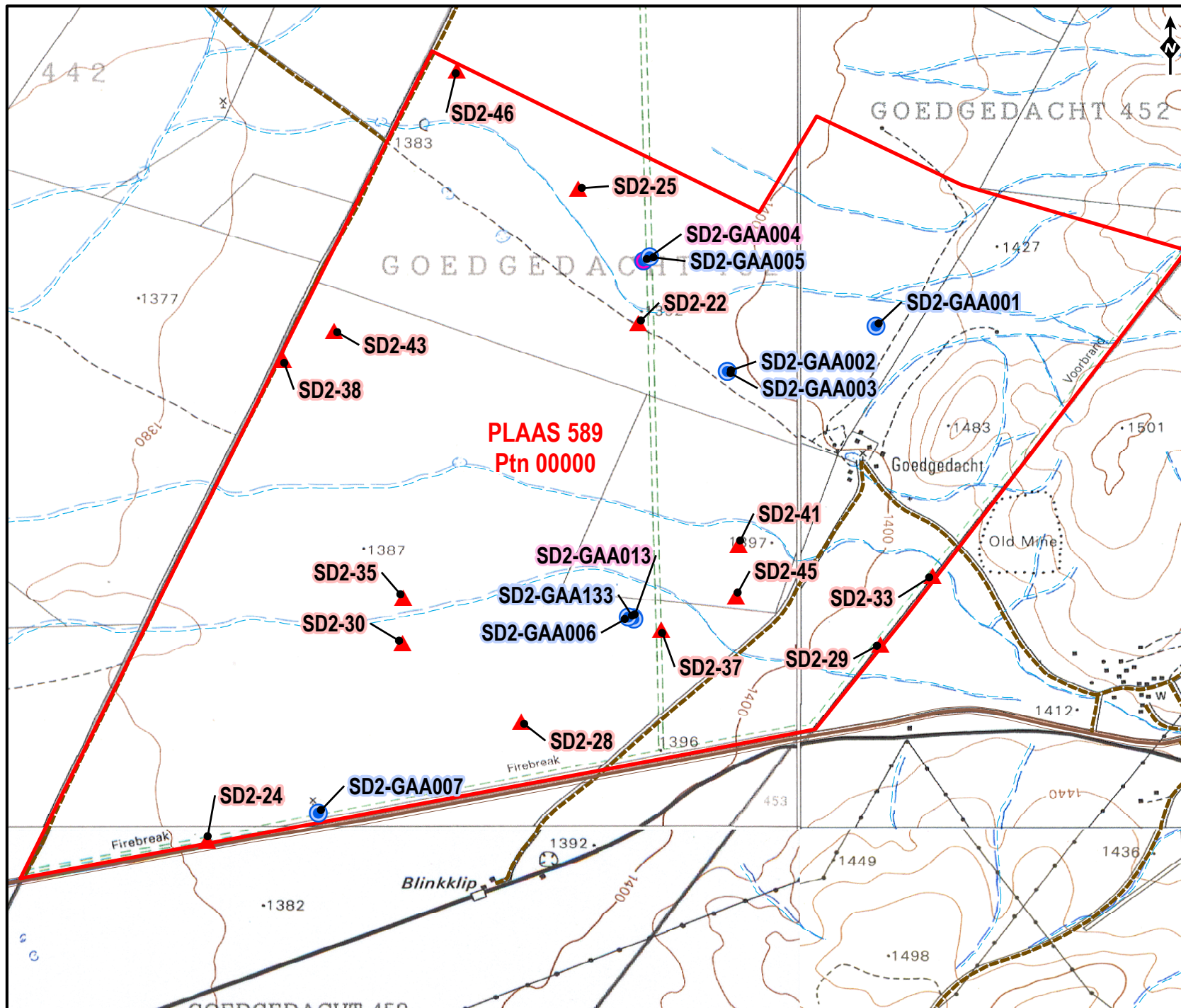
Sample Type Code Explanation:
D: Drinking water
E: Effluent
K: Sewage
O: Organic
P: Pressed or pellet
R: Rock
S: Soil
X: Other source



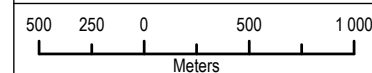
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Project No.: 11613568



2.15 Jen Haven Community



- LEGEND**
- ▲ Newly drilled borehole
 - Existing borehole survey
 - Existing borehole tested
 - ▭ Goedgedacht 452 Ptn 0
 - Secondary road
 - Other
 - Rivers - Non perennial



RESOURCES/NOTES
 Coordinate System: GCS WGS 1984
 Datum: WGS 1984

PROJECT
 GW ASSESSMENT VGG SCHEME

TITLE
GOEDVERDACHT 458 PTN 0
JEN HAVEN COMMUNITY

PROJECT No. 11613568	REV 0
SCALE 1:36 000	A4
GIS MB	14/07/2014
CHECK DB	14/07/2014
REVIEW FW	14/07/2014



Borehole Construction and Geological Log

Date compiled: 19/02/2014

BASIC SITE INFORMATION: Site Identifier: 2823AAX0001 Number: SD2-22 Site type: Borehole

Distr./Farm No.: 452

Site Name/Des.: GOEDGEDACHT

Region Type: Water supply authority

Region Descr.: TSANTSABANE LM

Latitude [°]: 28.219793

Reg./BB.:

Topo-set.:

Depth [m]: 73.00

Longitude [°]: 23.239764

G-Nr.:

Site status: Unused

Col. ht. [m]: 0.59

Altitude [m]: 1388.80

Site purp.: Production (water supply)

Diam. [mm]: 165

Coord. acc.: Accurate to within 1 units

Use applic.: Domestic - all purposes

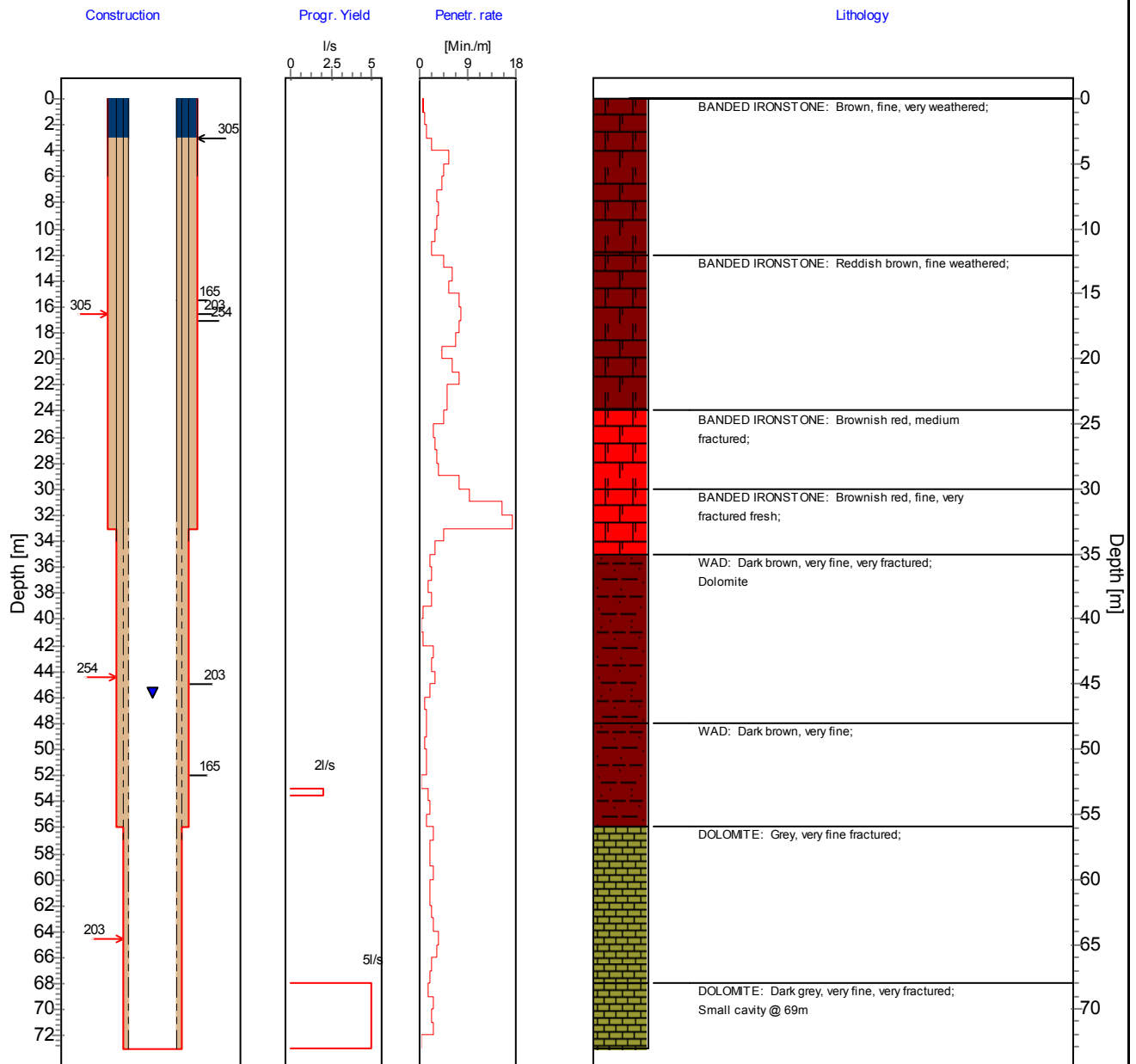
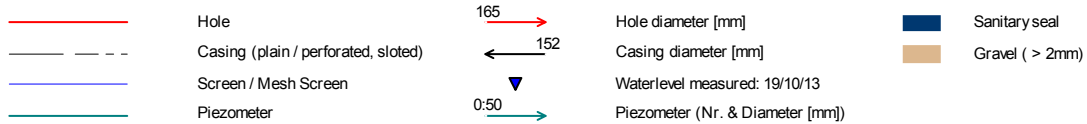
Drain. reg.: D73A

Coord. meth.: Altimeter

Equipment: No equipment

Rep. inst.: GOLD

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Construction and Geohydrological Legend

COMMENT:



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Tel: 012 - 364 4000
Fax: 012 - 364 4001
Project No.: 11613568

MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823AAX0001 Number: SD2-22 Site type: Borehole

Distr./Farm No.: 452 Site Name/Descr.: GOEDGEDACHT WELLFIELD

Latitude [°]:	28.219793	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	45.20
Longitude [°]:	23.239764	Alt. No. 2:		Depth [m]:	73.00	WL status:	Static
Altitude [m]:	1388.80	Rep. inst.:	GOLD	Col. ht. [m]:	0.59	Date WL meas.:	20140121

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:

Type of Inst.: Pulley Diam. [mm]:
Manufacturer: Depth to Intk. [m]:

Engine:

Manufacturer: Power Rating [kW]
Type of Power: Pulley Diam. [mm]:

USE APPLICATION:

Site Status: Unused
Purpose: Production (water supply)
Consumer: Non-urban
Application: Domestic - all purposes

WATER CHEMISTRY:

Sample No.:	SD2-22	Date sampled:	20131025	Depth sampl. [m]:	70.50	Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters:		
pH:	7.73	Na:	12.6	Cl:	19.9	Langel.:	0.23	E.Coli:
EC: [mS/m]	46	K:	2.93	NO3 as N:	3.54	Aggr-Ind:	12.25	Faec. co:
TDS:	286	Si:	12.5	SO4:	14.7	Ion-bal:	1.81	Total Co:
T. Alk.:	213	Al:	< 0.05	F:	< 0.1	CaCO3:	248.06	SPC:
Ca:	62	Fe:	< 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit ‡ Value exceeds minimum allowable limit				
Mg:	22.7	Mn:	< 0.05					

AQUIFER INFORMATION:

Depth to Top [m]	Depth to Bot. [m]	Yield[l/s]	Method meas.	Aquifer type	Comment
53.00	53.50	2.00	Notch (V- or U-notch)		
68.00	73.00	5.00	Notch (V- or U-notch)		

CASING DETAILS:

Depth to Top [m]	to Bot. [m]	Diam. [mm]	Material	Thickn. [mm]	Type of openings	Openings [mm]: Length Width	Hor. Dist.	Vert. Dist.
0.00	6.00	305	Steel		Plain casing			
0.00	34.00	254	Steel		Plain casing			
0.00	33.00	203	Steel		Plain casing			
33.00	57.00	203	Steel		Perforated or slotted			
0.00	31.00	165	Steel		Plain casing			
31.00	73.00	165	Steel		Perforated or slotted			

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery [m] %	[min]	T [m²/d]	Storage	Comment
STEP TEST STEP 1	20131023	60	70.50	5.13	1.06					
STEP TEST STEP 2	20131023	60	70.50	11.04	4.24					
STEP TEST STEP 3	20131023	60	70.50	15.52	7.80					
STEP TEST STEP 4	20131023	20	70.50	20.02	27.54	100	150			
PUMP INLET	20131023	4	70.50	18.85	24.69					
CONSTANT	20131024	2880	70.50	13.07	9.32	100	1200	203	0.05	

RECOMMENDATIONS:

Prior.	Rec. equipm.	Depth to intk. [m]	Type of power	Duty cyc. [hrs]	Disch. rate [l/s]	Water quality	Dyn. water level [m]	Crit. water level [m]
1	Mono-type pump	66.00	Electric motor	24	5.00	CLASS 0	49.00	60.00

Note: 1. Production borehole
2. Install water level monitoring facility in borehole



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Project No.: 11613568

PUMPING TEST REPORT

Date compiled: 31/03/2014

BASIC SITE INFORMATION:

Site Identifier: 2823AAX0001 Number: SD2-22

Site type: Borehole

Distr./Farm No.: 452

Site Name/Des.: GOEDGEDACHT

Latitude [°] 28.219793
Longitude [°] 23.239764
Altitude [m]: 1388.80

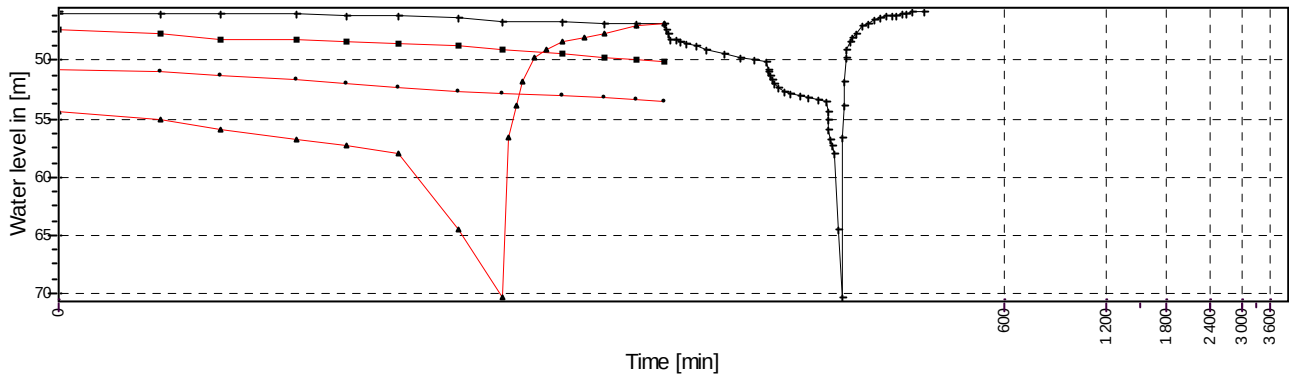
Alt. No. 1:
Alt. No. 2:
Rep. inst.: GOLD

Diam. [mm]: 165
Depth [m]: 73.00
Col. ht. [mm]: 0.59

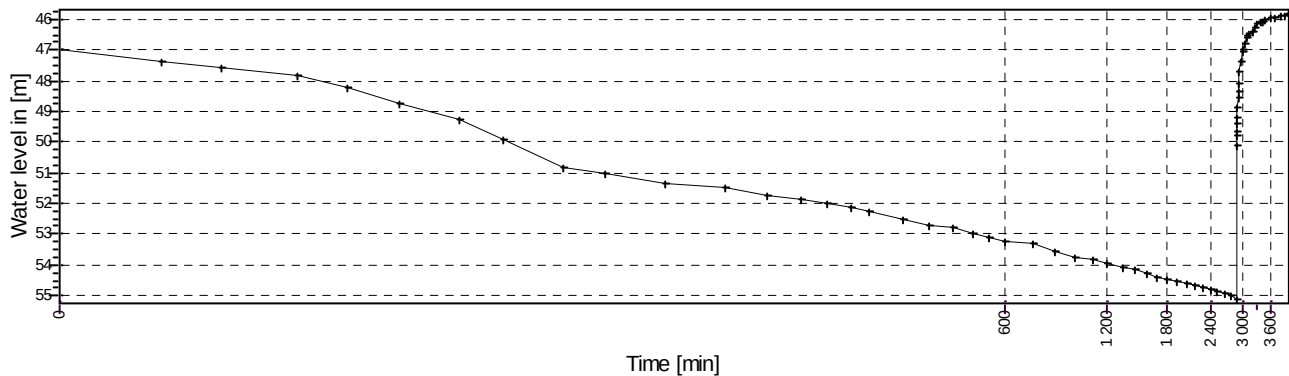
Water lev. [m]: 45.20
Piezometer: 0
Date WL meas.: 20140121

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



Constant Rate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m²/d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	70.50	20131023	1520	20131023	2110			
GOLD	Constant rate test	70.50	20131024	0800	20131027	0400			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m²/d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	1520	60	70.50	5.13	1.06							4.84
STEP TEST STEP 2	1620	60	70.50	11.04	4.24							2.60
STEP TEST STEP 3	1720	60	70.50	15.52	7.80							1.99
STEP TEST STEP 4	1820	20	70.50	20.02	27.54		100	150				0.73
PUMP INLET	2110	4	70.50	18.85	24.69							0.76
CONSTANT	0800	2880	70.50	13.07	9.32		100	1200				1.40



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Fax: 012 - 364 4001
Project No.: 11613568

BASIC SITE INFORMATION: Site Identifier: 2823ACX0081 Number: SD2-24 Site type: Borehole

Distr./Farm No.: 452

Site Name/Des.: GOEDGEDACHT

Region Type: Water supply authority

Region Descr.: TSANTSABANE LM

Latitude [°]: 28.251060

Reg./BB.:

Topo-set.:

Depth [m]: 119.00

Longitude [°]: 23.213680

G-Nr.:

Site status: Unused

Col. ht. [m]: 0.40

Altitude [m]: 1381.50

Site purp.: Production (water supply)

Diam. [mm]: 165

Coord. acc.: Accurate to within 1 units

Use applic.: Domestic - all purposes

Drain. reg.: D73A

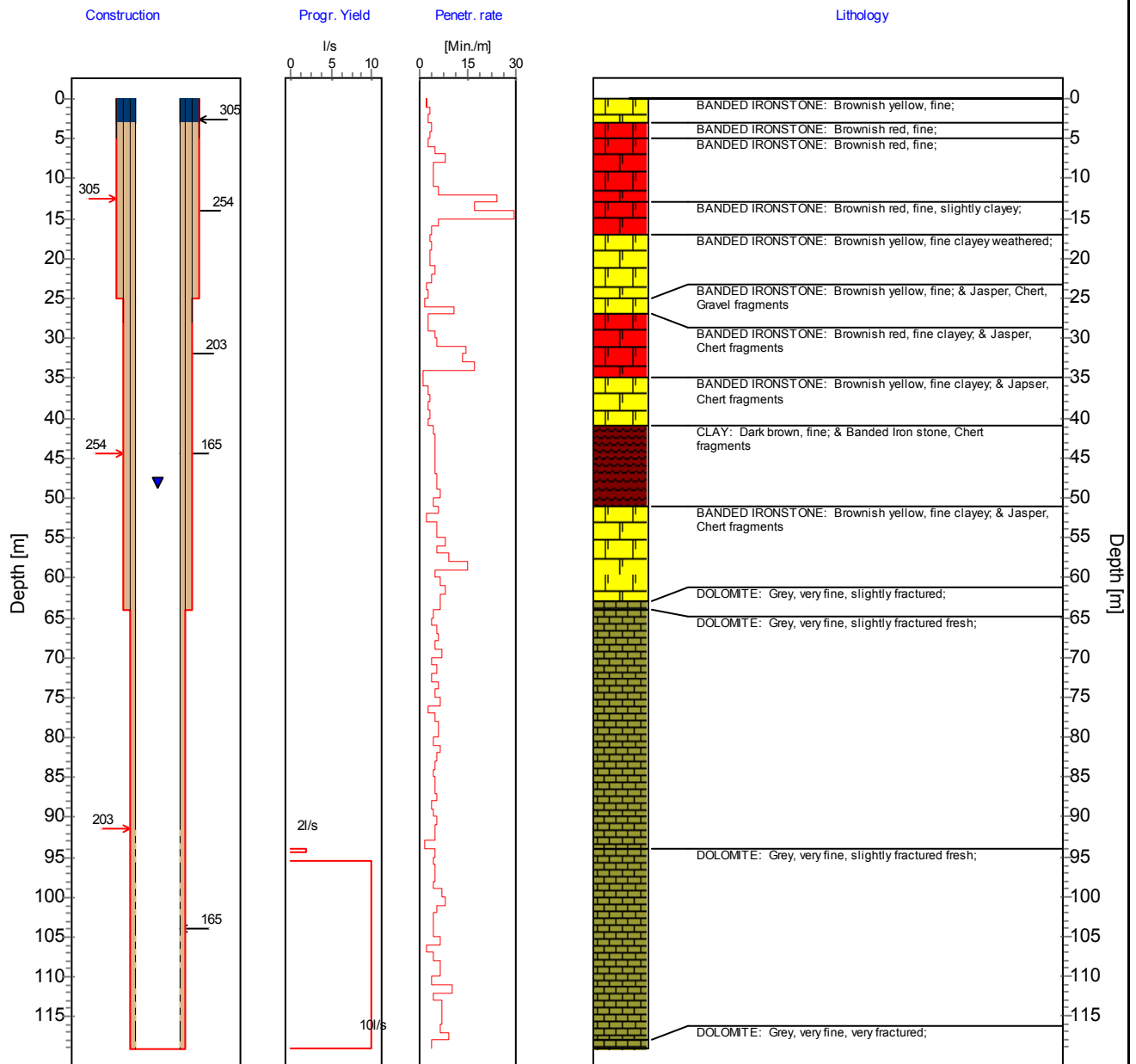
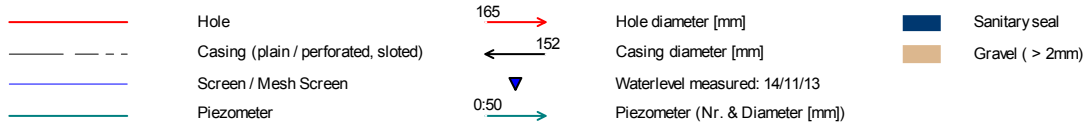
Coord. meth.: Altimeter

Equipment: No equipment

Rep. inst.: GOLD

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Construction and Geohydrological Legend



COMMENT:



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 Project No.: 11613568

MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823ACX0081 Number: SD2-24 Site type: Borehole

Distr./Farm No.: 452 Site Name/Descr.: GOEDGEDACHT WELLFIELD

Latitude [°]:	28.251060	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	47.61
Longitude [°]:	23.213680	Alt. No. 2:		Depth [m]:	119.00	WL status:	Static
Altitude [m]:	1381.50	Rep. inst.:	GOLD	Col. ht. [m]:	0.40	Date WL meas.:	20140119

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:	
Type of Inst.:	Pulley Diam. [mm]:
Manufacturer:	Depth to Intk. [m]:
Engine:	
Manufacturer:	Power Rating [kW]
Type of Power:	Pulley Diam. [mm]:

USE APPLICATION:

Site Status: Unused
Purpose: Production (water supply)
Consumer: Non-urban
Application: Domestic - all purposes

WATER CHEMISTRY:

Sample No.:	SD2-24	Date sampled:	20131116	Depth sampl. [m]:	94.50	Comment:		
Main Parameters:				Calculated Parameters:			Bacteriol. Parameters:	
pH:	7.63	Na:	12.6	Cl:	22.7	Langel.:	0.14	E.Coli:
EC: [mS/m]	50.3	K:	3.31	NO3 as N:	5.09	Aggr-Ind:	12.17	Faec. co:
TDS:	326	Si:	18.2	SO4:	11.3	Ion-bal:	1.52	Total Co:
T. Alk.:	226	Al:	0.1	F:	0.123	CaCO3:	265.57	SPC:
Ca:	61.6	Fe:	< 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit § Value exceeds minimum allowable limit				
Mg:	27.2	Mn:	< 0.05					

AQUIFER INFORMATION:

Depth to Top [m]	Depth to Bot. [m]	Yield[l/s]	Method meas.	Aquifer type	Comment
94.00	94.50	2.00	Notch (V- or U-notch)		
119.00	95.50	10.00	Notch (V- or U-notch)		

CASING DETAILS:

Depth to Top [m]	to Bot. [m]	Diam. [mm]	Material	Thickn. [mm]	Type of openings	Openings [mm]: Length Width	Hor. Dist.	Vert. Dist.
0.00	5.00	305	Steel		Plain casing			
0.00	28.00	254	Steel		Plain casing			
0.00	64.00	203	Steel		Plain casing			
0.00	89.00	165	Steel		Plain casing			
89.00	119.00	165	Steel		Perforated or slotted			

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery [m] %	T [m²/d]	Storage	Comment
STEP TEST STEP 1	20131114	60	94.50	5.11	0.90				
STEP TEST STEP 2	20131114	60	94.50	10.02	3.42				
STEP TEST STEP 3	20131114	60	94.50	15.02	7.69				
STEP TEST STEP 4	20131114	60	94.50	20.24	12.10	0.16 99	240		
CONSTANT	20131114	2880	94.50	15.02	8.56	0.22 97	2880	220	0.05

RECOMMENDATIONS:

Prior.	Rec. equipm.	Depth to intk. [m]	Type of power	Duty cyc. [hrs]	Disch. rate [l/s]	Water quality	Dyn. water level [m]	Crit. water level [m]
1	Mono-type pump	72.00	Electric motor	12	10.00	CLASS 0	54.00	60.00

Note: 1. Production borehole
2. Install water level monitoring facility in borehole



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Project No.: 11613568

PUMPING TEST REPORT

Date compiled: 08/01/2014

BASIC SITE INFORMATION:

Site Identifier: 2823ACX0081 Number: SD2-24

Site type: Borehole

Distr./Farm No.: 452

Site Name/Des.: GOEDGEDACHT

Latitude [°] 28.251060
Longitude [°] 23.213700
Altitude [m]: 1379.50

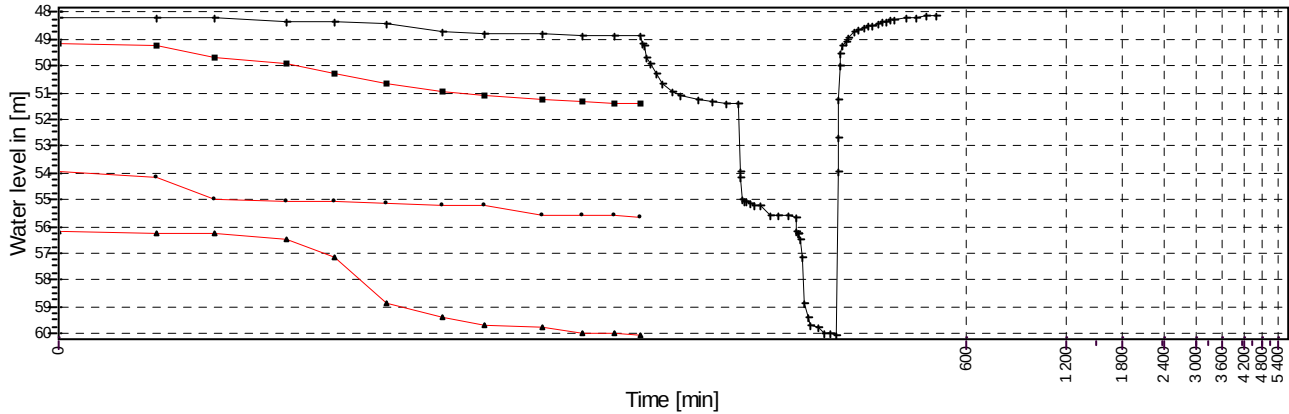
Alt. No. 1:
Alt. No. 2:
Rep. inst.: GOLD

Diam. [mm]: 165
Depth [m]: 119.00
Col. ht. [mm]: 0.40

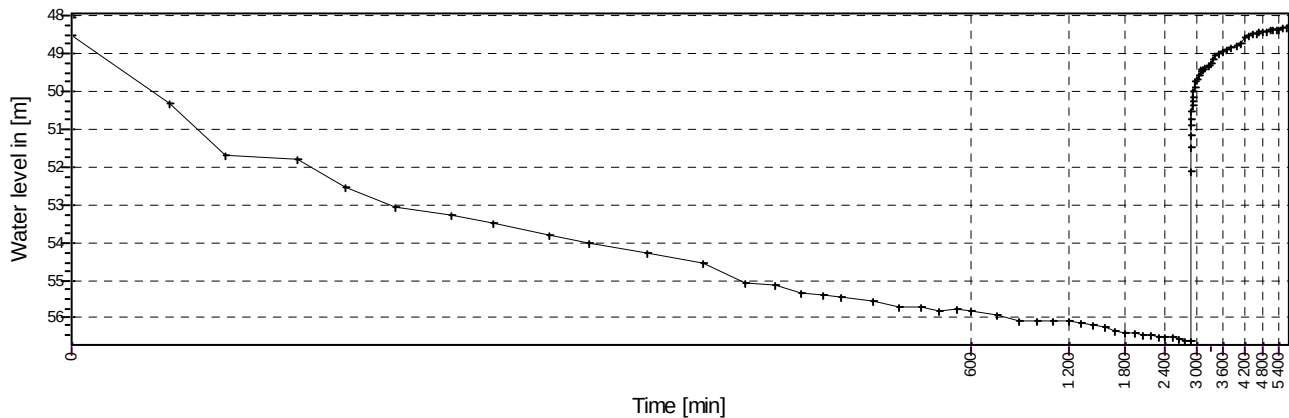
Water lev. [m]: 47.97
Piezometer: 0
Date WL meas.: 20131114

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



Constant Rate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	94.50	20131114	0700	20131114	1500			
GOLD	Constant rate test	94.50	20131114	1600	20131118	1600			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	0700	60	94.50	5.11	0.90							5.68
STEP TEST STEP 2	0800	60	94.50	10.02	3.42							2.93
STEP TEST STEP 3	0900	60	94.50	15.02	7.69							1.95
STEP TEST STEP 4	1000	60	94.50	20.24	12.10	0.16	99	240				1.67
CONSTANT	1600	2880	94.50	15.02	8.56	0.22	97	2880				1.75



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Project No.: 11613568

BASIC SITE INFORMATION: Site Identifier: 2823AAX0002 Number: SD2-25 Site type: Borehole

Distr./Farm No.: 452

Site Name/Des.: GOEDGEDACHT

Region Type: Water supply authority

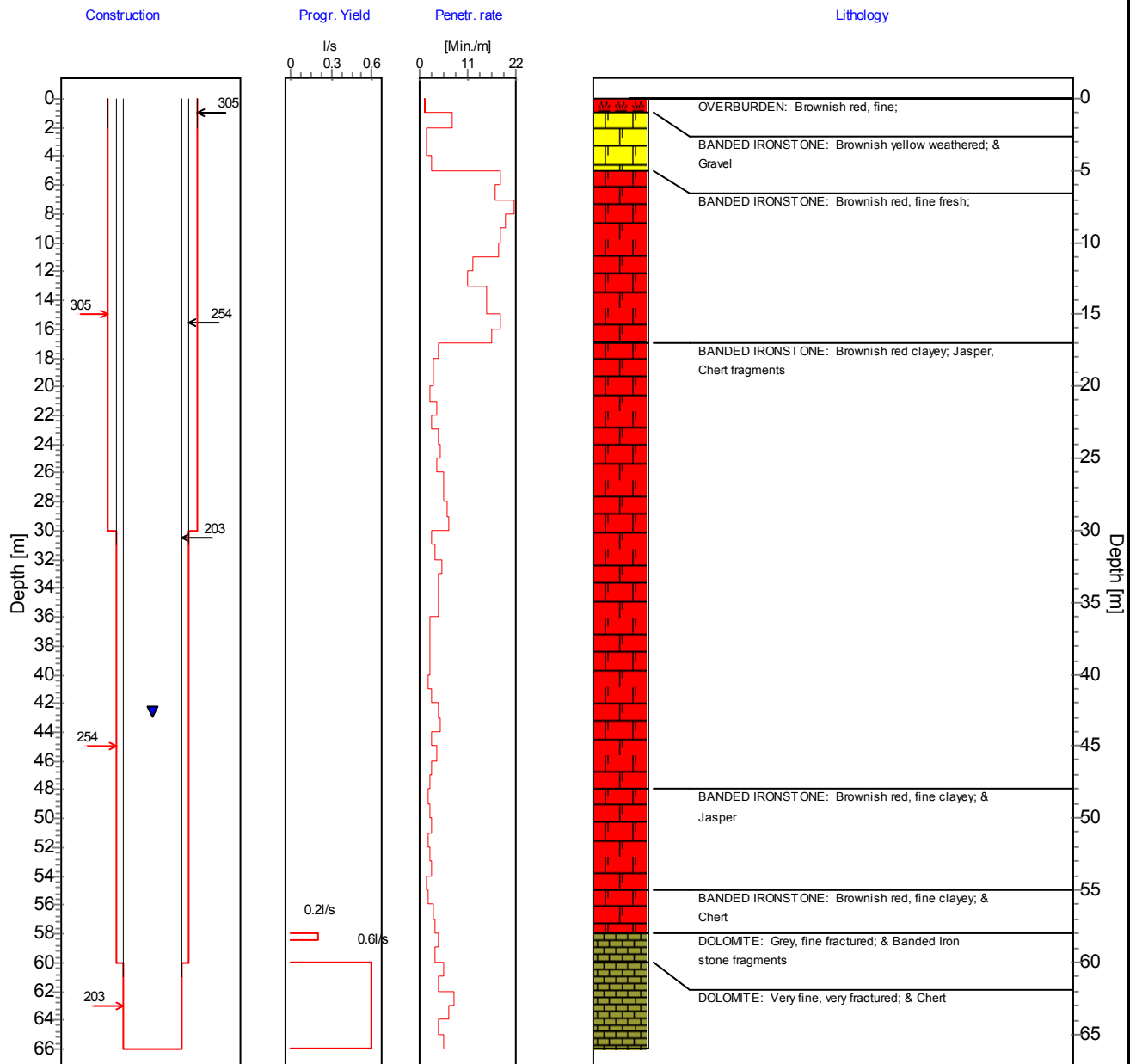
Region Descr.: TSANTSABANE LM

Latitude [°]: 28.211630	Reg./BB.:	Topo-set.:	Depth [m]: 61.15
Longitude [°]: 23.236130	G-Nr.:	Site status: Unused	Col. ht. [m]: 0.56
Altitude [m]: 1385.10		Site purp.: Production (water supply)	Diam. [mm]: 200
Coord. acc.: Accurate to within 1 units		Use applic.: Domestic - all purposes	Drain. reg.: D73A
Coord. meth.: Altimeter		Equipment: No equipment	Rep. inst.: GOLD

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Construction and Geohydrological Legend

	Hole	165 →	Hole diameter [mm]
	Casing (plain / perforated, slotted)	← 152	Casing diameter [mm]
	Screen / Mesh Screen	▼	Waterlevel measured: 25/10/13
	Piezometer	0:50 →	Piezometer (Nr. & Diameter [mm])



COMMENT:



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Project No.: 11613568

MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823AAX0002 Number: SD2-25 Site type: Borehole

Distr./Farm No.: 452 Site Name/Descr.: GOEDGEDACHT

Latitude [°]:	28.211630	Alt. No. 1:		Diam. [mm]:	200	Water lev. [m]:	41.61
Longitude [°]:	23.236130	Alt. No. 2:		Depth [m]:	61.15	WL status:	Static
Altitude [m]:	1385.10	Rep. inst.: GOLD		Col. ht. [m]:	0.56	Date WL meas.:	20140119

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:		
Type of Inst.:	Pulley Diam. [mm]:	
Manufacturer:	Depth to Intk. [m]:	
Engine:		
Manufacturer:	Power Rating [kW]	
Type of Power:	Pulley Diam. [mm]:	

USE APPLICATION:

Site Status: Unused
Purpose: Production (water supply)
Consumer: Non-urban
Application: Domestic - all purposes

WATER CHEMISTRY:

Sample No.:	SD2-25	Date sampled:	20131112	Depth sampl. [m]:	58.50	Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters:		
pH:	7.55	Na:	13.8	Cl:	22.7	Langel.:	0.12	E.Coli:
EC: [mS/m]	55.4	K:	3.63	NO3 as N:	5.14	Aggr-Ind:	12.16	Faec. co:
TDS:	374	Si:	14.4	SO4:	12.1	Ion-bal:	-1.11	Total Co:
T. Alk.:	253	Al:	0.43 †	F:	< 0.1	CaCO3:	274.62	SPC:
Ca:	64.9	Fe:	< 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit ¡ Value exceeds minimum allowable limit				
Mg:	27.4	Mn:	< 0.05					

AQUIFER INFORMATION:

Depth to Top [m]	Depth to Bot. [m]	Yield[l/s]	Method meas.	Aquifer type	Comment
58.00	58.50	0.20	Notch (V- or U-notch)		
60.00	66.00	0.60	Notch (V- or U-notch)		

CASING DETAILS:

Depth to Top [m]	to Bot. [m]	Diam. [mm]	Material	Thickn. [mm]	Type of openings	Openings [mm]: Length Width	Hor. Dist.	Vert. Dist.
0.00	2.00	305	Steel		Plain casing			
0.00	31.00	254	Steel		Plain casing			
0.00	61.00	203	Steel		Plain casing			

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery [m]	%	[min]	T [m²/d]	Storage	Comment
STEP TEST STEP 1	20131112	60	58.50	3.36	13.73						
STEP TEST STEP 2	20131112	2	58.50	5.00	16.33	0.21	99	80			
PUMP INLET	20131112	5	58.50	4.42	16.33						



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Project No.: 11613568

PUMPING TEST REPORT

Date compiled: 31/03/2014

BASIC SITE INFORMATION:

Site Identifier: 2823AAX0002 Number: SD2-25

Site type: Borehole

Distr./Farm No.: 452

Site Name/Des.: GOEDGEDACHT

Latitude [°] 28.211630

Alt. No. 1:

Diam. [mm]: 200

Water lev. [m]: 41.61

Longitude [°] 23.236130

Alt. No. 2:

Depth [m]: 61.15

Piezometer: 0

Altitude [m]: 1385.10

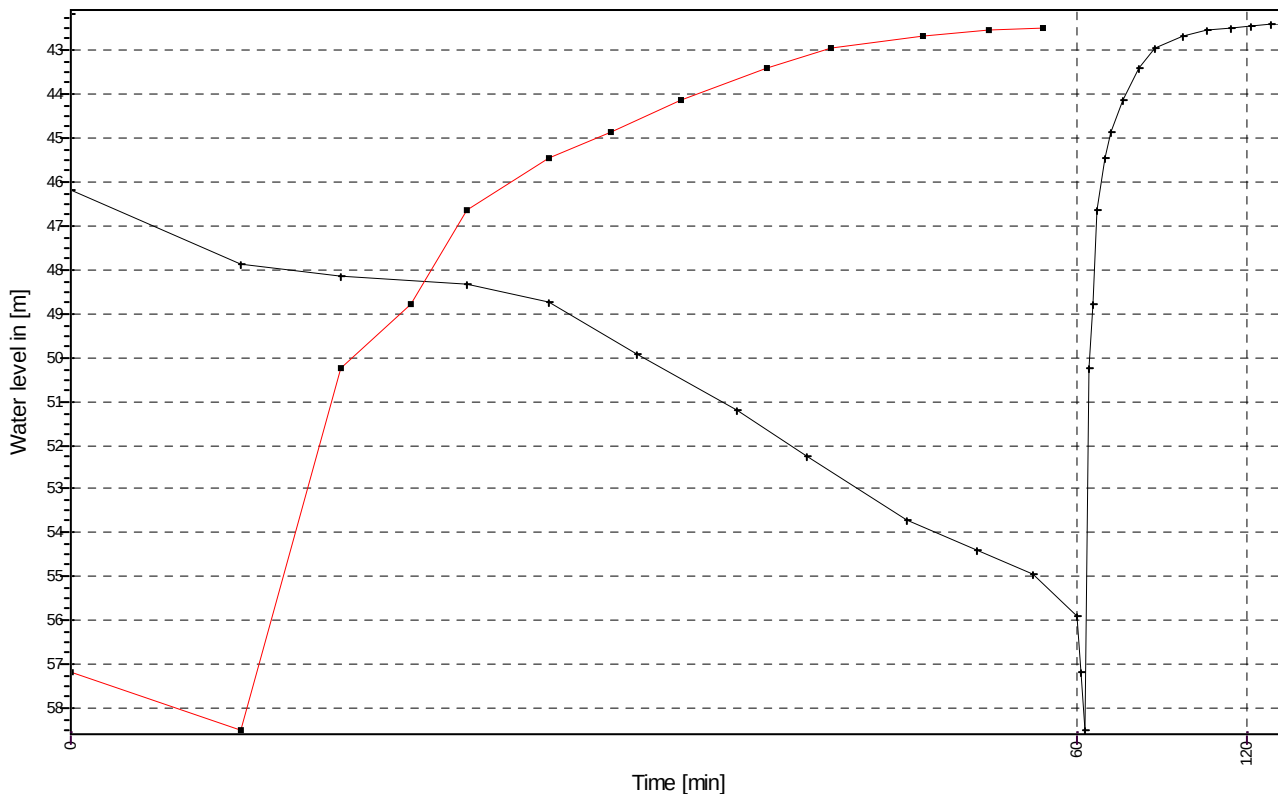
Rep. inst.: GOLD

Col. ht. [mm]: 0.56

Date WL meas.: 20140119

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	58.50	20131112	0700	20131112	0922			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	0700	60	58.50	3.36	13.73							0.24
STEP TEST STEP 2	0800	2	58.50	5.00	16.33	0.21	99	80				0.31
PUMP INLET	0922	5	58.50	4.42	16.33							0.27



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Project No.: 11613568

BASIC SITE INFORMATION: Site Identifier: 2823AAX0004 Number: SD2-28 Site type: Borehole

Distr./Farm No.: 452

Site Name/Des.: GOEDGEDACHT

Region Type: Water supply authority

Region Descr.: TSANTSABANE LM

Latitude [°]: 28.243900

Reg./BB.:

Topo-set.:

Depth [m]: 85.00

Longitude [°]: 23.232680

G-Nr.:

Site status: Unused

Col. ht. [m]: 0.55

Altitude [m]: 1391.20

Site purp.: Production (water supply)

Diam. [mm]: 203

Coord. acc.: Accurate to within 1 units

Use applic.: Domestic - all purposes

Drain. reg.: D73A

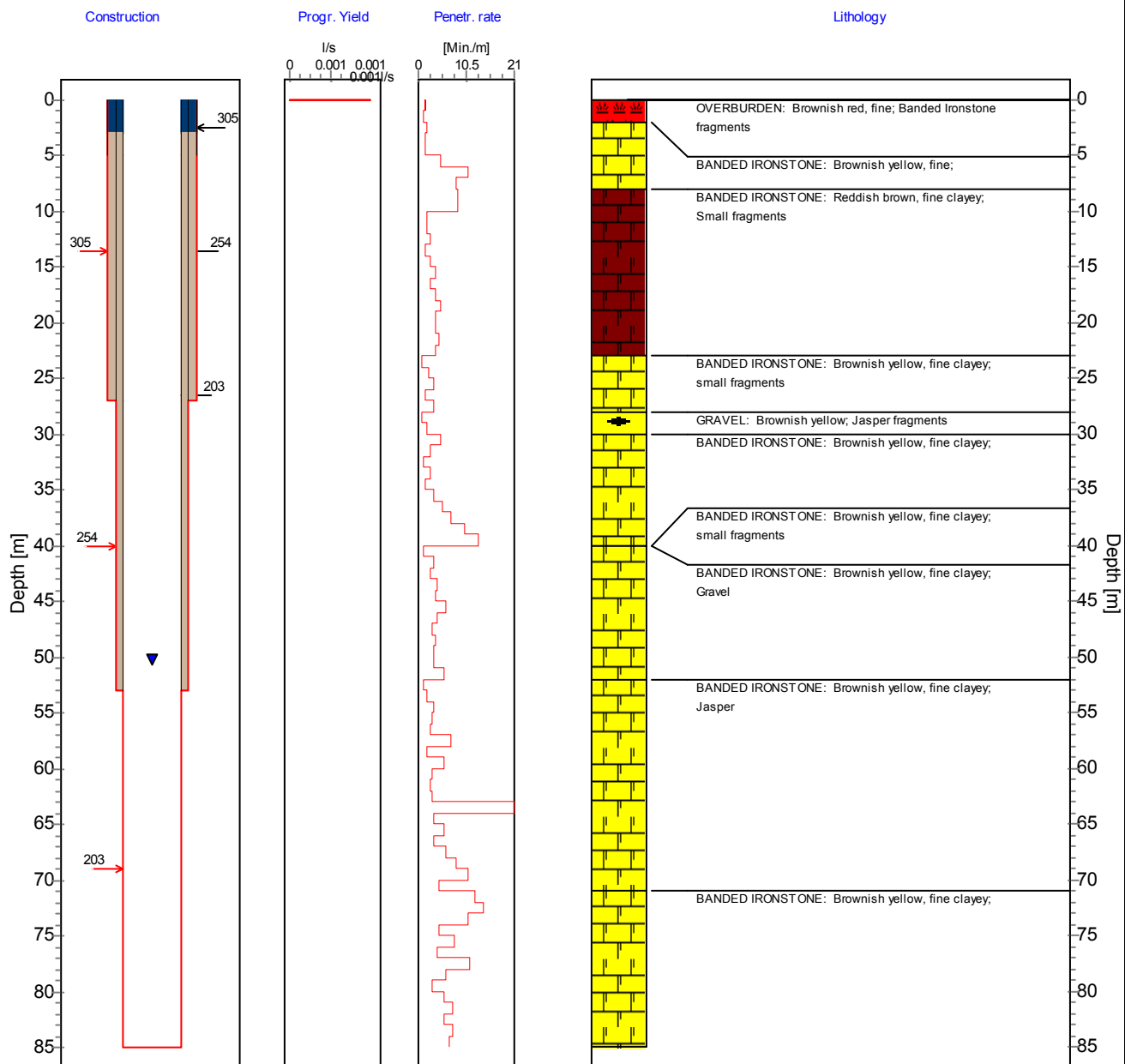
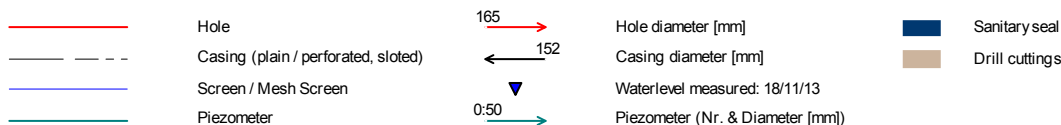
Coord. meth.: Altimeter

Equipment: No equipment

Rep. inst.: GOLD

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Construction and Geohydrological Legend



COMMENT:



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 Project No.: 11613568

BASIC SITE INFORMATION: Site Identifier: 2823ABX0001 Number: SD2-29 Site type: Borehole

Distr./Farm No.: 452

Site Name/Des.: GOEDGEDACHT

Region Type: Water supply authority

Region Descr.: TSANTSABANE LM

Latitude [°]: 28.239210

Reg./BB.:

Topo-set.:

Depth [m]: 73.00

Longitude [°]: 23.254410

G-Nr.:

Site status: Unused

Col. ht. [m]: 0.48

Altitude [m]: 1401.50

Site purp.: Production (water supply)

Diam. [mm]: 165

Coord. acc.: Accurate to within 1 units

Use applic.: Domestic - all purposes

Drain. reg.: D73A

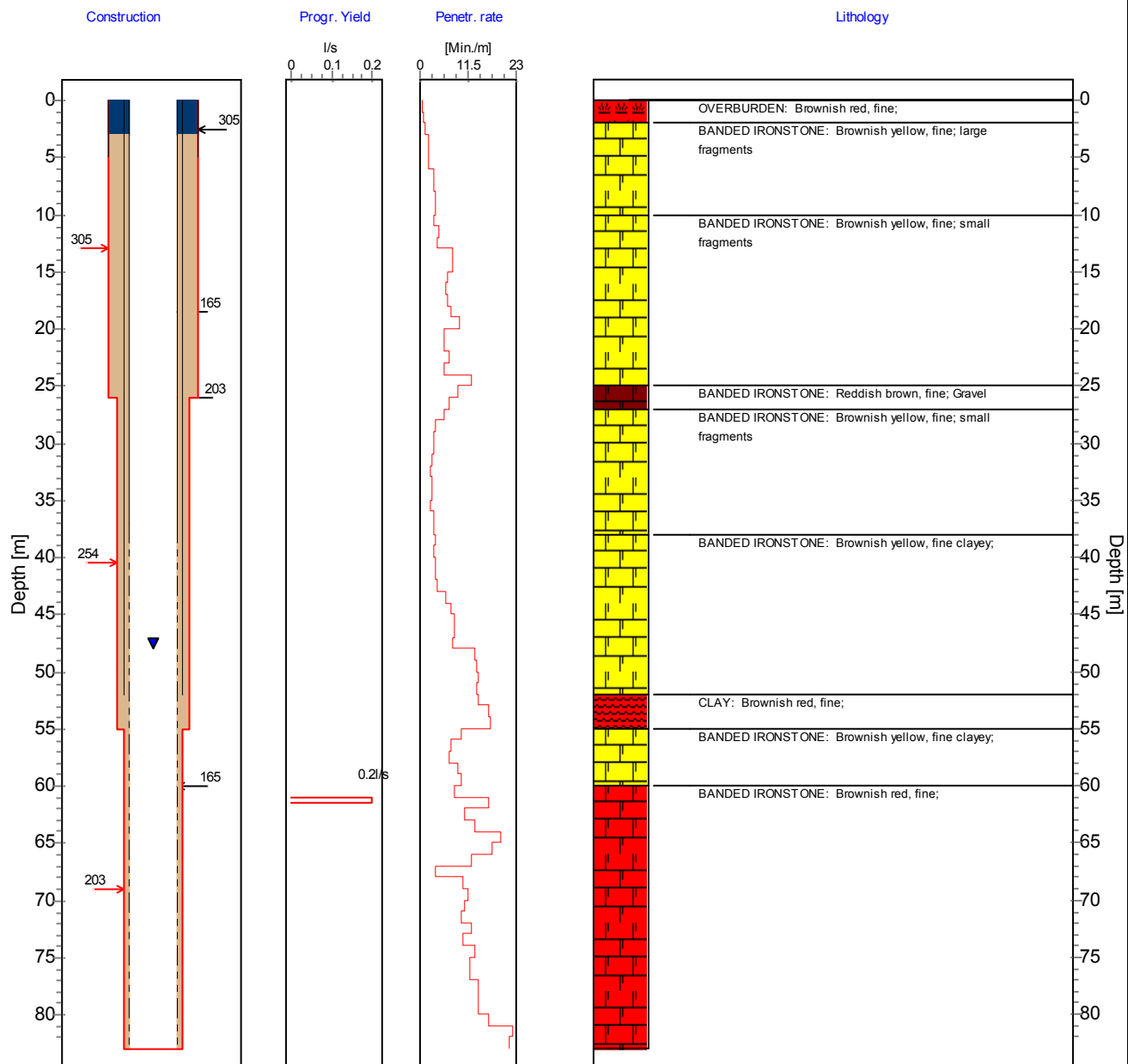
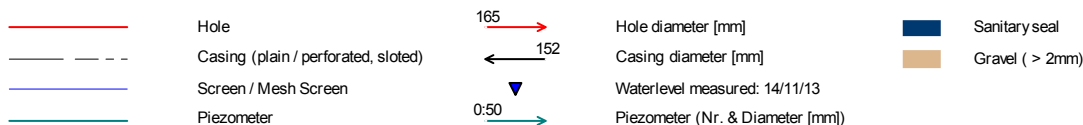
Coord. meth.: Altimeter

Equipment: No equipment

Rep. inst.: GOLD

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Construction and Geohydrological Legend



COMMENT:



Golder Associates Africa, Pretoria
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Project No.: 11613568

MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823ABX0001 Number: SD2-29 Site type: Borehole

Distr./Farm No.: 452 Site Name/Descr.: GOEDGEDACHT

Latitude [°]:	28.239200	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	48.10
Longitude [°]:	23.254410	Alt. No. 2:		Depth [m]:	70.40	WL status:	Static
Altitude [m]:	1401.50	Rep. inst.:	GOLD	Col. ht. [m]:	0.57	Date WL meas.:	20140125

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:		
Type of Inst.:	Pulley Diam. [mm]:	
Manufacturer:	Depth to Intk. [m]:	
Engine:		
Manufacturer:	Power Rating [kW]	
Type of Power:	Pulley Diam. [mm]:	

USE APPLICATION:

Site Status: Unused
Purpose: Production (water supply)
Consumer: Non-urban
Application: Domestic - all purposes

WATER CHEMISTRY:

Sample No.:	SD2-29	Date sampled:	20140218	Depth sampl. [m]:	62.00	Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters:		
pH:	6.96	Na:	14.9	Cl:	53.5	Langel.:	-0.88	E.Coli:
EC: [mS/m]	43.2	K:	4.65	NO3 as N:	< 0.3	Aggr-Ind:	11.11	Faec. co:
TDS:	350	Si:		SO4:	26.9	Ion-bal:	5.23 †	Total Co:
T. Alk.:	132	Al:	< 0.05	F:	0.21	CaCO3:	224.90	SPC:
Ca:	42.5	Fe:	0.12 †	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit ¡ Value exceeds minimum allowable limit				
Mg:	28.9	Mn:	1.09 ‡					

AQUIFER INFORMATION:

Depth to Top [m]	Depth to Bot. [m]	Yield[l/s]	Method meas.	Aquifer type	Comment
61.00	61.50	0.20	Notch (V- or U-notch)		

CASING DETAILS:		Diam.	Thickn.	Openings [mm]:		Hor.	Vert.
Depth to Top [m]	to Bot. [m]	[mm]	[mm]	Type of openings	Length	Width	Dist.
0.00	5.00	305	Steel	Plain casing			
0.00	52.00	203	Steel	Plain casing			
0.00	37.00	165	Steel	Plain casing			
37.00	83.00	165	Steel	Perforated or slotted			

TESTING DETAILS:		Durat.	Depth to	Disch.	Drawd.	Recovery		T [m²/d]		Storage	Comment
Description	Date	[min]	intk. [m]	rate[l/s]	[m]	[m]	%	[min]			
STEP TEST STEP 1	20140125	60	62.00	0.51	9.42						
STEP TEST STEP 2	20140125	3	62.00	0.74	13.32	6.42	52	70			
PUMP INLET	20140125	2	62.00	0.21	13.33						



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Project No.: 11613568

PUMPING TEST REPORT

Date compiled: 17/04/2014

BASIC SITE INFORMATION:

Site Identifier: 2823ABX0001 Number: SD2-29

Site type: Borehole

Distr./Farm No.: 452

Site Name/Des.: GOEDGEDACHT

Latitude [°] 28.239200

Alt. No. 1:

Diam. [mm]: 165

Water lev. [m]: 48.10

Longitude [°] 23.254410

Alt. No. 2:

Depth [m]: 70.40

Piezometer: 0

Altitude [m]: 1401.50

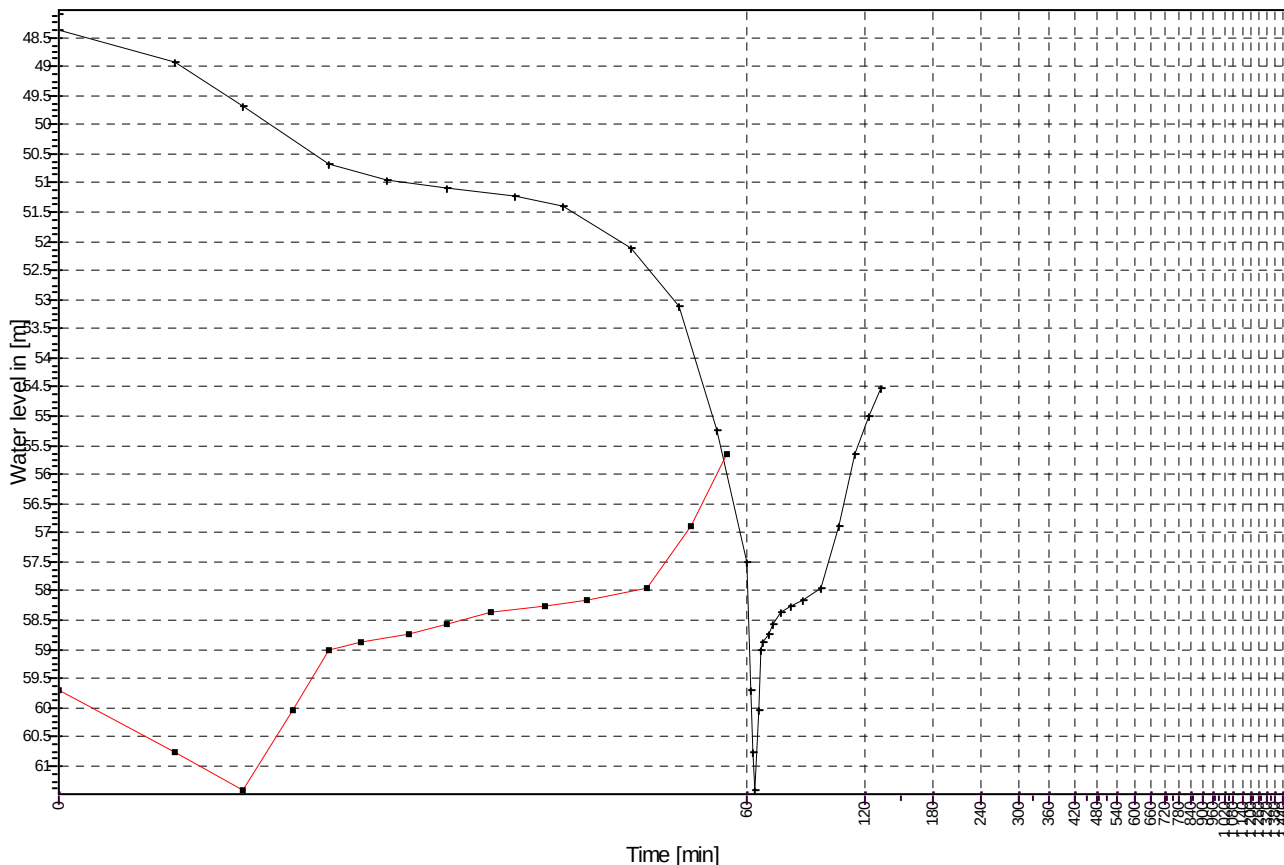
Rep. inst.: GOLD

Col. ht. [mm]: 0.57

Date WL meas.: 20140125

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	62.00	20140125	0810	20140125	1023			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate [l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	0810	60	62.00	0.51	9.42							0.05
STEP TEST STEP 2	0910	3	62.00	0.74	13.32	6.42	52	70				0.06



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Project No.: 11613568

BASIC SITE INFORMATION: Site Identifier: 2823AAX0005 Number: SD2-30 Site type: Borehole

Distr./Farm No.: 452

Site Name/Des.: GOEDGEDACHT

Region Type: Water supply authority

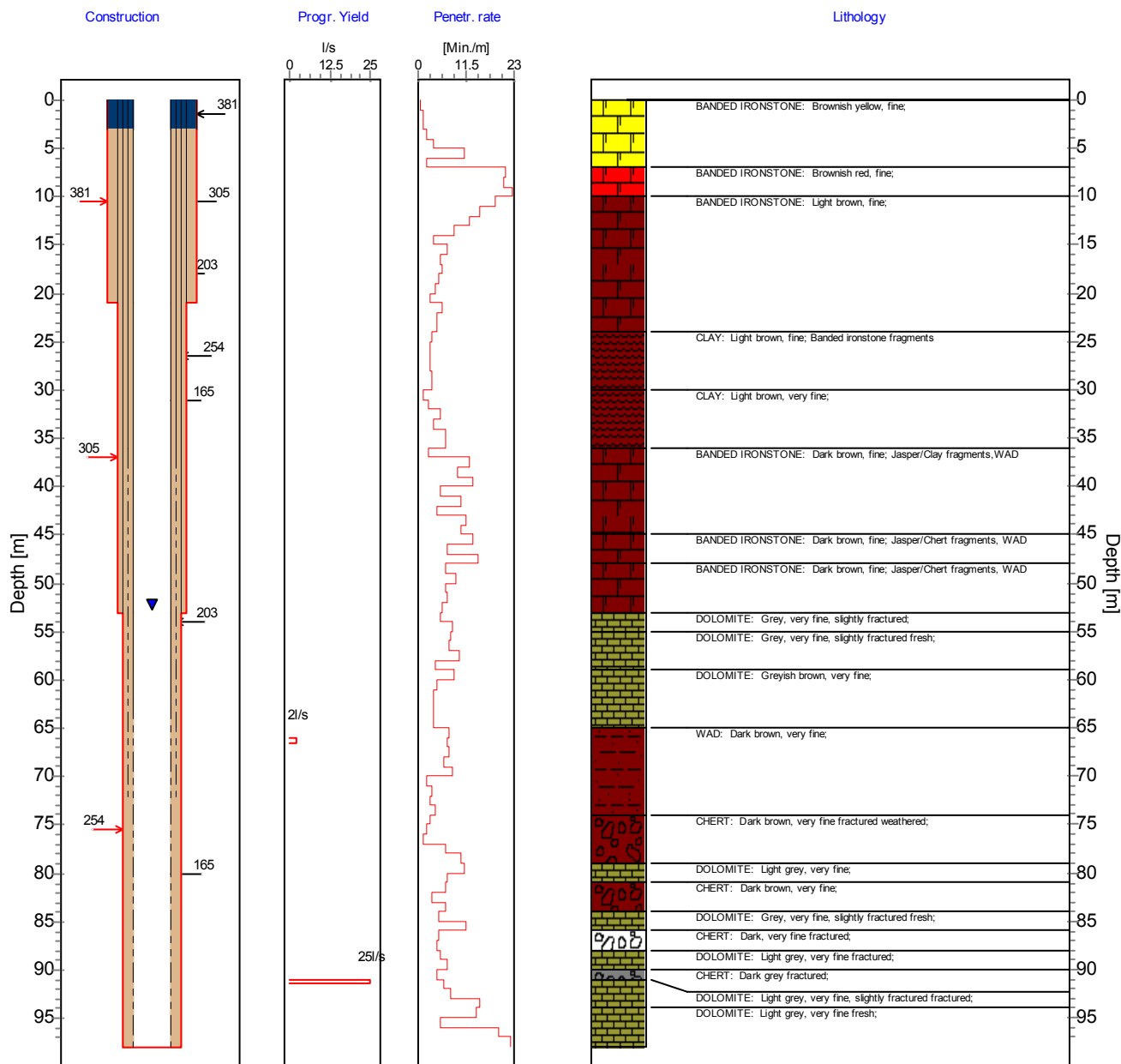
Region Descr.: TSANTSABANE LM

Latitude [°]: 28.239130	Reg./BB.:	Topo-set.:	Depth [m]: 97.75
Longitude [°]: 23.225500	G-Nr.:	Site status: Unused	Col. ht. [m]: 0.52
Altitude [m]: 1387.12		Site purp.: Observation	Diam. [mm]: 165
Coord. acc.: Accurate to within 1 units		Use applic.:	Drain. reg.: D73A
Coord. meth.: Altimeter		Equipment: No equipment	Rep. inst.: GOLD

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Construction and Geohydrological Legend

	Hole	165 →	Hole diameter [mm]		Sanitary seal
	Casing (plain / perforated, slotted)	← 152	Casing diameter [mm]		Gravel (> 2mm)
	Screen / Mesh Screen	▼	Waterlevel measured: 11/11/13		
	Piezometer	0:50 →	Piezometer (Nr. & Diameter [mm])		



COMMENT:



Golder Associates Africa, Pretoria
 P O Box 13776, Hatfield, 00285
 Tel: 012 - 364 4000
 Fax: 012 - 364 4001
 Project No.: 11613568

MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823AAX0005 Number: SD2-30 Site type: Borehole

Distr./Farm No.: 452 Site Name/Descr.: GOEDGEDACHT WELLFIELD

Latitude [°]:	28.239130	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	52.27
Longitude [°]:	23.225500	Alt. No. 2:		Depth [m]:	97.75	WL status:	Static
Altitude [m]:	1387.12	Rep. inst.:	GOLD	Col. ht. [m]:	0.52	Date WL meas.:	20140119

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:

Type of Inst.: Pulley Diam. [mm]:
Manufacturer: Depth to Intk. [m]:

Engine:

Manufacturer: Power Rating [kW]
Type of Power: Pulley Diam. [mm]:

USE APPLICATION:

Site Status: Unused
Purpose: Observation
Consumer: Non-urban
Application:

WATER CHEMISTRY:

Sample No.: SD2-30		Date sampled: 20131129		Depth sampl. [m]: 88.50		Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters:		
pH:	8.09	Na:	13.9	Cl:	23	Langel.:	0.67	E.Coli:
EC: [mS/m]	45.5	K:	2.9	NO3 as N:	4.34	Aggr-Ind:	12.71	Faec. co:
TDS:	408	Si:	14.9	SO4:	14	Ion-bal:	11.67 ‡	Total Co:
T. Alk.:	222	Al:		F:	0.121	CaCO3:	326.14	SPC:
Ca:	75	Fe:	< 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit ‡ Value exceeds minimum allowable limit				
Mg:	33.8	Mn:						

AQUIFER INFORMATION:

Depth to Top [m]	Depth to Bot. [m]	Yield[l/s]	Method meas.	Aquifer type	Comment
66.00	66.50	2.00	Notch (V- or U-notch)		
91.00	91.50	25.00	Notch (V- or U-notch)		

CASING DETAILS:

Depth to Top [m]	to Bot. [m]	Diam. [mm]	Material	Thickn. [mm]	Type of openings	Openings [mm]: Length Width	Hor. Dist.	Vert. Dist.
0.00	3.00	381	Steel		Plain casing			
0.00	21.00	305	Steel		Plain casing			
0.00	53.00	254	Steel		Plain casing			
0.00	36.00	203	Steel		Plain casing			
36.00	72.00	203	Steel		Perforated or slotted			
0.00	62.00	165	Steel		Plain casing			
62.00	98.00	165	Steel		Perforated or slotted			

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery [m] %	T [m²/d]	Storage	Comment
STEP TEST STEP 1	20131128	60	88.50	5.30	4.22				
STEP TEST STEP 2	20131128	60	88.50	10.01	15.56				
STEP TEST STEP 3	20131128	60	88.50	14.45	29.60				
STEP TEST STEP 4	20131128	7	88.50	17.01	35.59	0.03 240			
PUMP INLET	20131128	3	88.50	15.21	36.30				
CONSTANT	20131128	1440	88.50	10.08	15.25	100 210	184	0.05	

RECOMMENDATIONS:

Prior.	Rec. equipm.	Depth to intk. [m]	Type of power	Duty cyc. [hrs]	Disch. rate [l/s]	Water quality	Dyn. water level [m]	Crit. water level [m]
1	Mono-type pump	72.00	Electric motor	20	5.00	CLASS 0	59.77	66.00

Note: 1. Production borehole
2. Install water level monitoring facility in borehole



Golder Associates Africa, Pretoria
P O Box 13776, Hatfield, 00285
Tel: 012 - 364 4000
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Project No.: 11613568

PUMPING TEST REPORT

Date compiled: 31/03/2014

BASIC SITE INFORMATION:

Site Identifier: 2823AAX0005 Number: SD2-30

Site type: Borehole

Distr./Farm No.: 452

Site Name/Des.: GOEDGEDACHT

Latitude [°] 28.239130
Longitude [°] 23.225500
Altitude [m]: 1387.12

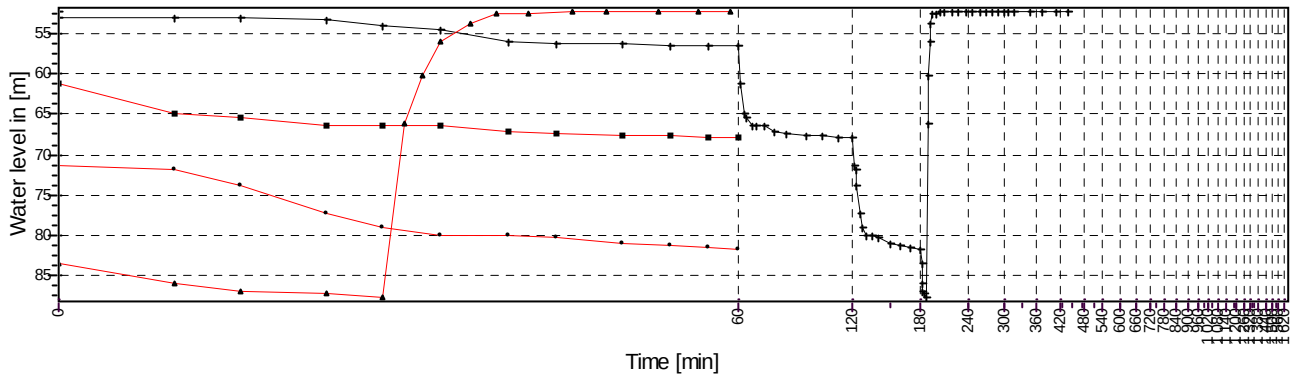
Alt. No. 1:
Alt. No. 2:
Rep. inst.: GOLD

Diam. [mm]: 165
Depth [m]: 97.75
Col. ht. [mm]: 0.52

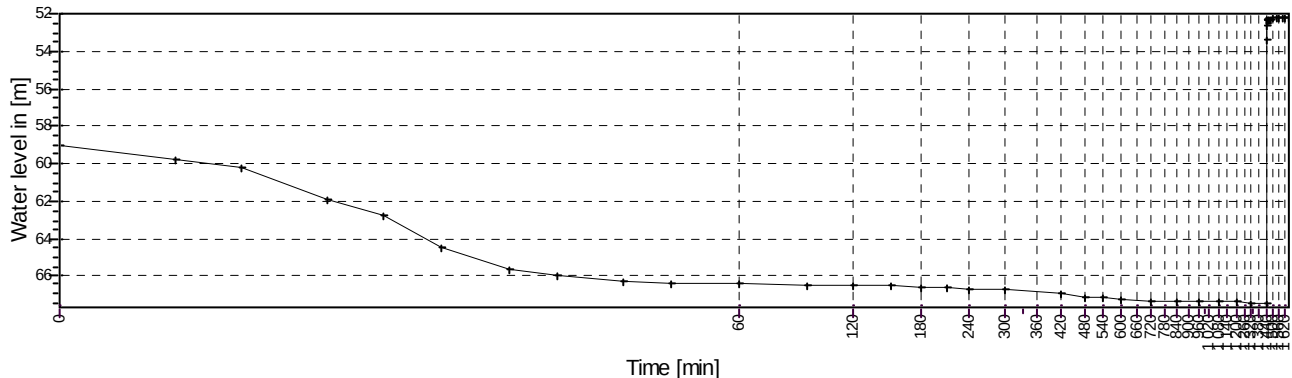
Water lev. [m]: 52.27
Piezometer: 0
Date WL meas.: 20140119

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



Constant Rate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	88.50	20131128	0700	20131128	1417			
GOLD	Constant rate test	88.50	20131128	1900	20131129	2230			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	0700	60	88.50	5.30	4.22							1.26
STEP TEST STEP 2	0800	60	88.50	10.01	15.56							0.64
STEP TEST STEP 3	0900	60	88.50	14.45	29.60							0.49
STEP TEST STEP 4	1000	7	88.50	17.01	35.59	0.03	240					0.48
PUMP INLET	1417	3	88.50	15.21	36.30							0.42
CONSTANT	1900	1440	88.50	10.08	15.25		100	210				0.66



Golder Associates Africa, Pretoria
P O Box 13776, Hatfield, 00285
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Fax: 012 - 364 4001
Project No.: 11613568

BASIC SITE INFORMATION: Site Identifier: 2823ABX0002 Number: SD2-33 Site type: Borehole

Distr./Farm No.: 452

Site Name/Des.: GOEDVERDACHT

Region Type: Water supply authority

Region Descr.: TSANTSABANE LM

Latitude [°]: 28.235060

Reg./BB.:

Topo-set.:

Depth [m]: 101.96

Longitude [°]: 23.257560

G-Nr.:

Site status: Unused

Col. ht. [m]: 0.43

Altitude [m]: 1402.96

Site purp.: Observation

Diam. [mm]: 165

Coord. acc.: Accurate to within 1 units

Use applic.:

Drain. reg.: D73A

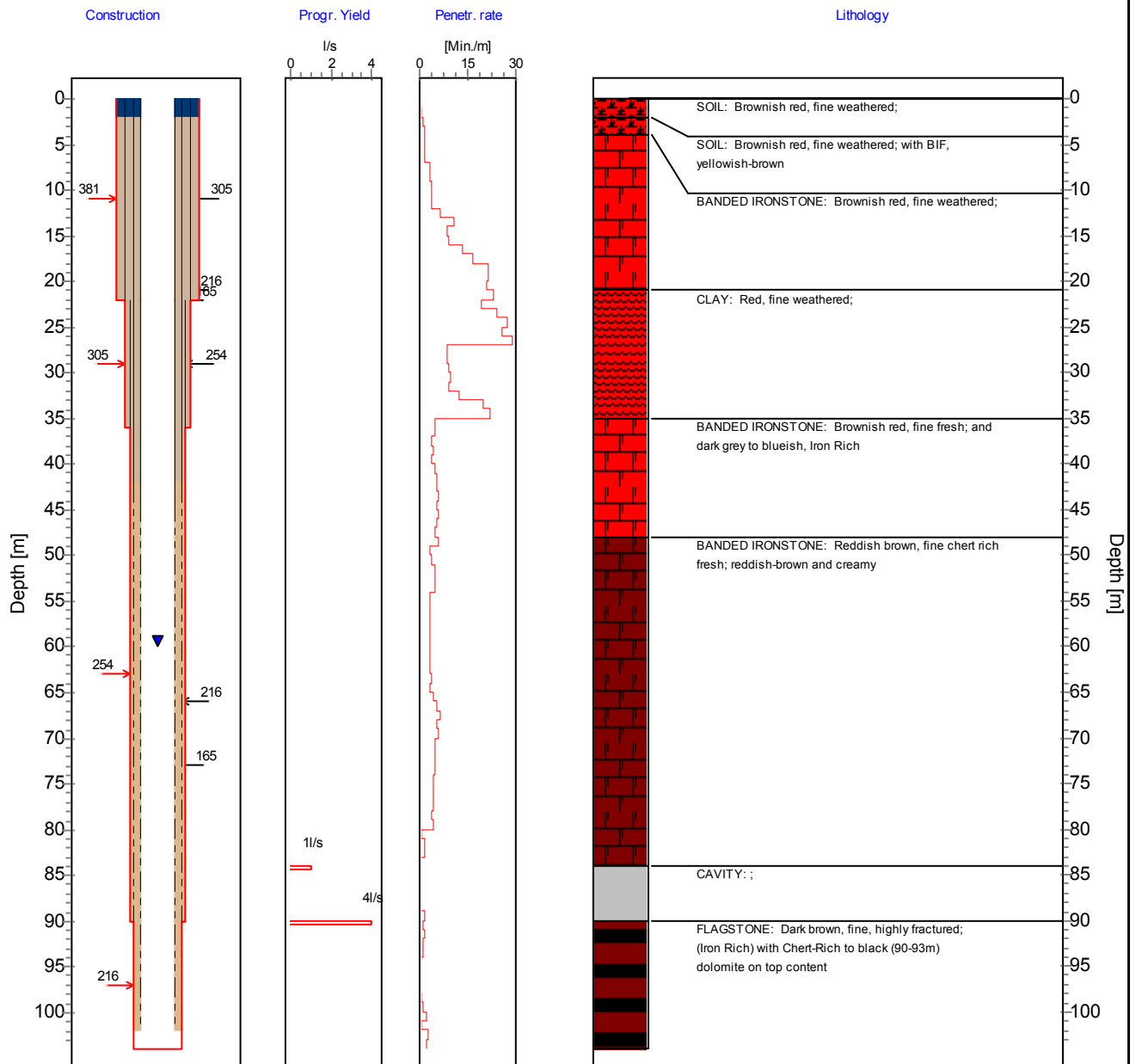
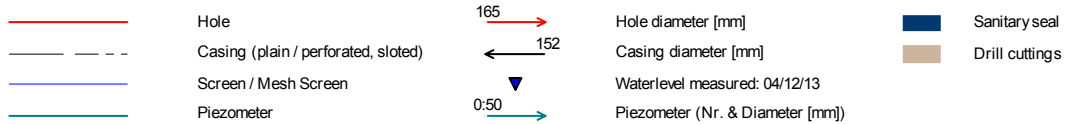
Coord. meth.: Altimeter

Equipment: No equipment

Rep. inst.: GOLD

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Construction and Geohydrological Legend



COMMENT:



Golder Associates Africa, Pretoria
 P O Box 13776, Hatfield, 00285
 Tel: 012 - 364 4000
 Fax: 012 - 364 4001
 Project No.: 11613568

MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823ABX0002 Number: SD2-33 Site type: Borehole

Distr./Farm No.: 452 Site Name/Descr.: GOEDVERDACHT WELLFIELD

Latitude [°]:	28.235060	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	59.43
Longitude [°]:	23.257560	Alt. No. 2:		Depth [m]:	101.96	WL status:	Static
Altitude [m]:	1402.96	Rep. inst.:	GOLD	Col. ht. [m]:	0.43	Date WL meas.:	20140119

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:	
Type of Inst.:	Pulley Diam. [mm]:
Manufacturer:	Depth to Intk. [m]:
Engine:	
Manufacturer:	Power Rating [kW]
Type of Power:	Pulley Diam. [mm]:

USE APPLICATION:

Site Status: Unused
Purpose: Observation
Consumer: Non-urban
Application:

WATER CHEMISTRY:

Sample No.: SD2-33		Date sampled: 20131204		Depth sampl. [m]: 0		Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters:		
pH:	8.2	Na:	64.5	Cl:	42.2	Langel.:	0.43	E.Coli:
EC: [mS/m]	52.8	K:	5.6	NO3 as N:	2.45	Aggr-Ind:	12.47	Faec. co:
TDS:	394	Si:	11	SO4:	38.4	Ion-bal:	1.91	Total Co:
T. Alk.:	220	Al:		F:	0.261	CaCO3:	194.31	SPC:
Ca:	33.7	Fe:	0.13 †	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit ‡ Value exceeds minimum allowable limit				
Mg:	26.8	Mn:						

AQUIFER INFORMATION:

Depth to Top [m]	Depth to Bot. [m]	Yield[l/s]	Method meas.	Aquifer type	Comment
84.00	84.50	1.00	Notch (V- or U-notch)		
90.00	90.50	4.00	Notch (V- or U-notch)		

CASING DETAILS:

Depth to Top [m]	to Bot. [m]	Diam. [mm]	Material	Thickn. [mm]	Type of openings	Openings [mm]: Length Width	Hor. Dist.	Vert. Dist.
0.00	22.00	305	Steel		Plain casing			
22.00	36.00	254	Steel		Plain casing			
0.00	42.00	216	Steel		Plain casing			
42.00	90.00	216	Steel		Perforated or slotted			
0.00	44.00	165	Steel		Plain casing			
44.00	102.00	165	Steel		Perforated or slotted			

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery [m] %	[min]	T [m²/d]	Storage	Comment
STEP TEST STEP 1	20140114	60	94.50	5.06	3.51					
STEP TEST STEP 2	20140114	60	94.50	10.06	11.00					
STEP TEST STEP 3	20140114	60	94.50	15.06	19.24					
STEP TEST STEP 4	20140114	50	94.50	19.01	34.31	0.15	100	240		
PUMP INLET	20140114	5	94.50	13.12	35.04					
CONSTANT	20140114	2880	94.50	9.00	12.89	100	840	119	0.05	

RECOMMENDATIONS:

Prior.	Rec. equipm.	Depth to intk. [m]	Type of power	Duty cyc. [hrs]	Disch. rate [l/s]	Water quality	Dyn. water level [m]	Crit. water level [m]
1	Mono-type pump	80.00	Electric motor	24	5.00	CLASS 1	66.60	72.00

Note: 1. Production borehole
2. Install water level monitoring facility in borehole.



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Project No.: 11613568

PUMPING TEST REPORT

Date compiled: 31/03/2014

BASIC SITE INFORMATION:

Site Identifier: 2823ABX0002 Number: SD2-33

Site type: Borehole

Distr./Farm No.: 452

Site Name/Des.: GOEDVERDACHT

Latitude [°] 28.235060
Longitude [°] 23.257560
Altitude [m]: 1402.96

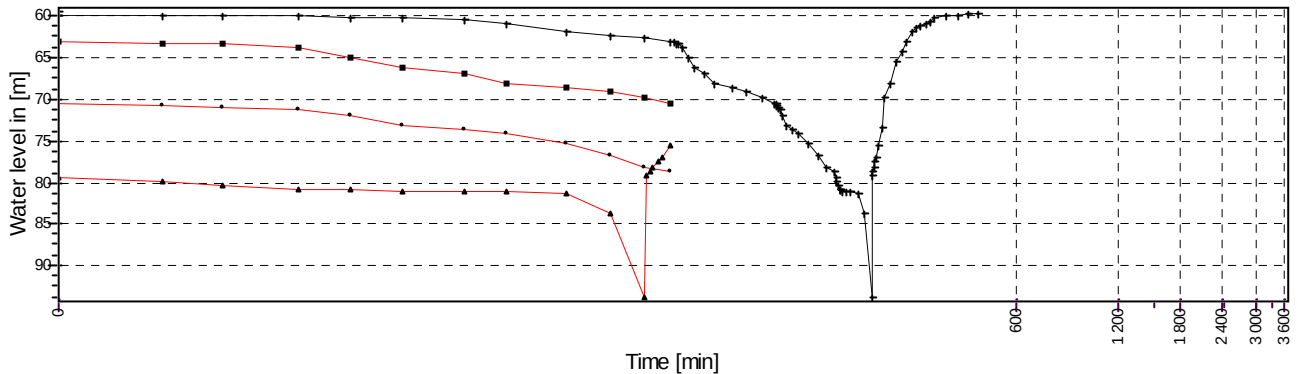
Alt. No. 1:
Alt. No. 2:
Rep. inst.: GOLD

Diam. [mm]: 165
Depth [m]: 101.96
Col. ht. [mm]: 0.43

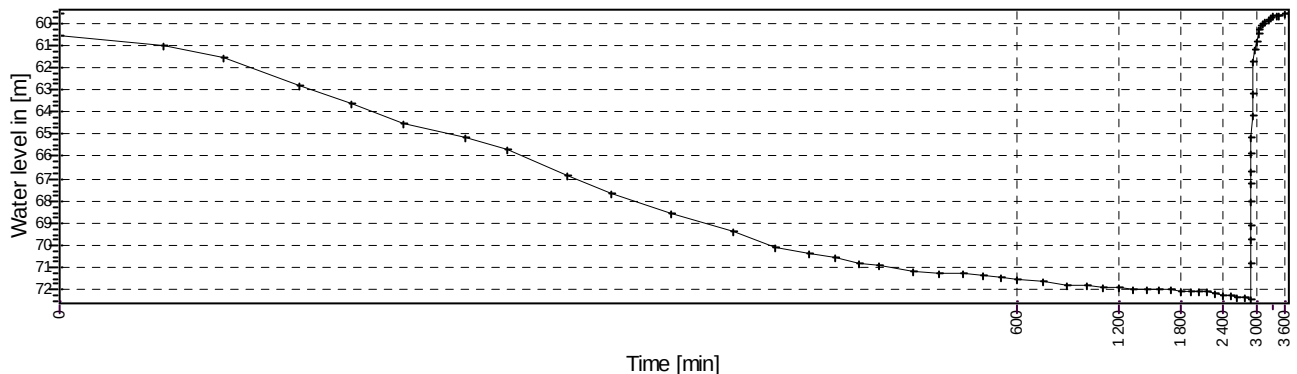
Water lev. [m]: 59.43
Piezometer: 0
Date WL meas.: 20140119

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



Constant Rate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	94.50	20140114	0800	20140114	1550			
GOLD	Constant rate test	94.50	20140114	1630	20140117	0630			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	0800	60	94.50	5.06	3.51							1.44
STEP TEST STEP 2	0900	60	94.50	10.06	11.00							0.91
STEP TEST STEP 3	1000	60	94.50	15.06	19.24							0.78
STEP TEST STEP 4	1100	50	94.50	19.01	34.31	0.15	100	240				0.55
PUMP INLET	1443	5	94.50	13.12	35.04							0.37
CONSTANT	1630	2880	94.50	9.00	12.89		100	840				0.70



Golder Associates Africa, Pretoria
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Fax: 012 - 364 4001
Project No.: 11613568

BASIC SITE INFORMATION: Site Identifier: 2823AAX0009 Number: SD2-35 Site type: Borehole

Distr./Farm No.: 452

Site Name/Des.: GOEDVERDACHT

Region Type: Water supply authority

Region Descr.: TSANTSABANE LM

Latitude [°]: 28.236380

Reg./BB.:

Topo-set.:

Depth [m]: 100.00

Longitude [°]: 23.225530

G-Nr.:

Site status: Unused

Col. ht. [m]: 0.43

Altitude [m]: 1384.40

Site purp.: Observation

Diam. [mm]: 216

Coord. acc.: Accurate to within 1 units

Use applic.:

Drain. reg.: D73A

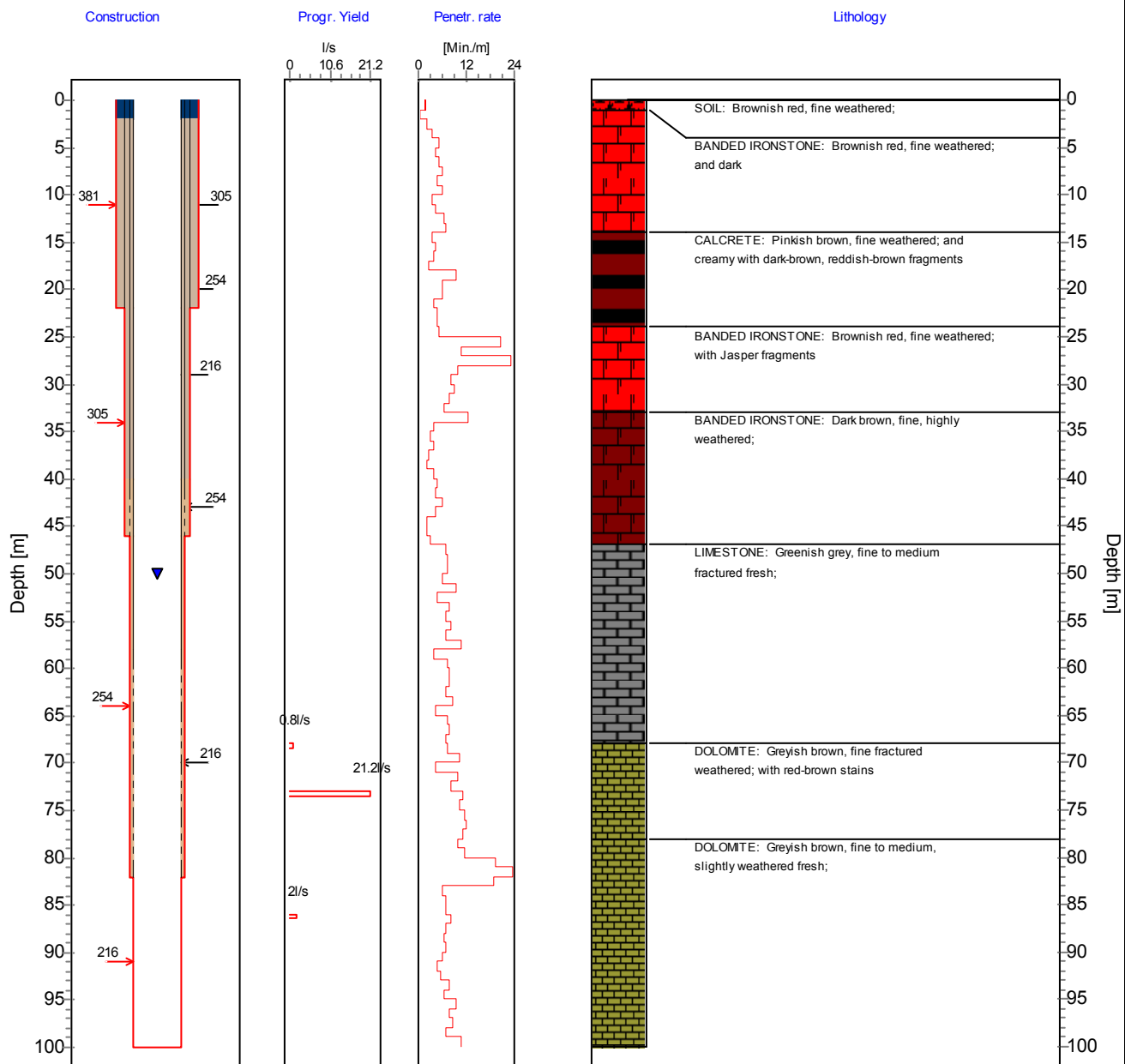
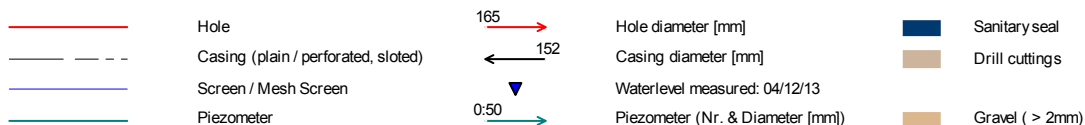
Coord. meth.: Altimeter

Equipment: No equipment

Rep. inst.: GOLD

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Construction and Geohydrological Legend



COMMENT:



Golder Associates Africa, Pretoria
P O Box 13776, Hatfield, 00285
Tel: 012 - 364 4000
Fax: 012 - 364 4001
Project No.: 11613568

MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823AAX0009 Number: SD2-35 Site type: Borehole

Distr./Farm No.: 452 Site Name/Descr.: GOEDVERDACHT WELLFIELD

Latitude [°]:	28.236380	Alt. No. 1:		Diam. [mm]:	216	Water lev. [m]:	50.12
Longitude [°]:	23.225530	Alt. No. 2:		Depth [m]:	98.85	WL status:	Static
Altitude [m]:	1384.40	Rep. inst.:	GOLD	Col. ht. [m]:	0.45	Date WL meas.:	20140223

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:

Type of Inst.: Pulley Diam. [mm]:
Manufacturer: Depth to Intk. [m]:

Engine:

Manufacturer: Power Rating [kW]
Type of Power: Pulley Diam. [mm]:

USE APPLICATION:

Site Status: Unused
Purpose: Observation
Consumer: Non-urban
Application:

WATER CHEMISTRY:

Sample No.:	SD2-35	Date sampled:	20131204	Depth sampl. [m]:	82.50	Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters:		
pH:	8.23	Na:	14.1	Cl:	22.9	Langel.:	0.75	E.Coli:
EC: [mS/m]	41	K:	2.94	NO3 as N:	4.33	Aggr-Ind:	12.79	Faec. co:
TDS:	324	Si:	14.8	SO4:	14.5	Ion-bal:	1.99	Total Co:
T. Alk.:	246	Al:		F:	0.125	CaCO3:	287.28	SPC:
Ca:	58.6	Fe:	< 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit § Value exceeds minimum allowable limit				
Mg:	34.3	Mn:						

AQUIFER INFORMATION:

Depth to Top [m]	Depth to Bot. [m]	Yield[l/s]	Method meas.	Aquifer type	Comment
68.00	68.50	0.80	Notch (V- or U-notch)		
73.00	73.50	21.20	Notch (V- or U-notch)		
86.00	86.50	2.00	Notch (V- or U-notch)		

CASING DETAILS:

Depth to Top [m]	to Bot. [m]	Diam. [mm]	Material	Thickn. [mm]	Type of openings	Openings [mm]: Length Width	Hor. Dist.	Vert. Dist.
0.00	22.00	305	Steel		Plain casing			
0.00	40.00	254	Steel		Plain casing			
40.00	46.00	254	Steel		Perforated or slotted			
0.00	58.00	216	Steel		Plain casing			
58.00	82.00	216	Steel		Perforated or slotted			

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery [m] %	[min]	T [m²/d]	Storage	Comment
STEP TEST STEP 1	20131209	60	82.50	6.02	0.07					
STEP TEST STEP 2	20131209	60	82.50	10.06	0.12					
STEP TEST STEP 3	20131209	30	82.50	15.00	0.16	100	2			
STEP TEST STEP 1	20131209	60	82.50	15.06	0.21					
STEP TEST STEP 2	20131209	60	82.50	20.06	0.26					
STEP TEST STEP 3	20131209	60	82.50	30.05	0.30	100	2			
CONSTANT (1)	20131210	1440	82.50	25.03	0.28	100	15			
CONSTANT (2)	20140223	4320	70.84	30.05	0.43	100	1200	1342	0.05	

RECOMMENDATIONS:

Prior.	Rec. equipm.	Depth to intk. [m]	Type of power	Duty cyc. [hrs]	Disch. rate [l/s]	Water quality	Dyn. water level [m]	Crit. water level [m]
1	Mono-type pump	72.00	Electric motor	24	10.00	CLASS 0	50.50	60.00

Note: 1. Production borehole
2. Install water level monitoring facility in borehole



Golder Associates Africa, Pretoria
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Tel: 012 - 364 4000
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Project No.: 11613568

PUMPING TEST REPORT

Date compiled: 04/06/2014

BASIC SITE INFORMATION:

Site Identifier: 2823AAX0009 Number: SD2-35

Site type: Borehole

Distr./Farm No.: 452

Site Name/Des.: GOEDVERDACHT

Latitude [°] 28.236380
Longitude [°] 23.225530
Altitude [m]: 1384.40

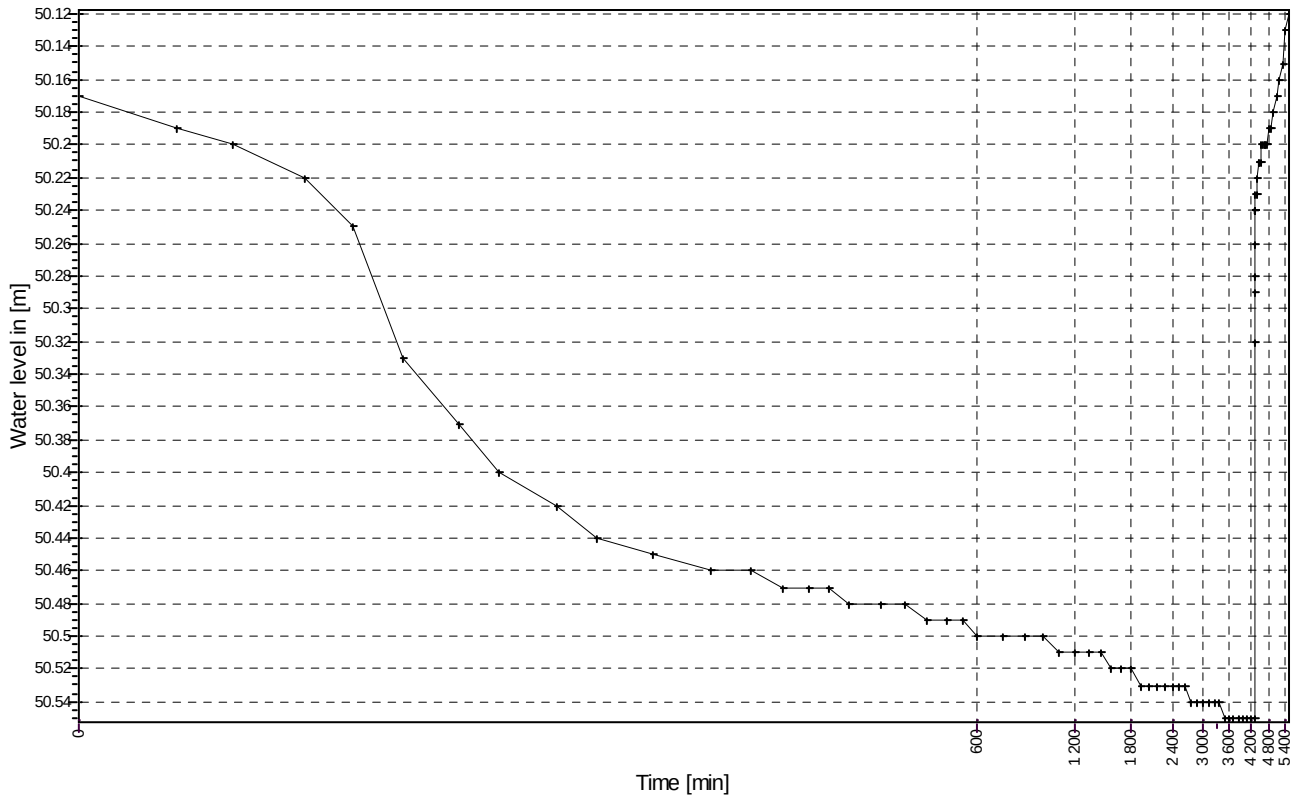
Alt. No. 1:
Alt. No. 2:
Rep. inst.: GOLD

Diam. [mm]: 216
Depth [m]: 98.85
Col. ht. [mm]: 0.45

Water lev. [m]: 50.12
Piezometer: 0
Date WL meas.: 20140223

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Constant Rate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	82.50	20131209	1130	20131209	1402			
GOLD	Step test	82.50	20131209	1800	20131209	2102			
GOLD	Constant rate test	73.50	20131210	0730	20131211	0745			
GOLD	Constant rate test	70.84	20140223	1830	20140227	1430			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m] %	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	1130	60	82.50	6.02	0.07						86.00
STEP TEST STEP 2	1230	60	82.50	10.06	0.12						83.83
STEP TEST STEP 3	1330	30	82.50	15.00	0.16	100	2				93.75
STEP TEST STEP 1	1800	60	82.50	15.06	0.21						71.71
STEP TEST STEP 2	1900	60	82.50	20.06	0.26						77.15
STEP TEST STEP 3	2000	60	82.50	30.05	0.30	100	2				100.1
CONSTANT (1)	0730	1440	82.50	25.03	0.28	100	15				89.39
CONSTANT (2)	1830	4320	70.84	30.05	0.43	100	1200				69.88



Golder Associates Africa, Pretoria
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Project No.: 11613568

PUMPING TEST REPORT

Date compiled: 31/03/2014

BASIC SITE INFORMATION:

Site Identifier: 2823AAX0009 Number: SD2-35

Site type: Borehole

Distr./Farm No.: 452

Site Name/Des.: GOEDVERDACHT

Latitude [°] 28.236380
Longitude [°] 23.225530
Altitude [m]: 1384.40

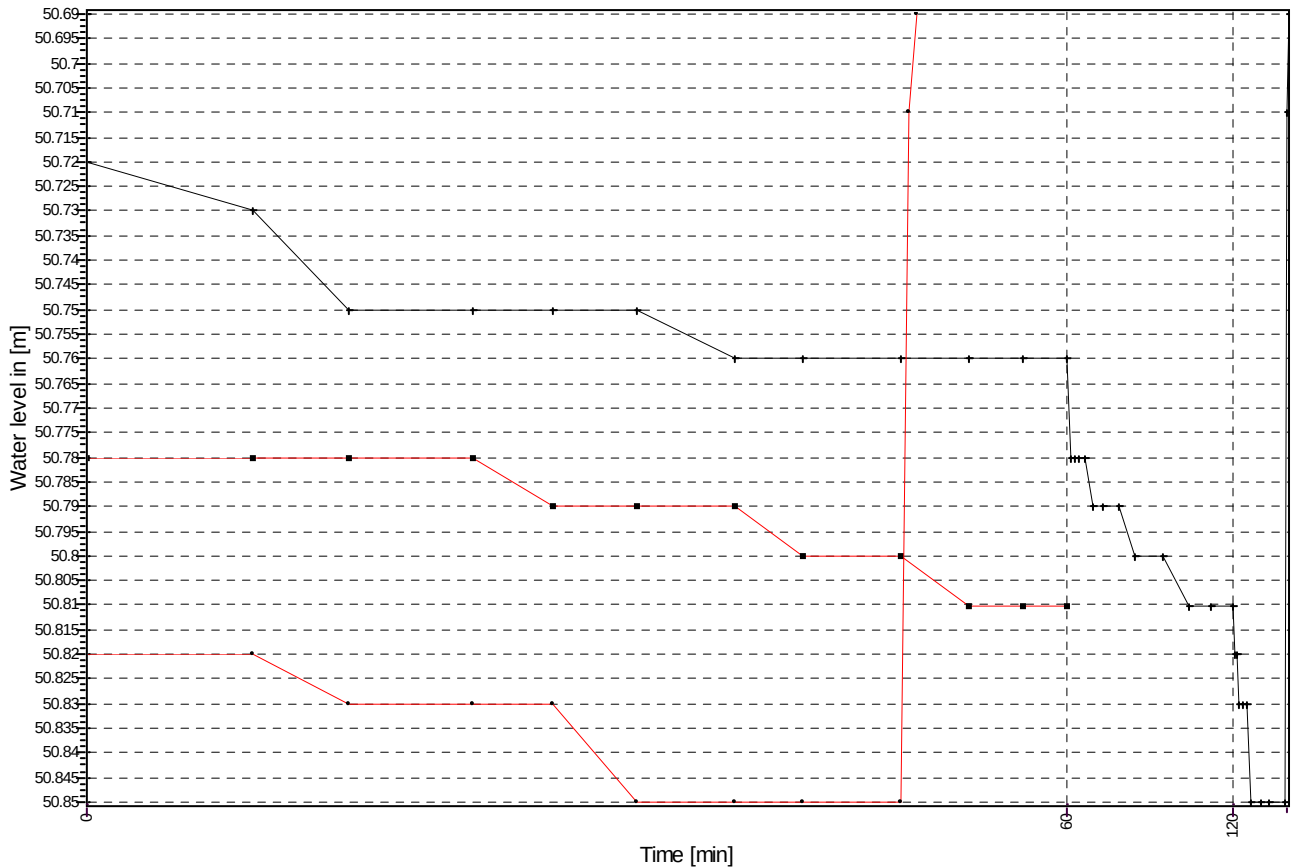
Alt. No. 1:
Alt. No. 2:
Rep. inst.: GOLD

Diam. [mm]: 216
Depth [m]: 100.00
Col. ht. [mm]: 0.43

Water lev. [m]: 50.07
Piezometer: 0
Date WL meas.: 20140119

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	82.50	20131209	1130	20131209	1402			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	1130	60	82.50	6.02	0.07							86.00
STEP TEST STEP 2	1230	60	82.50	10.06	0.12							83.83
STEP TEST STEP 3	1330	30	82.50	15.00	0.16		100	2				93.75



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Project No.: 11613568

PUMPING TEST REPORT

Date compiled: 31/03/2014

BASIC SITE INFORMATION:

Site Identifier: 2823AAX0009 Number: SD2-35

Site type: Borehole

Distr./Farm No.: 452

Site Name/Des.: GOEDVERDACHT

Latitude [°] 28.236380
Longitude [°] 23.225530
Altitude [m]: 1384.40

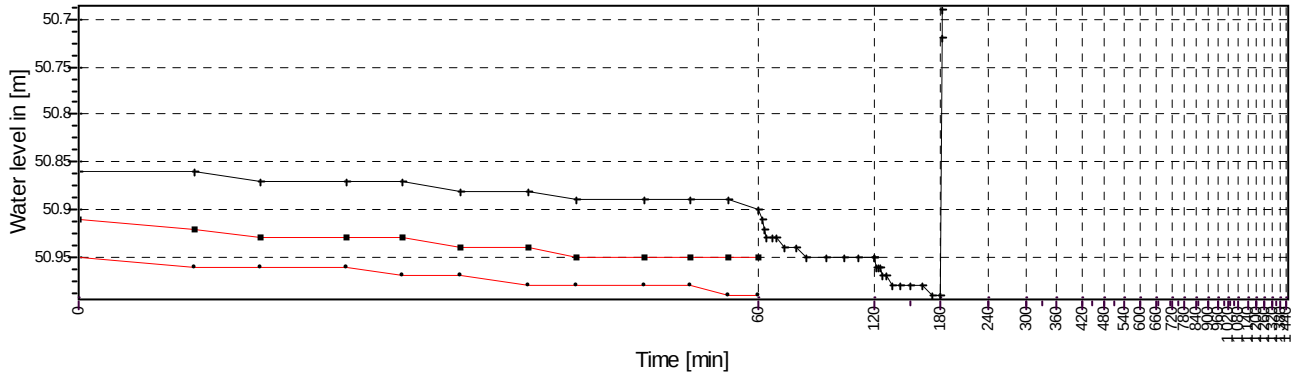
Alt. No. 1:
Alt. No. 2:
Rep. inst.: GOLD

Diam. [mm]: 216
Depth [m]: 100.00
Col. ht. [mm]: 0.43

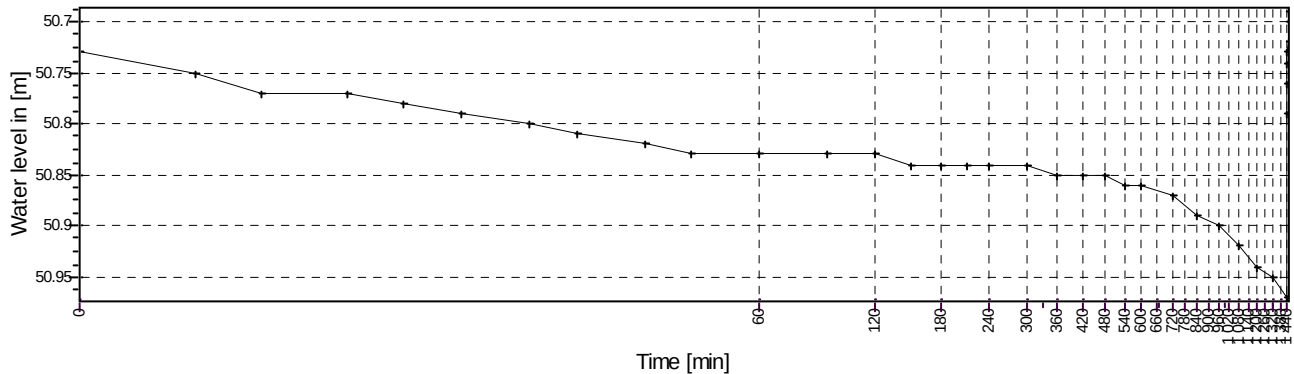
Water lev. [m]: 50.07
Piezometer: 0
Date WL meas.: 20140119

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



Constant Rate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	82.50	20131209	1800	20131209	2102			
GOLD	Constant rate test	73.50	20131210	0730	20131211	0745			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	1800	60	82.50	15.06	0.21							71.71
STEP TEST STEP 2	1900	60	82.50	20.06	0.26							77.15
STEP TEST STEP 3	2000	60	82.50	30.05	0.30		100	2				100.1
CONSTANT	0730	1440	82.50	25.03	0.28		100	15				89.39



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Project No.: 11613568

Borehole Construction and Geological Log

Date compiled: 27/03/2014

BASIC SITE INFORMATION: Site Identifier: 2823AAX0032 Number: SD2-37 Site type: Borehole

Distr./Farm No.: 452

Site Name/Des.: GOEDGEDACHT

Region Type: Water supply authority

Region Descr.: TSANTSABANE LM

Latitude [°]: 28.238330

Reg./BB.:

Topo-set.:

Depth [m]: 83.86

Longitude [°]: 23.241140

G-Nr.:

Site status: Unused

Col. ht. [m]: 0.50

Altitude [m]: 1394.02

Site purp.: Production (water supply)

Diam. [mm]: 165

Coord. acc.: Accurate to within 1 unit

Use applic.: Domestic - all purposes

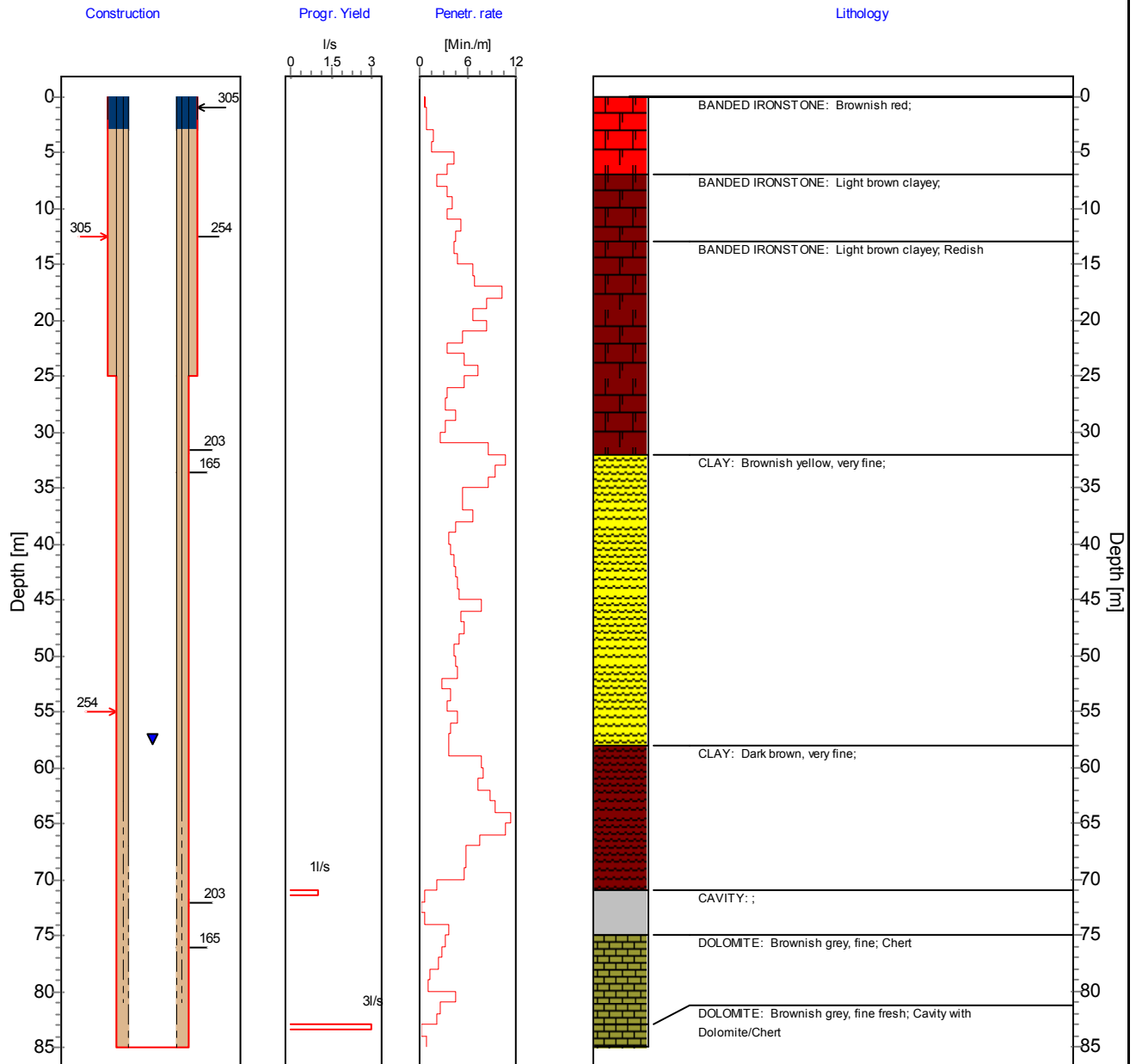
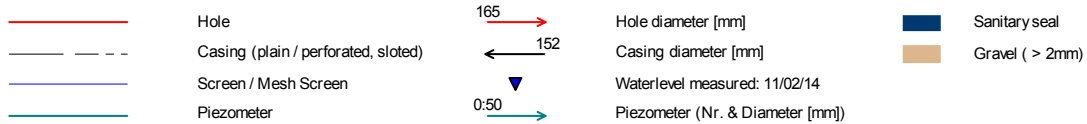
Drain. reg.: D73A

Coord. meth.: Altimeter

Equipment: No equipment

Rep. inst.: GOLD

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Construction and Geohydrological Legend

COMMENT:



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Project No.: 13615706

MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823AAX0032 Number: SD2-37 Site type: Borehole

Distr./Farm No.: 452 Site Name/Descr.: GOEDGEDACHT WELLFIELD

Latitude [°]:	28.238330	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	59.90
Longitude [°]:	23.241140	Alt. No. 2:		Depth [m]:	83.86	WL status:	Static
Altitude [m]:	1394.02	Rep. inst.: GOLD		Col. ht. [m]:	0.50	Date WL meas.:	20140220

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:
Type of Inst.: Pulley Diam. [mm]:
Manufacturer: Depth to Intk. [m]:

Engine:
Manufacturer: Power Rating [kW]
Type of Power: Pulley Diam. [mm]:

USE APPLICATION:

Site Status: Unused
Purpose: Production (water supply)
Consumer: Non-urban
Application: Domestic - all purposes

WATER CHEMISTRY:

Sample No.:	SD2-37	Date sampled:	20140223	Depth sampl. [m]:	76.50	Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters:		
pH:	7.64	Na:	28.3	Cl:	37.8	Langel.:	0.12	E.Coli:
EC: [mS/m]	52.7	K:	3.25	NO3 as N:	2.86	Aggr-Ind:	12.15	Faec. co:
TDS:	364	Si:		SO4:	25.6	Ion-bal:	2.14	Total Co:
T. Alk.:	219	Al:	< 0.05	F:	< 0.1	CaCO3:	257.27	SPC:
Ca:	59.1	Fe:	< 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit § Value exceeds minimum allowable limit				
Mg:	26.7	Mn:	< 0.05					

AQUIFER INFORMATION:

Depth to Top [m]	Depth to Bot. [m]	Yield[l/s]	Method meas.	Aquifer type	Comment
71.00	71.50	1.00	Notch (V- or U-notch)		
83.00	83.50	3.00	Notch (V- or U-notch)		

CASING DETAILS:

Depth to Top [m]	to Bot. [m]	Diam. [mm]	Material	Thickn. [mm]	Type of openings	Openings [mm]: Length Width	Hor. Dist.	Vert. Dist.
0.00	2.00	305	Steel		Plain casing			
0.00	25.00	254	Steel		Plain casing			
0.00	63.00	203	Steel		Plain casing			
63.00	81.00	203	Steel		Perforated or slotted			
0.00	67.00	165	Steel		Plain casing			
67.00	85.00	165	Steel		Perforated or slotted			

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery [m] %	T [m²/d]	Storage	Comment
STEP TEST STEP 1	20140220	60	76.50	5.03	0.12				
STEP TEST STEP 2	20140220	60	76.50	10.04	0.29				
STEP TEST STEP 3	20140220	60	76.50	15.10	0.51				
STEP TEST STEP 4	20140220	60	76.50	20.46	0.76	100	10		
CONSTANT	20140221	2880	76.50	20.17	0.77	100	10	2528	0.05

RECOMMENDATIONS:

Prior.	Rec. equipm.	Depth to intk. [m]	Type of power	Duty cyc. [hrs]	Disch. rate [l/s]	Water quality	Dyn. water level [m]	Crit. water level [m]
1	Mono-type pump	80.00	Electric motor	24	10.00	CLASS 0	60.00	70.00

Note: 1. Production borehole
2. Install water level monitoring facility in borehole



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Project No.: 11613568

PUMPING TEST REPORT

Date compiled: 28/03/2014

BASIC SITE INFORMATION:

Site Identifier: 2823AAX0032 Number: SD2-37

Site type: Borehole

Distr./Farm No.: 452

Site Name/Des.: GOEDGEDACHT

Latitude [°] 28.238330
Longitude [°] 23.241140
Altitude [m]: 1394.02

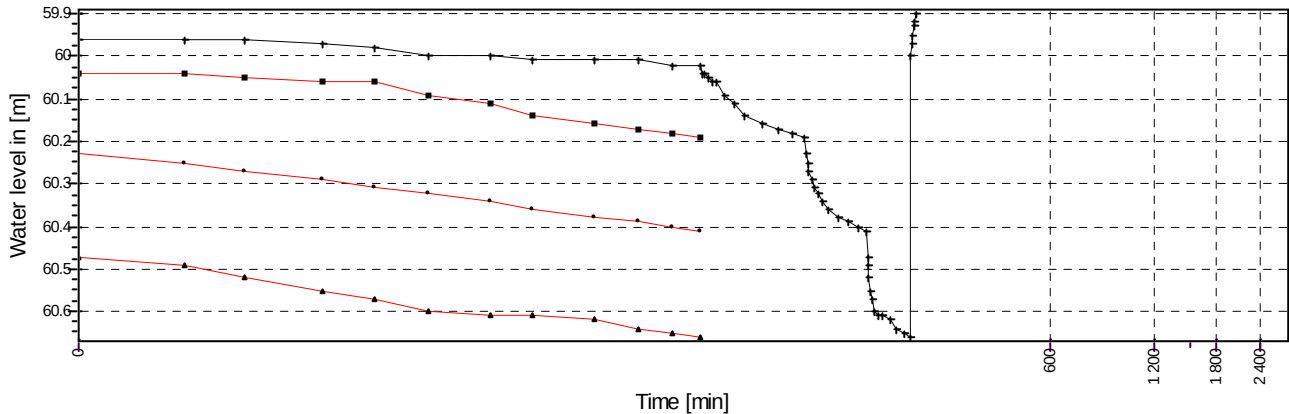
Alt. No. 1:
Alt. No. 2:
Rep. inst.: GOLD

Diam. [mm]: 165
Depth [m]: 83.86
Col. ht. [mm]: 0.50

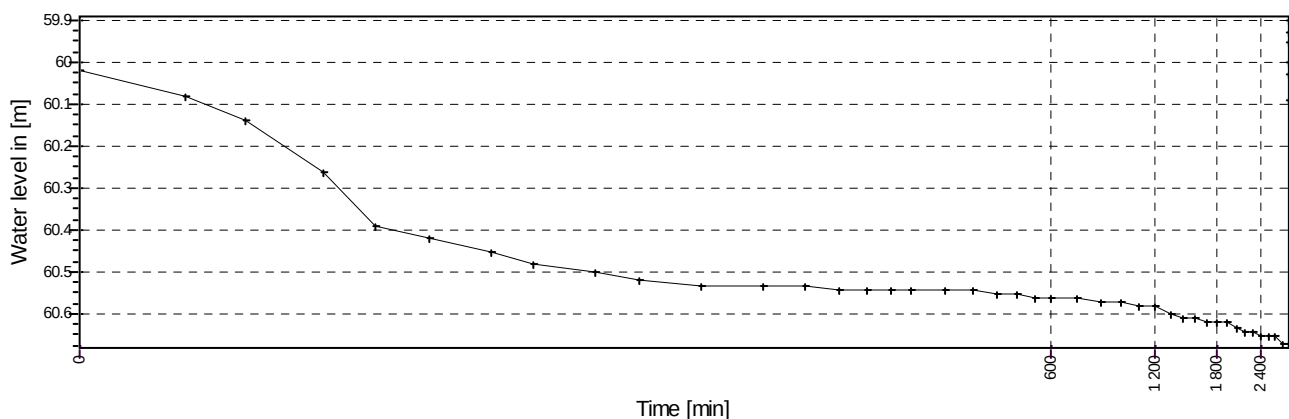
Water lev. [m]: 59.90
Piezometer: 0
Date WL meas.: 20140220

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



Constant Rate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	76.50	20140220	1230	20140220	1640			
GOLD	Constant rate test	76.50	20140221	0830	20140223	0840			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate [l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	1230	60	76.50	5.03	0.12							41.92
STEP TEST STEP 2	1330	60	76.50	10.04	0.29							34.62
STEP TEST STEP 3	1430	60	76.50	15.10	0.51							29.61
STEP TEST STEP 4	1530	60	76.50	20.46	0.76	100	10					26.92
CONSTANT	0830	2880	76.50	20.17	0.77	100	10					26.19



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Borehole Construction and Geological Log

Date compiled: 28/03/2014

BASIC SITE INFORMATION: Site Identifier: 2823AAX0034 Number: SD2-38 Site type: Borehole

Distr./Farm No.: 452 Site Name/Des.: GOEDGEDACHT

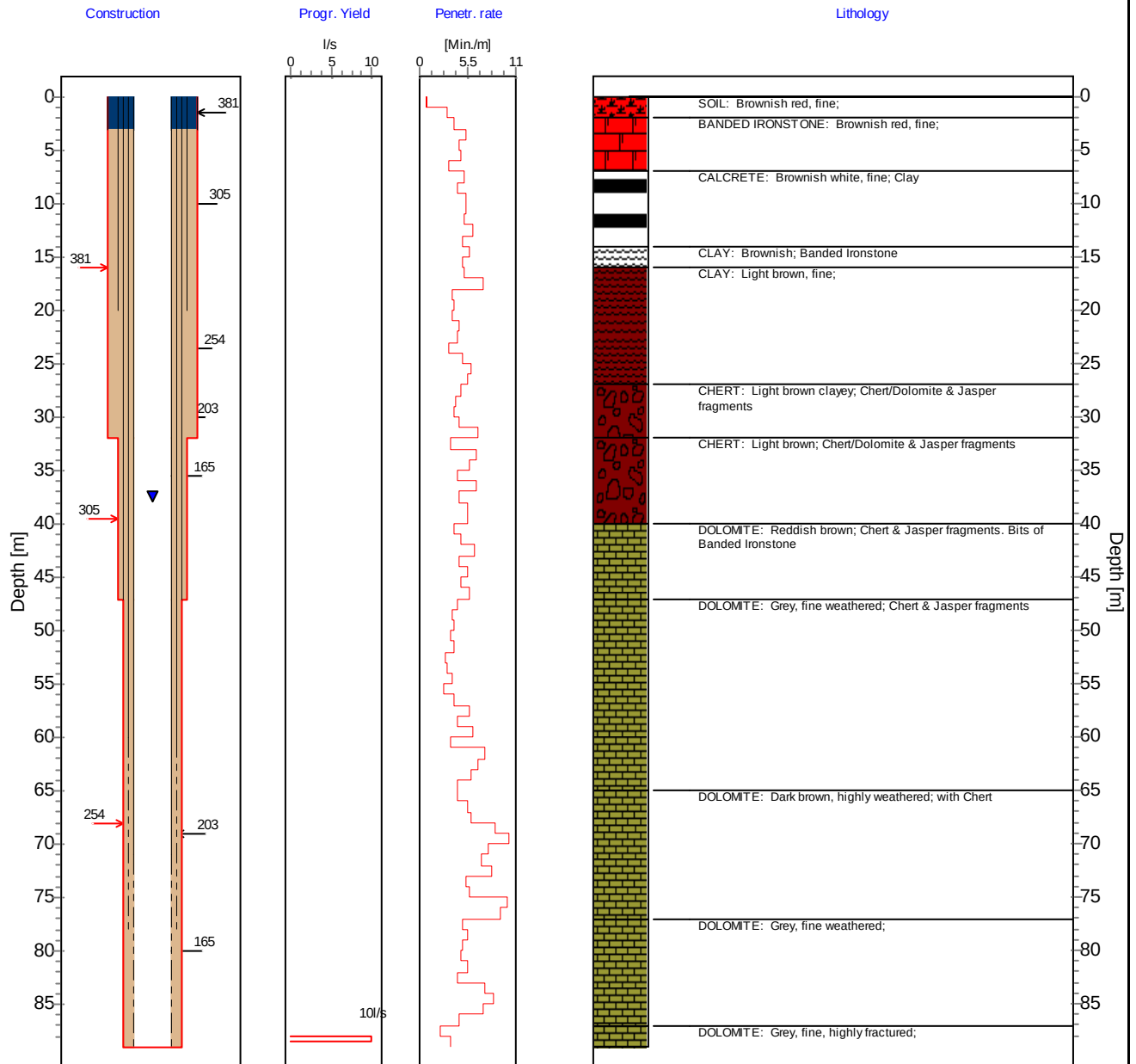
Region Type: Water supply authority Region Descr.: TSANTSABANE LM

Latitude [°]: 28.221980	Reg./BB.:	Topo-set.:	Depth [m]: 88.75
Longitude [°]: 23.218280	G-Nr.:	Site status: Unused	Col. ht. [m]: 0.42
Altitude [m]: 1381.44		Site purp.: Production (water supply)	Diam. [mm]: 165
Coord. acc.: Accurate to within 1 unit		Use applic.:	Drain. reg.: D73A
Coord. meth.: Altimeter		Equipment: No equipment	Rep. inst.: GOLD

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Construction and Geohydrological Legend

	Hole	165 →	Hole diameter [mm]		Sanitary seal
	Casing (plain / perforated, slotted)	← 152	Casing diameter [mm]		Gravel (> 2mm)
	Screen / Mesh Screen	▼	Waterlevel measured: 11/02/14		
	Piezometer	0:50 →	Piezometer (Nr. & Diameter [mm])		



COMMENT:



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Project No.: 11613568

MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823AAX0034 Number: SD2-38 Site type: Borehole

Distr./Farm No.: 452 Site Name/Descr.: GOEDGEDACHT WELLFIELD

Latitude [°]:	28.221980	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	38.08
Longitude [°]:	23.218280	Alt. No. 2:		Depth [m]:	88.75	WL status:	Static
Altitude [m]:	1381.44	Rep. inst.:	GOLD	Col. ht. [m]:	0.42	Date WL meas.:	20140305

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:	
Type of Inst.:	Pulley Diam. [mm]:
Manufacturer:	Depth to Intk. [m]:
Engine:	
Manufacturer:	Power Rating [kW]
Type of Power:	Pulley Diam. [mm]:

USE APPLICATION:

Site Status: Unused
Purpose: Production (water supply)
Consumer: Non-urban
Application:

WATER CHEMISTRY:

Sample No.: SD2-38		Date sampled: 20140308		Depth sampl. [m]: 81.04		Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters:		
pH:	7.9	Na:	12.6	Cl:	22.3	Langel.:	0.53	E.Coli:
EC: [mS/m]	79 †	K:	3.12	NO3 as N:	3.75	Aggr-Ind:	12.57	Faec. co:
TDS:	400	Si:		SO4:	13.4	Ion-bal:	-0.60	Total Co:
T. Alk.:	289	Al:	< 0.05	F:	< 0.1	CaCO3:	312.54	SPC:
Ca:	64.6	Fe:	< 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit § Value exceeds minimum allowable limit				
Mg:	36.8	Mn:	< 0.05					

AQUIFER INFORMATION:

Depth to Top [m]	Depth to Bot. [m]	Yield[l/s]	Method meas.	Aquifer type	Comment
88.00	88.50	10.00	Notch (V- or U-notch)		

CASING DETAILS:

Depth to Top [m]	to Bot. [m]	Diam. [mm]	Material	Thickn. [mm]	Type of openings	Openings [mm]: Length Width	Hor. Dist.	Vert. Dist.
0.00	3.00	381	Steel		Plain casing			
0.00	20.00	305	Steel		Plain casing			
0.00	47.00	254	Steel		Plain casing			
0.00	60.00	203	Steel		Plain casing			
60.00	78.00	203	Steel		Perforated or slotted			
0.00	71.00	165	Steel		Plain casing			
71.00	89.00	165	Steel		Perforated or slotted			

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery [m] %	[min]	T [m²/d]	Storage	Comment
STEP TEST STEP 1	20140305	60	81.04	6.00	0.33					
STEP TEST STEP 2	20140305	60	81.04	10.55	3.71					
STEP TEST STEP 3	20140305	60	81.04	15.54	11.10					
STEP TEST STEP 4	20140305	50	81.04	20.33	42.54	100	10			
PUMP INLET	20140305	10	81.04	18.77	42.54					
CONSTANT	20140306	3360	81.04	15.01	27.43	100	20	33	0.05	

RECOMMENDATIONS:

Prior.	Rec. equipm.	Depth to intk. [m]	Type of power	Duty cyc. [hrs]	Disch. rate [l/s]	Water quality	Dyn. water level [m]	Crit. water level [m]
1	Mono-type pump	72.00	Electric motor	24	7.00	CLASS 0	51.00	65.00

Note: 1. Production borehole
2. Install water level monitoring facility in borehole



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Project No.: 11613568

PUMPING TEST REPORT

Date compiled: 28/03/2014

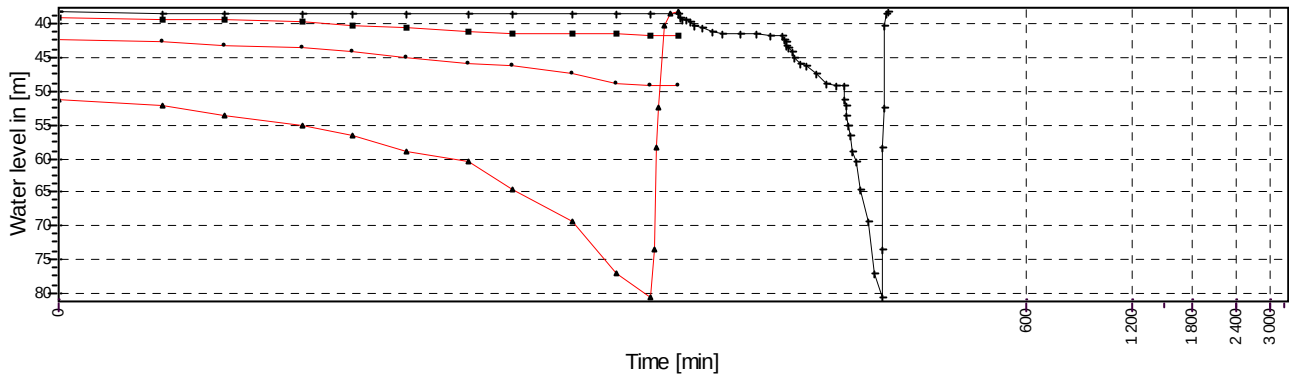
BASIC SITE INFORMATION: Site Identifier: 2823AAX0034 Number: SD2-38 Site type: Borehole

Distr./Farm No.: 452 Site Name/Des.: GOEDGEDACHT

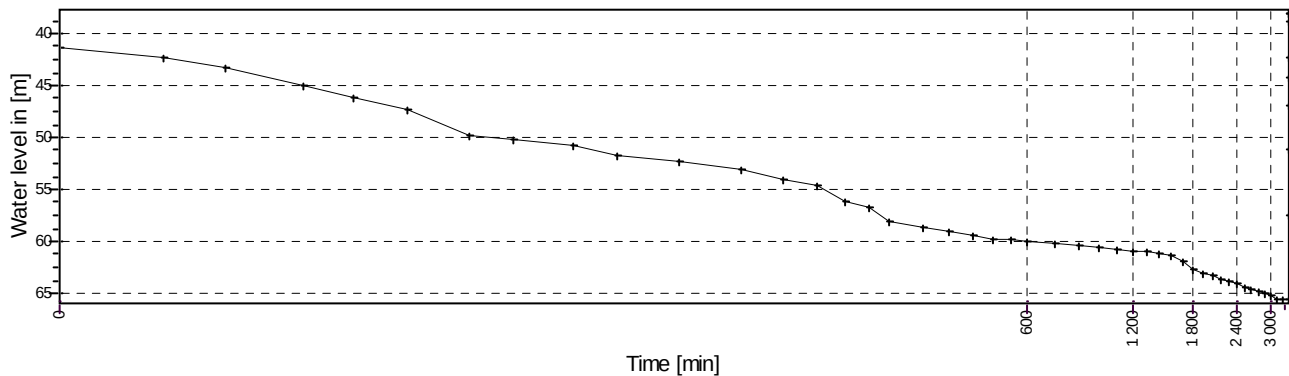
Latitude [°]	28.221980	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	38.08
Longitude [°]	23.218280	Alt. No. 2:		Depth [m]:	88.75	Piezometer:	0
Altitude [m]:	1381.44	Rep. inst.: GOLD		Col. ht. [mm]:	0.42	Date WL meas.:	20140305

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



Constant Rate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m²/d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	81.04	20140305	1250	20140305	1650			
GOLD	Constant rate test	81.04	20140306	1000	20140308	1820			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m²/d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	1250	60	81.04	6.00	0.33							18.18
STEP TEST STEP 2	1350	60	81.04	10.55	3.71							2.84
STEP TEST STEP 3	1450	60	81.04	15.54	11.10							1.40
STEP TEST STEP 4	1550	50	81.04	20.33	42.54	100		10				0.48
PUMP INLET	1650	10	81.04	18.77	42.54							0.44
CONSTANT	1000	3360	81.04	15.01	27.43	100		20				0.55



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Project No.: 11613568

BASIC SITE INFORMATION: Site Identifier: 2823AAX0037 Number: SD2-41 Site type: Borehole

Distr./Farm No.: 452

Site Name/Des.: GOEDGEDACHT

Region Type: Water supply authority

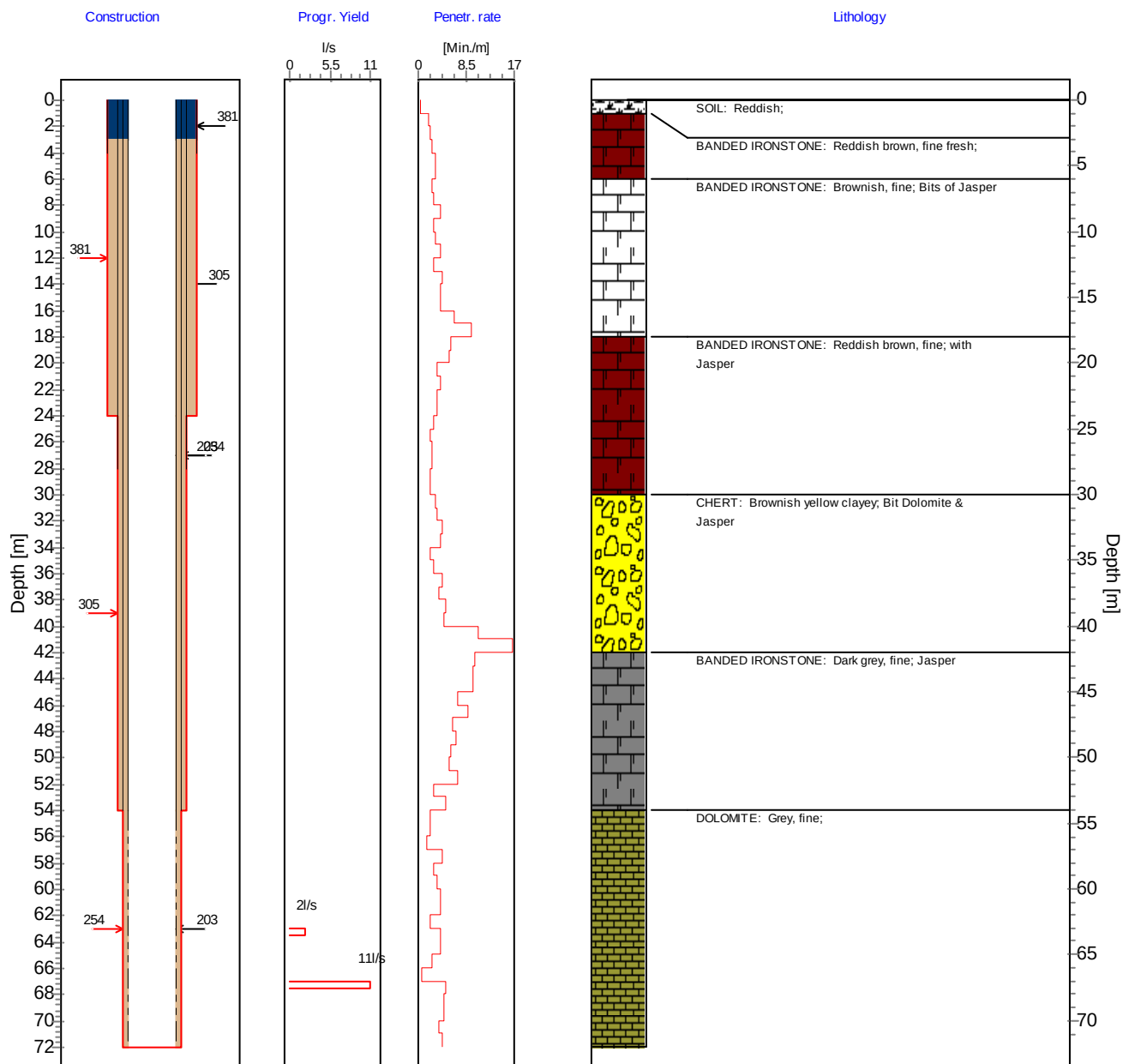
Region Descr.: TSANTSABANE LM

Latitude [°]: 28.233160	Reg./BB.:	Topo-set.:	Depth [m]: 72.00
Longitude [°]: 23.245830	G-Nr.:	Site status: Unused	Col. ht. [m]:
Altitude [m]: 1394.32		Site purp.: Production (water supply)	Diam. [mm]: 203
Coord. acc.: Accurate to within 1 unit		Use applic.: Domestic - all purposes	Drain. reg.: D73A
Coord. meth.: Altimeter		Equipment: No equipment	Rep. inst.: GOLD

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Construction and Geohydrological Legend

	Hole	165 →	Hole diameter [mm]		Sanitary seal
	Casing (plain / perforated, slotted)	← 152	Casing diameter [mm]		Gravel (> 2mm)
	Screen / Mesh Screen	▼	Waterlevel with date meas.		
	Piezometer	0:50 →	Piezometer (Nr. & Diameter [mm])		



COMMENT:



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Tel: 012 - 364 4000
Fax: 012 - 364 4001
Project No.: 13615706

MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823AAX0037 Number: SD2-41 Site type: Borehole

Distr./Farm No.: 452 Site Name/Descr.: GOEDGEDACHT WELLFIELD

Latitude [°]:	28.233160	Alt. No. 1:		Diam. [mm]:	203	Water lev. [m]:	50.54
Longitude [°]:	23.245830	Alt. No. 2:		Depth [m]:	72.00	WL status:	Static
Altitude [m]:	1394.32	Rep. inst.: GOLD		Col. ht. [m]:	0.50	Date WL meas.:	20140227

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:	
Type of Inst.:	Pulley Diam. [mm]:
Manufacturer:	Depth to Intk. [m]:
Engine:	
Manufacturer:	Power Rating [kW]
Type of Power:	Pulley Diam. [mm]:

USE APPLICATION:

Site Status: Unused
Purpose: Production (water supply)
Consumer: Non-urban
Application: Domestic - all purposes

WATER CHEMISTRY:

Sample No.:	SD2-41	Date sampled:	20140228	Depth sampl. [m]:	0	Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters:		
pH:	7.94	Na:	27.6	Cl:	32.3	Langel.:	0.31	E.Coli:
EC: [mS/m]	46.1	K:	4.42	NO3 as N:	3.86	Aggr-Ind:	12.32	Faec. co:
TDS:	330	Si:		SO4:	23.2	Ion-bal:	2.32	Total Co:
T. Alk.:	189	Al:	< 0.05	F:	0.163	CaCO3:	220.20	SPC:
Ca:	51	Fe:	< 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit ¡ Value exceeds minimum allowable limit				
Mg:	22.6	Mn:	< 0.05					

AQUIFER INFORMATION:

Depth to Top [m]	Depth to Bot. [m]	Yield[l/s]	Method meas.	Aquifer type	Comment
63.00	63.50	2.00	Notch (V- or U-notch)		
67.00	67.50	11.00	Notch (V- or U-notch)		

CASING DETAILS:

Depth to Top [m]	to Bot. [m]	Diam. [mm]	Material	Thickn. [mm]	Type of openings	Openings [mm]: Length Width	Hor. Dist.	Vert. Dist.
0.00	4.00	381	Steel		Plain casing			
0.00	28.00	305	Steel		Plain casing			
0.00	54.00	254	Steel		Plain casing			
0.00	54.00	203	Steel		Plain casing			
54.00	72.00	203	Steel		Perforated or slotted			

RECOMMENDATIONS:

Prior.	Rec. equipm.	Depth to intk. [m]	Type of power	Duty cyc. [hrs]	Disch. rate [l/s]	Water quality	Dyn. water level [m]	Crit. water level [m]
1	Mono-type pump	70.00	Electric motor	24	5.00	CLASS 0	60.00	66.00

Note: 1. Production borehole
2. Install water level monitoring facility in borehole



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Project No.: 11613568

Borehole Construction and Geological Log

Date compiled: 13/05/2014

BASIC SITE INFORMATION: Site Identifier: 2823AAX0039 Number: SD2-43 Site type: Borehole

Distr./Farm No.: 444

Site Name/Des.: METSEATEN

Region Type: Water supply authority

Region Descr.: TSANTSABANE LM

Latitude [°]: 28.220220

Reg./BB.:

Topo-set.:

Depth [m]: 121.00

Longitude [°]: 23.221363

G-Nr.:

Site status: Dry

Col. ht. [m]:

Altitude [m]: 1380.00

Site purp.:

Diam. [mm]: 203

Coord. acc.: Accurate to within 1 unit

Use applic.:

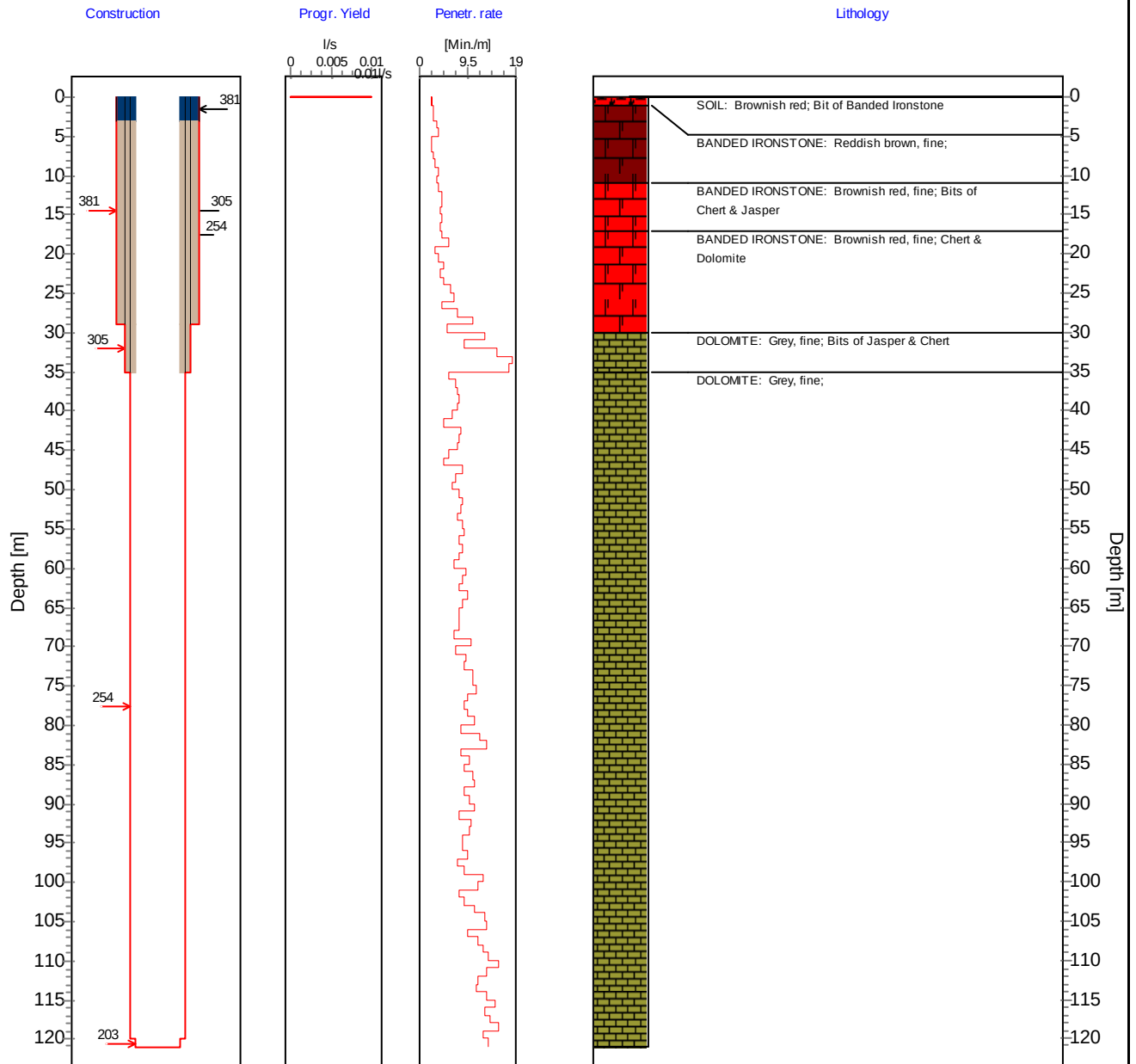
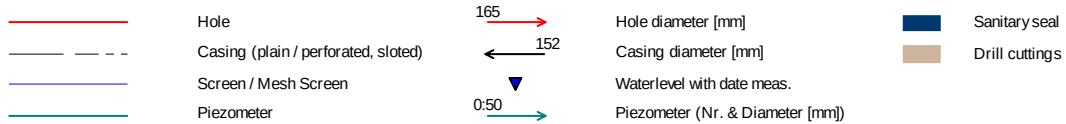
Drain. reg.: D73A

Coord. meth.: Altimeter

Equipment: No equipment

Rep. inst.: GOLD

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Construction and Geohydrological Legend

COMMENT:



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Fax: 012 - 364 4001
Project No.: 1163568

Borehole Construction and Geological Log

Date compiled: 13/05/2014

BASIC SITE INFORMATION: Site Identifier: 2823AAX0041 Number: SD2-45 Site type: Borehole

Distr./Farm No.: 452

Site Name/Des.: GOEDGEDACHT

Region Type: Water supply authority

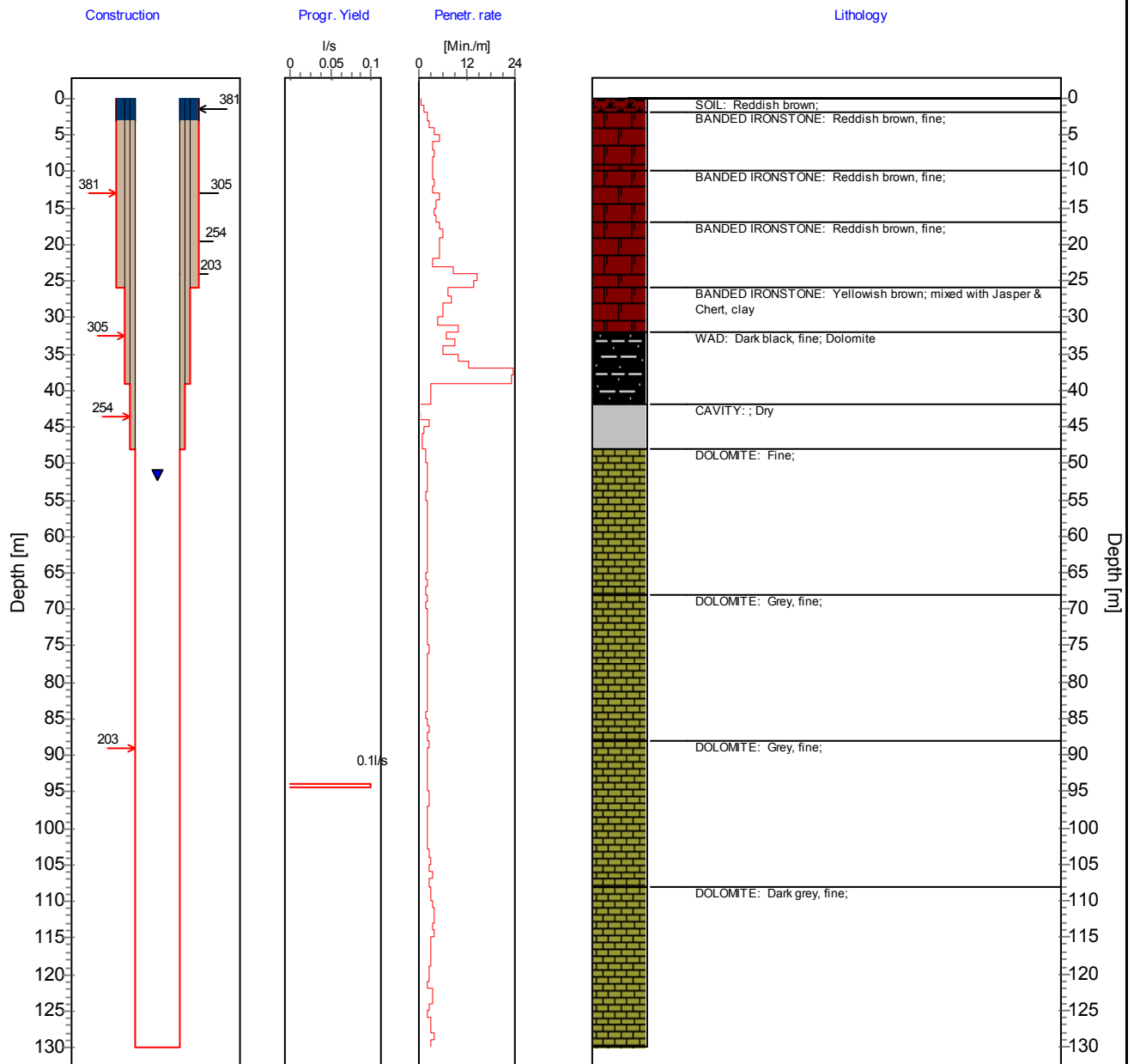
Region Descr.: TSANTSABANE LM

Latitude [°]:	28.236300	Reg./BB.:	Topo-set.:	Depth [m]:	130.00
Longitude [°]:	23.245670	G-Nr.:	Site status: Unused	Col. ht. [m]:	0.50
Altitude [m]:	1395.50		Site purp.: Production (water supply)	Diam. [mm]:	203
Coord. acc.:	Accurate to within 1 unit		Use applic.: Domestic - all purposes	Drain. reg.:	D73A
Coord. meth.:	Altimeter		Equipment: No equipment	Rep. inst.:	GOLD

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Construction and Geohydrological Legend

	Hole	165 →	Hole diameter [mm]		Sanitary seal
	Casing (plain / perforated, slotted)	← 152	Casing diameter [mm]		Drill cuttings
	Screen / Mesh Screen	▼	Waterlevel measured: 02/03/14		
	Piezometer	0:50 →	Piezometer (Nr. & Diameter [mm])		



COMMENT:



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Fax: 012 - 364 4001
Project No.: 11613568

Borehole Construction and Geological Log

Date compiled: 13/05/2014

BASIC SITE INFORMATION: Site Identifier: 2823AAX0042 Number: SD2-46 Site type: Borehole

Distr./Farm No.: 452 Site Name/Des.: GOEDGEDACHT

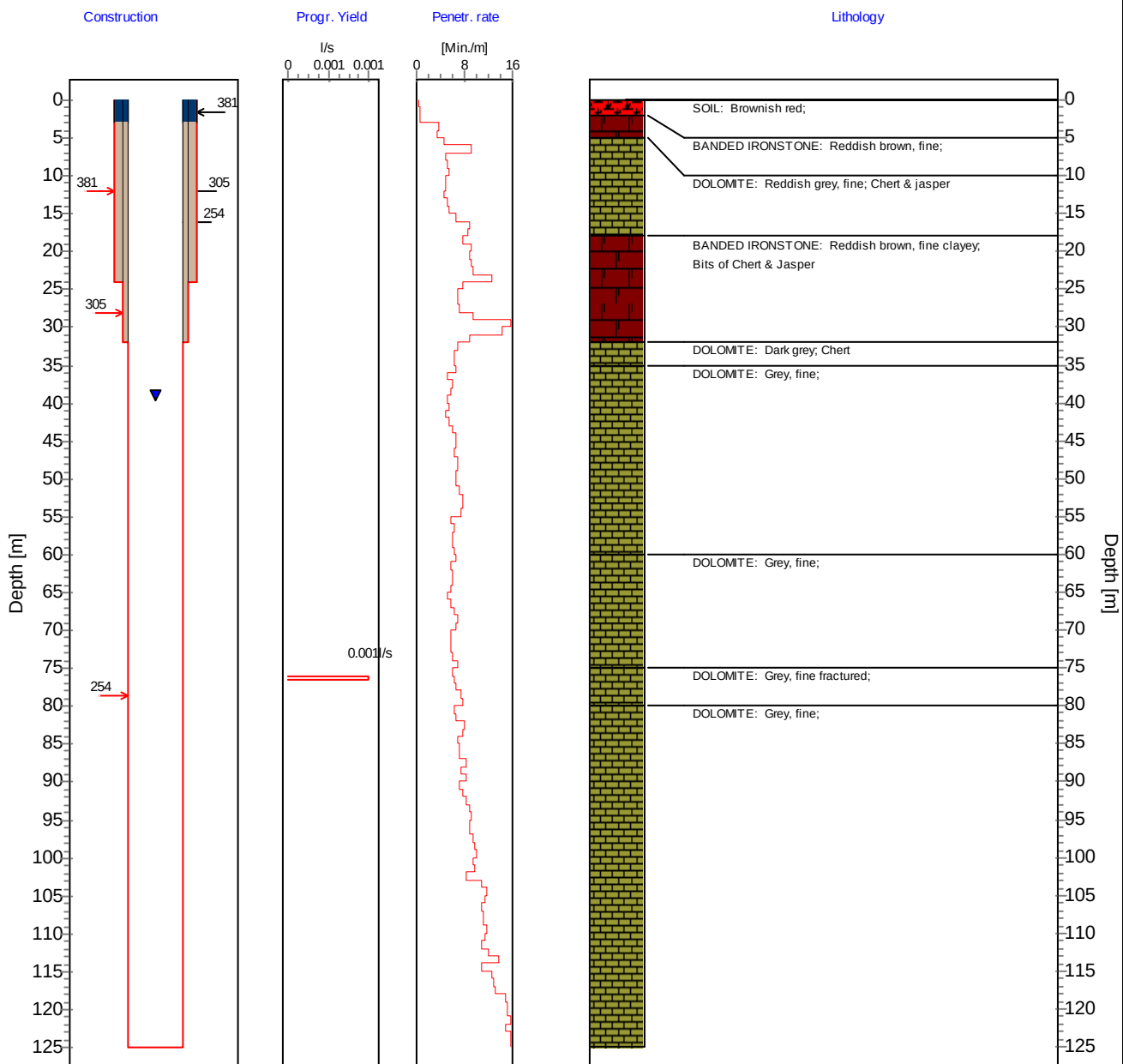
Region Type: Water supply authority Region Descr.: TSANTABANE LM

Latitude [°]: 28.204460	Reg./BB.:	Topo-set.:	Depth [m]: 125.00
Longitude [°]: 23.228780	G-Nr.:	Site status: Unused	Col. ht. [m]: 0.50
Altitude [m]: 1382.80		Site purp.: Production (water supply)	Diam. [mm]: 254
Coord. acc.: Accurate to within 1 unit		Use applic.: Domestic - all purposes	Drain. reg.: D73A
Coord. meth.: Altimeter		Equipment: No equipment	Rep. inst.: GOLD

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Construction and Geohydrological Legend

	Hole	165 →	Hole diameter [mm]		Sanitary seal
	Casing (plain / perforated, slotted)	← 152	Casing diameter [mm]		Drill cuttings
	Screen / Mesh Screen	▼	Waterlevel measured: 02/03/14		
	Piezometer	0:50 →	Piezometer (Nr. & Diameter [mm])		



COMMENT:



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Project No.: 1163568

PUMPING TEST REPORT

Date compiled: 28/01/2014

BASIC SITE INFORMATION: Site Identifier: 2823AAX0003 Number: SD2-GAA004 Site type: Borehole

Distr./Farm No.: 452

Site Name/Des.: GOEDGEDACHT PTN. JEN-HAVEN

Latitude [°] 28.216060
Longitude [°] 23.240080
Altitude [m]: 1388.17

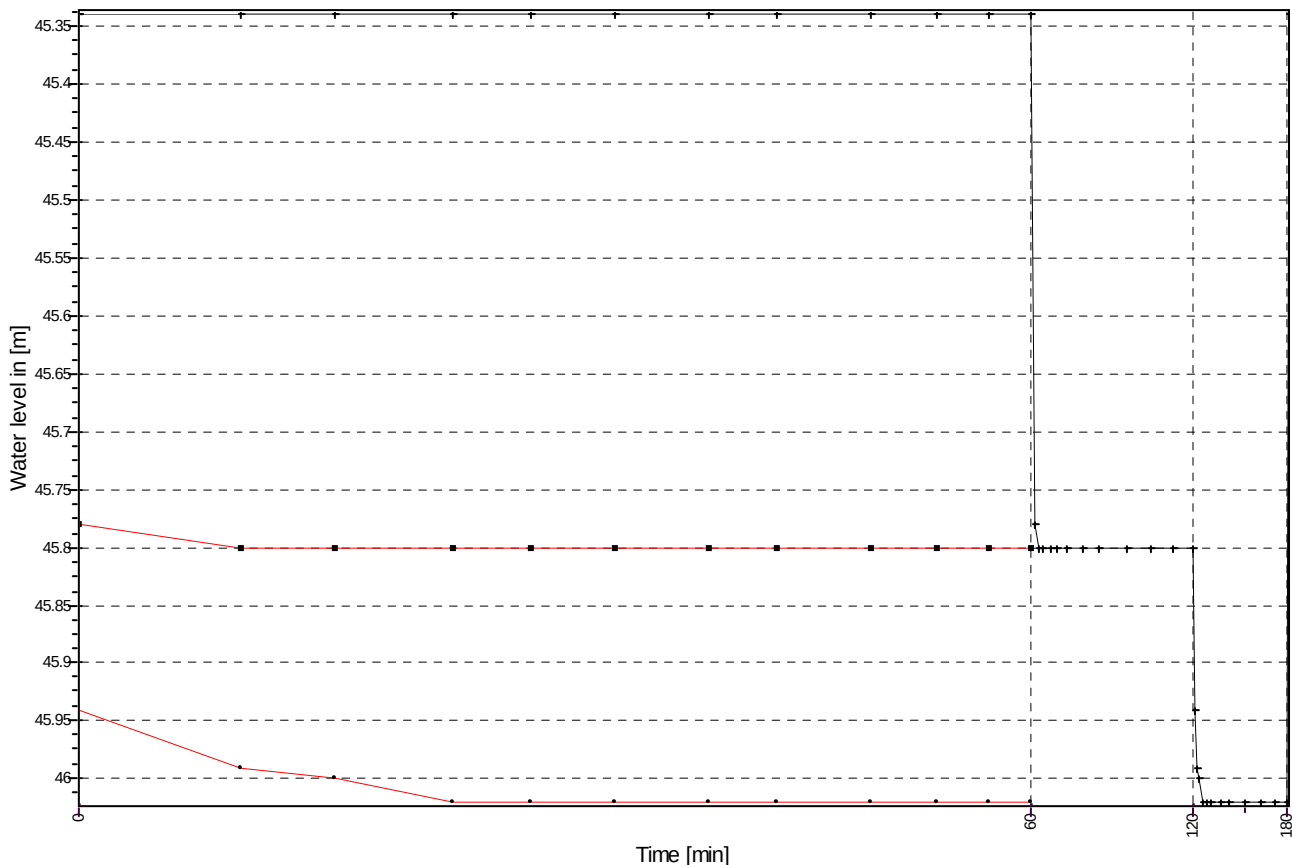
Alt. No. 1:
Alt. No. 2:
Rep. inst.: GOLD

Diam. [mm]: 215
Depth [m]: 88.55
Col. ht. [mm]: 0.66

Water lev. [m]: 45.34
Piezometer: 0
Date WL meas.: 20131112

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	76.50	20131112	1440	20131112	1741			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	1440	60	76.50	5.55	0							0.00
STEP TEST STEP 2	1540	60	76.50	16.38	0.46							35.61
STEP TEST STEP 3	1640	60	76.50	20.41	0.68		100	1				30.01



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Fax: 012 - 364 4001
Project No.: 13615335

MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823AAX0003 Number: SD2-GAA004 Site type: Borehole

Distr./Farm No.: 452 Site Name/Descr.: GOEDGEDACHT PTN. JEN-HAVEN

Latitude [°]:	28.216060	Alt. No. 1:		Diam. [mm]:	215	Water lev. [m]:	45.34
Longitude [°]:	23.240080	Alt. No. 2:		Depth [m]:	88.55	WL status:	Static
Altitude [m]:	1388.17	Rep. inst.: GOLD		Col. ht. [m]:	0.66	Date WL meas.:	20131112

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:		Pulley Diam. [mm]:	
Type of Inst.:		Depth to Intk. [m]:	
Manufacturer:			
Engine:		Power Rating [kW]	
Manufacturer:		Pulley Diam. [mm]:	
Type of Power:			

USE APPLICATION:

Site Status:
Purpose:
Consumer:
Application:

WATER CHEMISTRY:

Sample No.:	SD2-	Date sampled:	20131112	Depth sampl. [m]:	76.50	Comment:	
Main Parameters:		Calculated Parameters:		Bacteriol. Parameters:			
pH:	7.6	Na:	12.5	Cl:	17.2	Langel.:	0.09
EC: [mS/m]	46.3	K:	2.84	NO3 as N:	4.22	Aggr-Ind:	12.11
TDS:	326	Si:	11.6	SO4:	12.6	Ion-bal:	2.16
T. Alk.:	211	Al:	< 0.05	F:	0.12	CaCO3:	244.60
Ca:	62.1	Fe:	< 0.05			SPC:	
Mg:	21.8	Mn:	< 0.05				

Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption
 † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit
 ! Value exceeds recommended minimum limit ¡ Value exceeds minimum allowable limit

AQUIFER INFORMATION:

Depth to Top [m]	Depth to Bot. [m]	Yield[l/s]	Method meas.	Aquifer type	Comment
60.00	60.50	0.00	Notch (V- or U-notch)		

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery [m]	%	[min]	T [m²/d]	Storage	Comment
STEP TEST STEP 1	20131112	60	76.50	5.55	0						
STEP TEST STEP 2	20131112	60	76.50	16.38	0.46						
STEP TEST STEP 3	20131112	60	76.50	20.41	0.68	100	1				



MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823AAX0027 Number: SD2-GAA013 Site type: Borehole

Distr./Farm No.: 452 Site Name/Descr.: GOEDGEDACHT PTN. JEN-HAVEN

Latitude [°]:	28.237640	Alt. No. 1:		Diam. [mm]:	200	Water lev. [m]:	49.05
Longitude [°]:	23.239480	Alt. No. 2:		Depth [m]:	88.20	WL status:	Static
Altitude [m]:	1391.70	Rep. inst.:	GOLD	Col. ht. [m]:	0.40	Date WL meas.:	20131121

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:

Type of Inst.: Pulley Diam. [mm]:
Manufacturer: Depth to Intk. [m]:

Engine:

Manufacturer: Power Rating [kW]
Type of Power: Pulley Diam. [mm]:

USE APPLICATION:

Site Status: Unused
Purpose: Production (water supply)
Consumer: Non-urban
Application:

WATER CHEMISTRY:

Sample No.:	SD2-	Date sampled:	20131121	Depth sampl. [m]:	76.50	Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters:		
pH:	8.26	Na:	21.4	Cl:	35.6	Langel.:	0.57	E.Coli:
EC: [mS/m]	48.8	K:	3.53	NO3 as N:	5.3	Aggr-Ind:	12.60	Faec. co:
TDS:	438	Si:	8.4	SO4:	24.5	Ion-bal:	2.84	Total Co:
T. Alk.:	207	Al:		F:	0.225	CaCO3:	268.82	SPC:
Ca:	42.3	Fe:	< 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit ¡ Value exceeds minimum allowable limit				
Mg:	39.7	Mn:						

CASING DETAILS:

Depth to Top [m]	to Bot. [m]	Diam. [mm]	Material	Thickn. [mm]	Type of openings	Openings [mm]: Length Width	Hor. Dist.	Vert. Dist.
0.00	37.00	200	Steel		Plain casing			

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery [m]	%	T [m²/d]	Storage	Comment
STEP TEST STEP 1	20131121	15	76.50	0.84	27.05	4.86	82	60		



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Project No.: 11613568

PUMPING TEST REPORT

Date compiled: 20/03/2014

BASIC SITE INFORMATION: Site Identifier: 2823AAX0027 Number: SD2-GAA013 Site type: Borehole

Distr./Farm No.: 452

Site Name/Des.: GOEDGEDACHT PTN. JEN-HAVEN

Latitude [°] 28.237680

Alt. No. 1:

Diam. [mm]: 200

Water lev. [m]: 49.05

Longitude [°] 23.239510

Alt. No. 2:

Depth [m]: 88.20

Piezometer: 0

Altitude [m]:

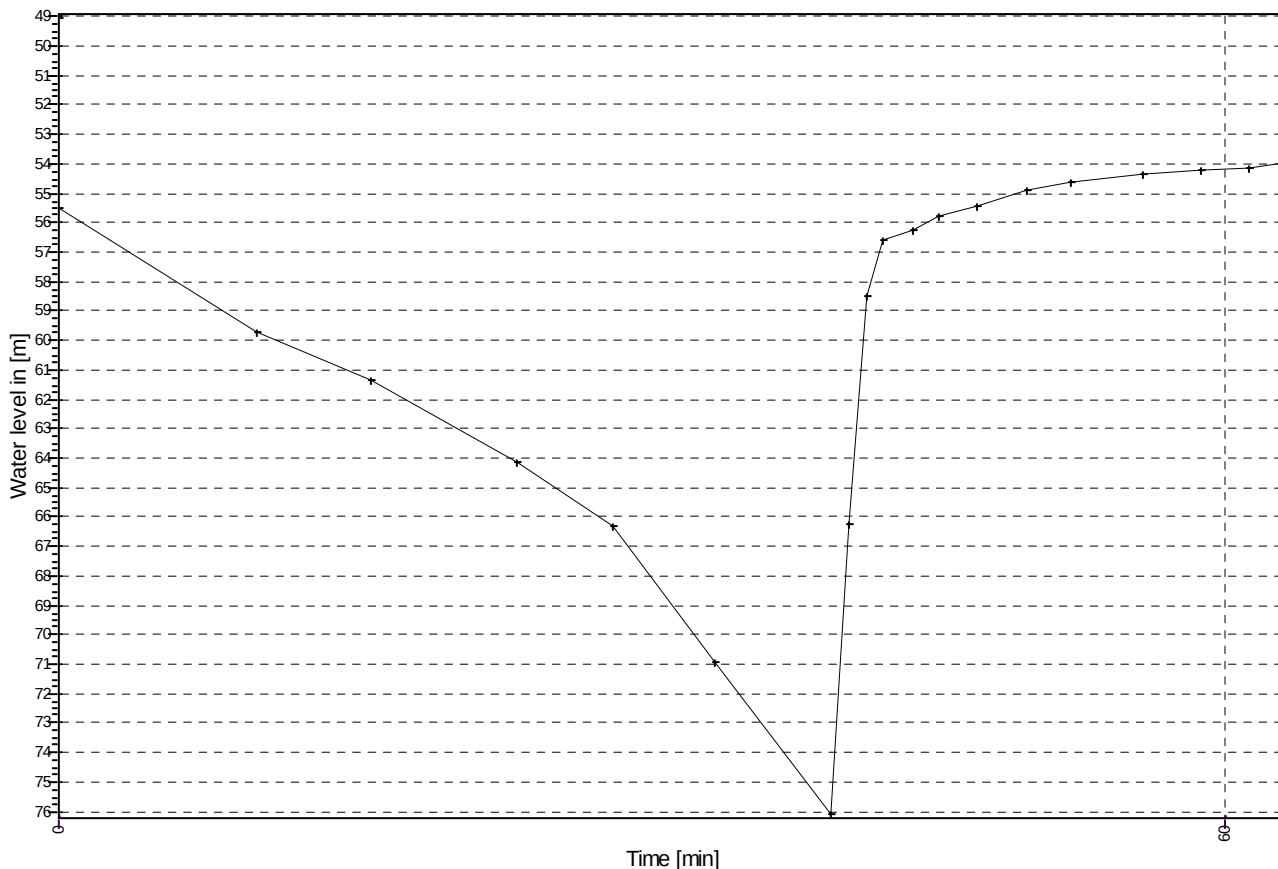
Rep. inst.: GOLD

Col. ht. [mm]: 0.40

Date WL meas.: 20131121

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	76.50	20131121	1340	20131121	1455			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	1340	15	76.50	0.84	27.05	4.86	82	60				0.03



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JEN HAVEN COMMUNITY - BASIC SITE INFORMATION

SITE LOCATION										GEOHYDROLOGY				MANAGEMENT RECOMMEND.			
Site Identifier:	Number:	District	Site name/Description	Site type:	Latitude [°]	Longitude [°]	Altitude [m]	Col. ht. [m]	Diam. [mm]	Depth [m]	Water l. [m]	Yield[l/s]	Rec. abs.[l/s]	Depth to Intk. [m]	Dis. rate[l/s]	Duty c. [hrs/d]	Daily abs. [m³/d]
2823AA00123	SD2-GAA133	442	FARM 442 PTN. HEUNINGVLEI	B	28.23611967	23.202800001	1375.90		165	116.00	25.14						
2823AA00127	SD2-GAA003	452	GOEDGEDACHT PTN. JEN-HAVEN	B	28.22122967	23.242660001	1394.07	0.62	215		46.64						
2823AA00128	SD2-GAA002	452	GOEDGEDACHT PTN. JEN-HAVEN	B	28.22271967	23.245160001	1398.40	0.26	165	86.00					6.50	8	187.20
2823AA00129	SD2-GAA006	452	GOEDGEDACHT PTN. JEN-HAVEN	B	28.23759967	23.239150001	1392.38		165		48.20						
2823AA00130	SD2-GAA007	452	GOEDGEDACHT PTN. JEN-HAVEN	B	28.24942967	23.220400001	1385.80		165		53.73						
2823AAX0004	SD2-GAA005	452	GOEDGEDACHT PTN. JEN-HAVEN	B	28.21576967	23.240450001	1389.27	0.28	165	80.00	44.50						
2823ABX0001	SD2-GAA001	452	GOEDGEDACHT PTN. JEN-HAVEN	B	28.21997967	23.254170001	1411.01		165	113.00	36.52						
SUMMARY:										Maximum:	116.00	53.73			6.50		187.20
										Minimum:	80.00	25.14			6.50		187.20
										Sum:					6.50		187.20
										Average:	98.75	42.46			6.50		187.20
Nr. of sites: 7																	

Site Type:
B = Borehole

NOTE:
"Yield" represents cumulative blow yield
The recommended abstraction ("Rec. abs.")
is based on a 24 hour duty cycle
(based on test pumping result)



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Project No.: 11613568

JEN HAVEN COMMUNITY - TIME DEPENDENT CHEMISTRY REPORT

Site Identifier: 2823AA00128 **Number:** SD2-GAA002 **Site Name:** GOEDGEDACHT PTN. JEN-HAVEN

Samp. Nr./Type	Date/Time samp.	pH	EC	TDS	Ca	Mg	Na	K	Si	Al	Fe	Mn	Cl	SO4	NO3 as N	F	T. Alk.
SD2-	20120326 0930	7.85	61.1	384	68.9	24.2	34.3	3.19	14.4				42.6	32.6	6.367	0.132	244

Chemistry Standard: SABS for human consumption
† Value exceeds recommended maximum limit
‡ Value exceeds maximum allowable limit
! Value exceeds recommended minimum limit
j Value exceeds minimum allowable limit

Concentrations in [mg/l] where applicable
EC [mS/m]
Nitrate as N

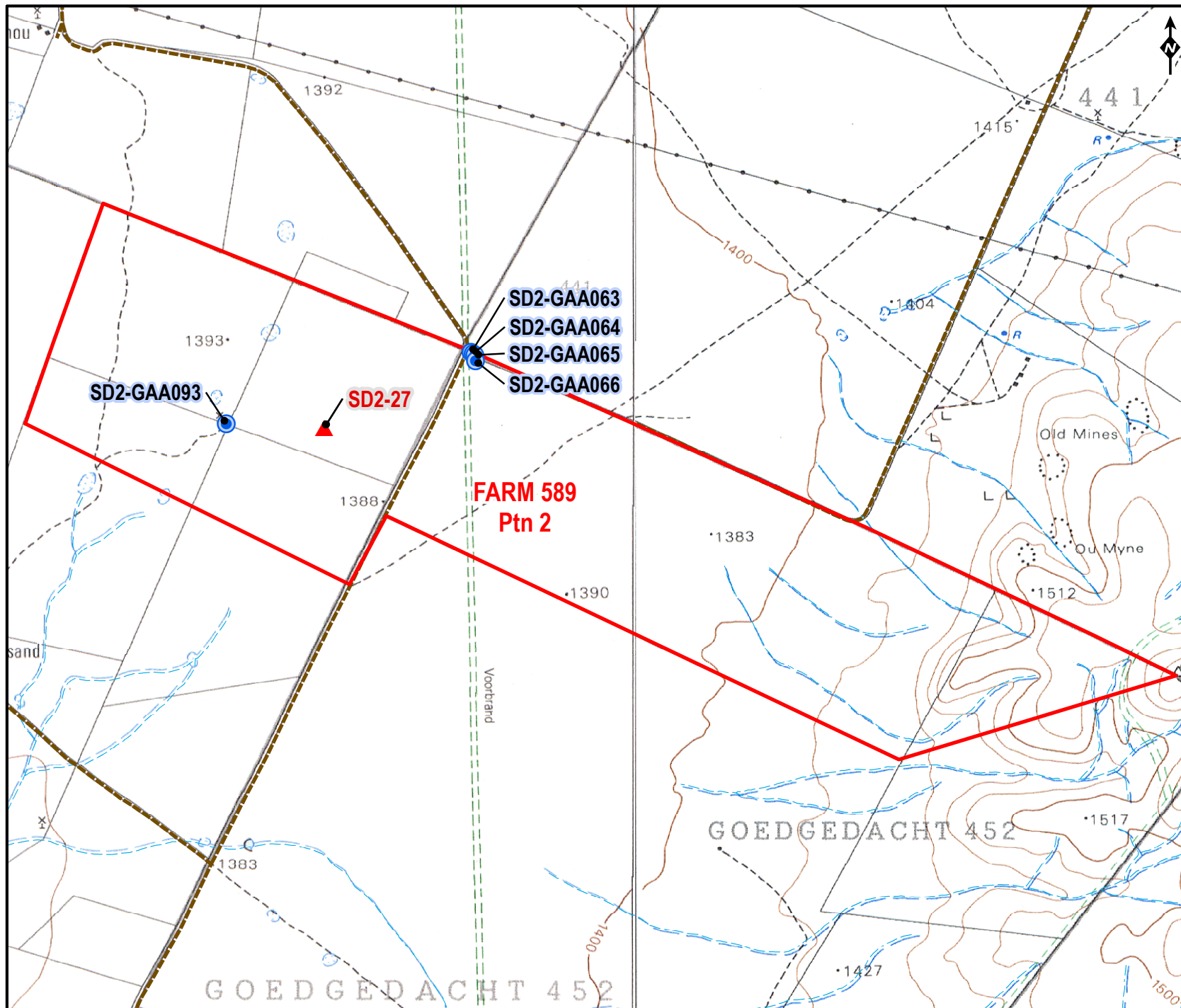
Sample Type Code Explanation:
D: Drinking water
E: Effluent
K: Sewage
O: Organic
P: Pressed or pellet
R: Rock
S: Soil
X: Other source



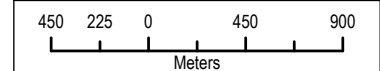
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Project No.: 11613568



2.16 Johnny Cloete



- LEGEND**
- ▲ Newly drilled borehole
 - Existing borehole survey
 - ▭ Farm 589 Ptn 2
 - Other
 - Rivers - Non perennial



RESOURCES/NOTES
 Coordinate System: GCS WGS 1984
 Datum: WGS 1984

PROJECT
 GW ASSESSMENT VGG SCHEME

TITLE
FARM 589 PTN 2
JOHNNY CLOETE

PROJECT No. 11613568	REV 0
SCALE 1:35 000	A4
GIS MB	15/07/2014
CHECK DB	15/07/2014
REVIEW FW	15/07/2014



JOHNNY CLOETE - BASIC SITE INFORMATION

SITE LOCATION										GEOHYDROLOGY				MANAGEMENT RECOMMEND.			
Site Identifier:	Number:	District	Site name/Description	Site type:	Latitude [°]	Longitude [°]	Altitude [m]	Col. ht. [m]	Diam. [mm]	Depth [m]	Water l. [m]	Yield[l/s]	Rec. abs.[l/s]	Depth to Intk. [m]	Dis. rate[l/s]	Duty c. [hrs/d]	Daily abs. [m³/d]
2823AA00116	SD2-GAA064	452	GOEDGEDACHT PTN. JO-DIEN	B	28.17887967	23.239990001	1395.00	0.17	165		32.65						
2823AA00117	SD2-GAA065	452	GOEDGEDACHT PTN. JO-DIEN	B	28.17893967	23.240100001	1395.00	0.41			21.85						
2823AA00118	SD2-GAA093	442	FARM 442 PTN. JO-DIEN	B	28.18299967	23.225490001	1389.00	0.25			11.63						
2823AA00126	SD2-GAA063	441	PLAAS 441 PTN. JO-DIEN	B	28.17879967	23.239880001	1395.00	0.39			17.18						
2823AAX0009	SD2-GAA066	452	GOEDGEDACHT PTN. JO-DIEN	B	28.17928967	23.240130001	1395.00	0.60									
SUMMARY:		Site Type: B = Borehole							Maximum:		32.65						
									Minimum:		11.63						
Nr. of sites:		5							Sum:								
									Average:		20.83						

NOTE:
 "Yield" represents cumulative blow yield
 The recommended abstraction ("Rec. abs.")
 is based on a 24 hour duty cycle
 (based on test pumping result)



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JOHNNY CLOETE - TIME DEPENDENT CHEMISTRY REPORT

Site Identifier: 2823AA00126 **Number:** SD2-GAA063 **Site Name:** PLAAS 441 PTN. JO-DIEN

Samp. Nr./Type	Date/Time samp.	pH	EC	TDS	Ca	Mg	Na	K	Si	Al	Fe	Mn	Cl	SO4	NO3 as N	F	T. Alk.
SD2-	20130527 1123	7.7	436 ‡	454	84.4	42.1	13.9	3.63	22.1	< 0.05	< 0.05	< 0.05	30.1	13.8	5	< 0.1	335

Chemistry Standard: SABS for human consumption
† Value exceeds recommended maximum limit
‡ Value exceeds maximum allowable limit
! Value exceeds recommended minimum limit
j Value exceeds minimum allowable limit

Concentrations in [mg/l] where applicable
EC [mS/m]
Nitrate as N

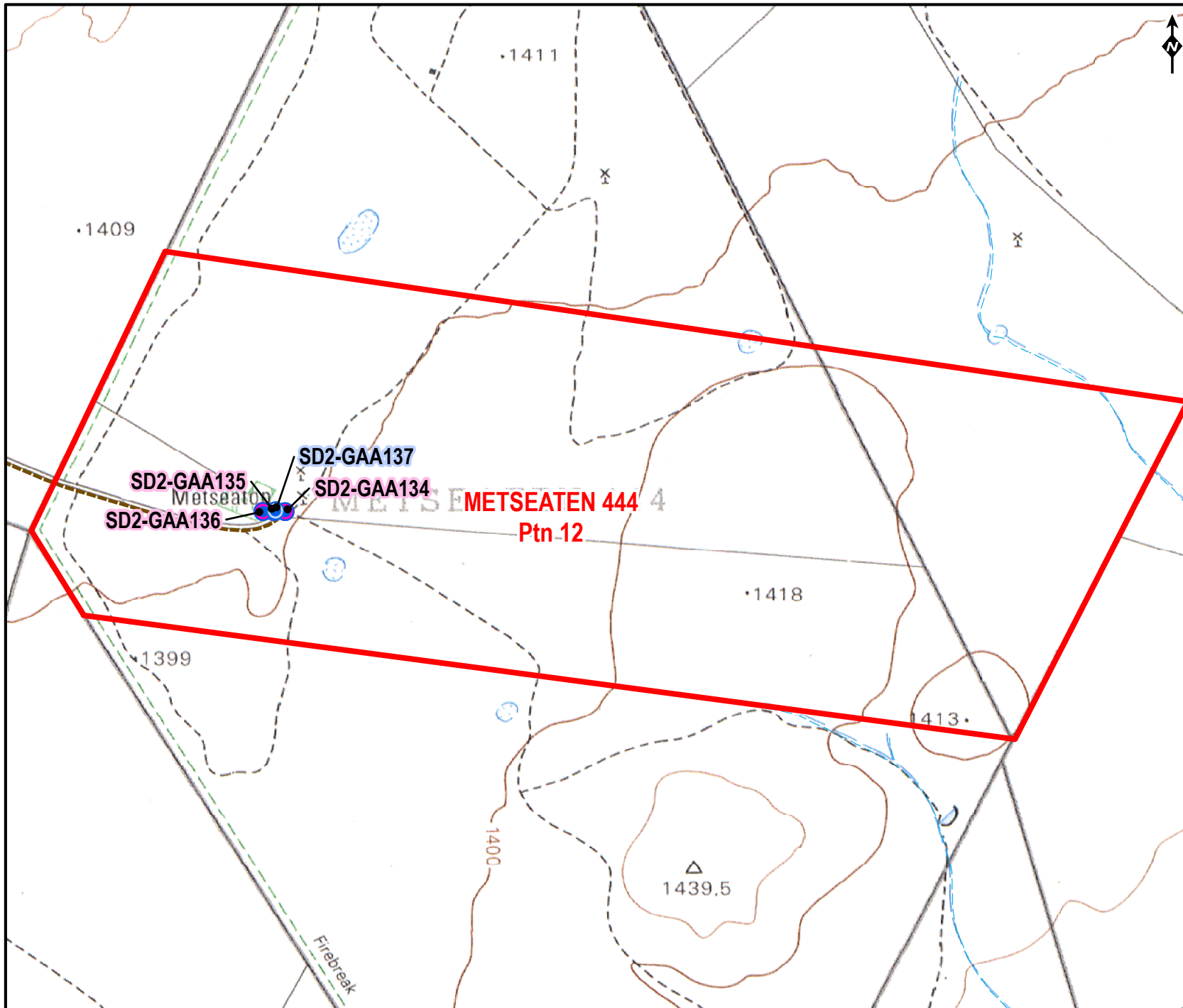
Sample Type Code Explanation:
D: Drinking water
E: Effluent
K: Sewage
O: Organic
P: Pressed or pellet
R: Rock
S: Soil
X: Other source



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Project No.: 11613568



2.17 Joseph Isaacs



- LEGEND**
- Existing borehole survey
 - Existing borehole tested
 - Metseaten 444
 - Other
 - Rivers - Non perennial



RESOURCES/NOTES
 Coordinate System: GCS WGS 1984
 Datum: WGS 1984

PROJECT
 GW ASSESSMENT VGG SCHEME

TITLE
METSEATEN 444
JOSEPH ISAACS

PROJECT No. 11613568		REV 0
SCALE 1:27 000		A4
GIS	MB	18/07/2014
CHECK	DB	18/07/2014
REVIEW	FW	18/07/2014



MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: *Site Identifier:* 2823AAX0028 *Number:* SD2-GAA134 *Site type:* Borehole

Distr./Farm No.: 444 *Site Name/Descr.:* METSEATEN

<i>Latitude [°]:</i> 28.202030	<i>Alt. No. 1:</i>	<i>Diam. [mm]:</i> 165	<i>Water lev. [m]:</i> 13.95
<i>Longitude [°]:</i> 23.138880	<i>Alt. No. 2:</i>	<i>Depth [m]:</i> 28.60	<i>WL status:</i> Static
<i>Altitude [m]:</i> 1402.08	<i>Rep. inst.:</i> GOLD	<i>Col. ht. [m]:</i> 0.39	<i>Date WL meas.:</i> 20140210

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:

<i>Type of Inst.:</i> Windpump	<i>Pulley Diam. [mm]:</i>
<i>Manufacturer:</i> RECIPROCAL	<i>Depth to Intk. [m]:</i> 28.10

Engine:

<i>Manufacturer:</i>	<i>Power Rating [kW]</i>
<i>Type of Power:</i> Wind	<i>Pulley Diam. [mm]:</i>

USE APPLICATION:

<i>Site Status:</i>	In use
<i>Purpose:</i>	Production (water supply)
<i>Consumer:</i>	Non-urban
<i>Application:</i>	Domestic - all purposes

WATER CHEMISTRY:

Sample No.:	SD2-	Date sampled:	20140218	Depth sampl. [m]:	27.34	Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters.		
pH:	7.38	Na:	14.4	Cl:	49.8	Langel.:	0.34	E.Coli:
EC: [mS/m]	100 †	K:	1.42	NO3 as N:	27.5 ‡	Aggr-Ind:	12.45	Faec. co:
TDS:	674 †	Si:		SO4:	25.8	Ion-bal:	3.15	Total Co:
T. Alk.:	413	Al:	< 0.05	F:	0.14	CaCO3:	615.09	SPC:
Ca:	113	Fe:	< 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit ¡ Value exceeds minimim allowable limit				
Mg:	81 †	Mn:	< 0.05					

TESTING DETAILS:

<i>Description</i>	<i>Date</i>	<i>Durat. [min]</i>	<i>Depth to intk. [m]</i>	<i>Disch. rate[l/s]</i>	<i>Drawd. [m]</i>	<i>Recovery [m] %</i>	<i>[min]</i>	<i>T [m²/d]</i>	<i>Storage</i>	<i>Comment</i>
STEP TEST STEP 1	20140210	60	27.34	0.53	10.07					
STEP TEST STEP 2	20140210	5	27.34	0.74	13.00	0.84	94	70		
PUMP INLET	20140210	2	27.34	0.41	13.00					



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Project No.: 11613568

PUMPING TEST REPORT

Date compiled: 23/07/2014

BASIC SITE INFORMATION: Site Identifier: 2823AAX0028 Number: SD2-GAA134 Site type: Borehole

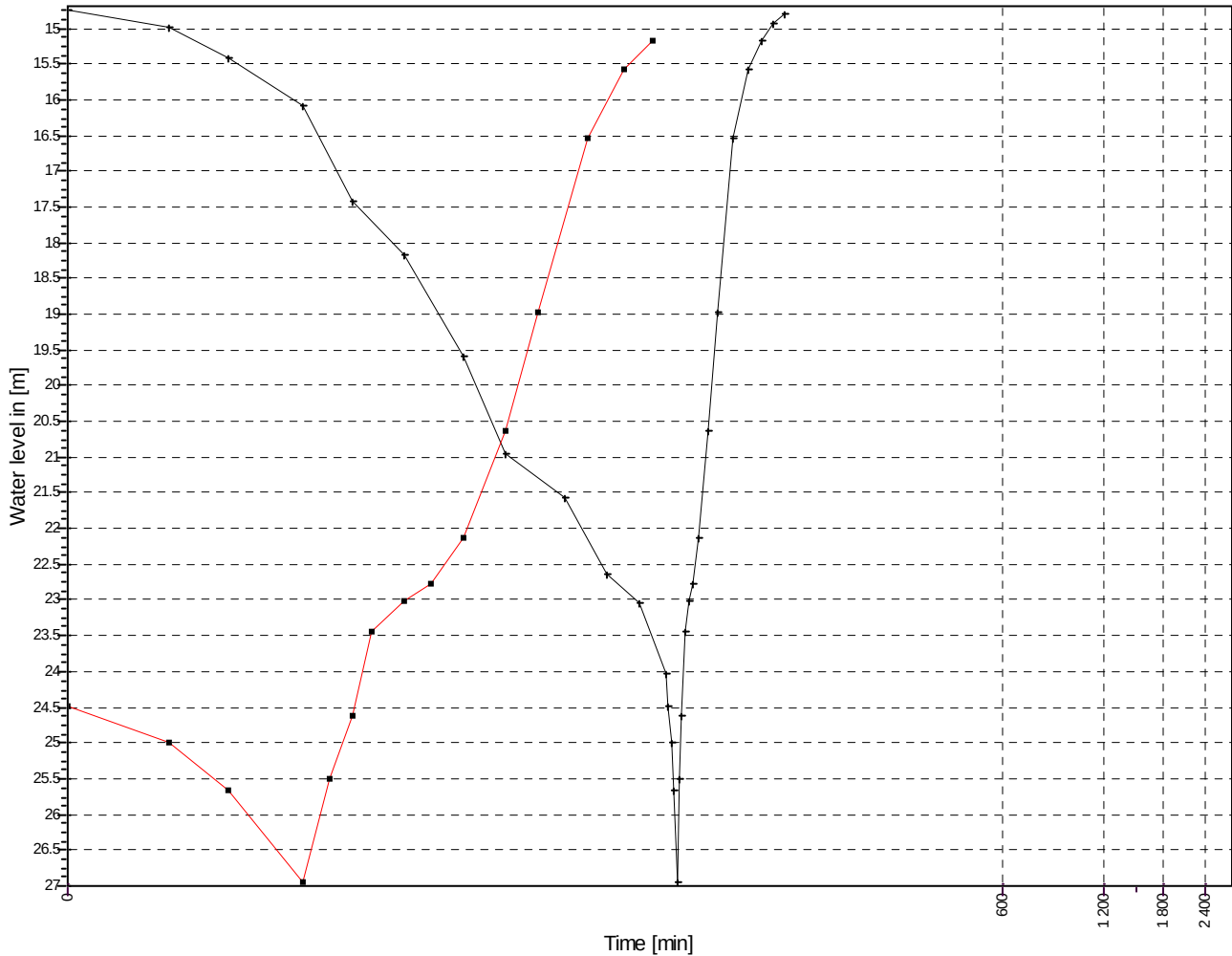
Distr./Farm No.: 444

Site Name/Des.: METSEATEN

Latitude [°]	28.202030	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	13.95
Longitude [°]	23.138880	Alt. No. 2:		Depth [m]:	28.60	Piezometer:	0
Altitude [m]:	1402.08	Rep. inst.: GOLD		Col. ht. [mm]:	0.39	Date WL meas.:	20140210

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	27.34	20140210	1515	20140210	1730			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate [l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	1515	60	27.34	0.53	10.07							0.05
STEP TEST STEP 2	1615	5	27.34	0.74	13.00	0.84	94	70				0.06
PUMP INLET	1730	2	27.34	0.41	13.00							0.03



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Project No.: 11613568

MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: *Site Identifier:* 2823AAX0029 *Number:* SD2-GAA135 *Site type:* Borehole

Distr./Farm No.: 444 *Site Name/Descr.:* METSEATEN

<i>Latitude [°]:</i> 28.202020	<i>Alt. No. 1:</i>	<i>Diam. [mm]:</i> 165	<i>Water lev. [m]:</i> 13.18
<i>Longitude [°]:</i> 23.138380	<i>Alt. No. 2:</i>	<i>Depth [m]:</i> 54.60	<i>WL status:</i> Static
<i>Altitude [m]:</i> 1403.77	<i>Rep. inst.:</i> GOLD	<i>Col. ht. [m]:</i> 0.27	<i>Date WL meas.:</i> 20140211

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:

<i>Type of Inst.:</i> Windpump	<i>Pulley Diam. [mm]:</i>
<i>Manufacturer:</i> RECIPROCAL	<i>Depth to Intk. [m]:</i> 45.50

Engine:

<i>Manufacturer:</i>	<i>Power Rating [kW]</i>
<i>Type of Power:</i> Wind	<i>Pulley Diam. [mm]:</i>

USE APPLICATION:

<i>Site Status:</i>	In use
<i>Purpose:</i>	Production (water supply)
<i>Consumer:</i>	Non-urban
<i>Application:</i>	Domestic - all purposes

WATER CHEMISTRY:

<i>Sample No.:</i> SD2-	<i>Date sampled:</i> 20140218	<i>Depth sampl. [m]:</i> 51.34	<i>Comment:</i>
Main Parameters:			Calculated Parameters:
<i>pH:</i> 7.93	<i>Na:</i> 16.5	<i>Cl:</i> 31.7	<i>Langel.:</i> 0.65
<i>EC: [mS/m]</i> 80.5 †	<i>K:</i> 3.86	<i>NO3 as N:</i> 13.4 †	<i>Aggr-Ind:</i> 12.74
<i>TDS:</i> 600 †	<i>Si:</i>	<i>SO4:</i> 21.9	<i>Ion-bal:</i> -2.40
<i>T. Alk.:</i> 396	<i>Al:</i> < 0.05	<i>F:</i> 0.16	<i>CaCO3:</i> 446.96
<i>Ca:</i> 64.9	<i>Fe:</i> 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit § Value exceeds minimum allowable limit	
<i>Mg:</i> 69.3	<i>Mn:</i> < 0.05		

CASING DETAILS:

<i>Depth to Top [m]</i>	<i>to Bot. [m]</i>	<i>Diam. [mm]</i>	<i>Material</i>	<i>Thickn. [mm]</i>	<i>Type of openings</i>	<i>Openings [mm]:</i>	<i>Hor. Dist.</i>	<i>Vert. Dist.</i>
0.00	1.00	165	Steel		Plain casing	<i>Length Width</i>		

TESTING DETAILS:

<i>Description</i>	<i>Date</i>	<i>Durat. [min]</i>	<i>Depth to intk. [m]</i>	<i>Disch. rate[l/s]</i>	<i>Drawd. [m]</i>	<i>Recovery [m] %</i>	<i>T [m²/d]</i>	<i>Storage</i>	<i>Comment</i>
STEP TEST STEP 1	20140211	60	51.34	0.52	25.14				
STEP TEST STEP 2	20140211	10	51.34	1.06	37.88	0.59 98	90		
PUMP INLET	20140211	2	51.34	0.40	37.89				



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Project No.: 11613568

PUMPING TEST REPORT

Date compiled: 23/07/2014

BASIC SITE INFORMATION: Site Identifier: 2823AAX0029 Number: SD2-GAA135 Site type: Borehole

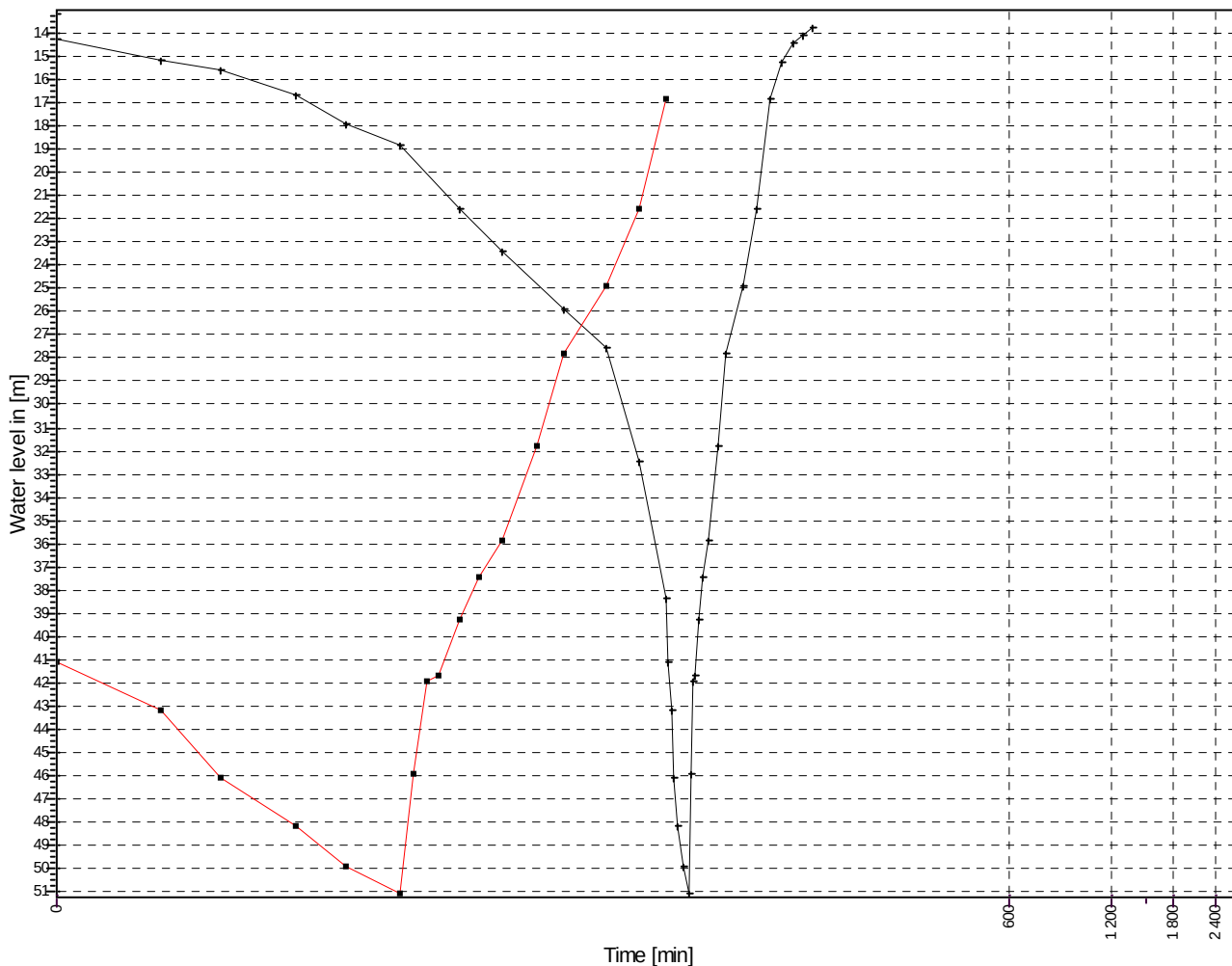
Distr./Farm No.: 444

Site Name/Des.: METSEATEN

Latitude [°]	28.202020	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	13.18
Longitude [°]	23.138380	Alt. No. 2:		Depth [m]:	54.60	Piezometer:	0
Altitude [m]:	1403.77	Rep. inst.: GOLD		Col. ht. [mm]:	0.27	Date WL meas.:	20140211

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	51.34	20140211	1530	20140211	1810			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	1530	60	51.34	0.52	25.14							0.02
STEP TEST STEP 2	1630	10	51.34	1.06	37.88	0.59	98	90				0.03
PUMP INLET	1810	2	51.34	0.40	37.89							0.01



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MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: *Site Identifier:* 2823AAX0030 *Number:* SD2-GAA136 *Site type:* Well point

Distr./Farm No.: 444 *Site Name/Descr.:* METSEATEN

<i>Latitude [°]:</i> 28.202000	<i>Alt. No. 1:</i>	<i>Diam. [mm]:</i> 165	<i>Water lev. [m]:</i> 10.89
<i>Longitude [°]:</i> 23.137880	<i>Alt. No. 2:</i>	<i>Depth [m]:</i> 36.80	<i>WL status:</i> Static
<i>Altitude [m]:</i> 1403.90	<i>Rep. inst.:</i> GOLD	<i>Col. ht. [m]:</i> 0.25	<i>Date WL meas.:</i> 20140212

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:

<i>Type of Inst.:</i> Mono-type pump	<i>Pulley Diam. [mm]:</i> 130
<i>Manufacturer:</i> BP12M	<i>Depth to Intk. [m]:</i> 33.00

Engine:

<i>Manufacturer:</i> KUBOK	<i>Power Rating [kW]</i>
<i>Type of Power:</i> Diesel engine	<i>Pulley Diam. [mm]:</i> 130

USE APPLICATION:

<i>Site Status:</i> In use
<i>Purpose:</i> Production (water supply)
<i>Consumer:</i> Non-urban
<i>Application:</i> Domestic - all purposes

WATER CHEMISTRY:

Sample No.:	SD2-	Date sampled:	20140212	Depth sampl. [m]:	33.34	Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters:		
pH:	7.61	Na:	11.7	Cl:	22.5	Langel.:	0.43	E.Coli:
EC: [mS/m]	79.1 †	K:	1.41	NO3 as N:	7.13	Aggr-Ind:	12.52	Faec. co:
TDS:	554 †	Si:		SO4:	22.7	Ion-bal:	0.40	Total Co:
T. Alk.:	423	Al:	< 0.05	F:	< 0.1	CaCO3:	480.83	SPC:
Ca:	76.5	Fe:	< 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit ¡ Value exceeds minimum allowable limit				
Mg:	70.5 †	Mn:	< 0.05					

CASING DETAILS:

<i>Depth to Top [m]</i>	<i>to Bot. [m]</i>	<i>Diam. [mm]</i>	<i>Material</i>	<i>Thickn. [mm]</i>	<i>Type of openings</i>	<i>Openings [mm]:</i>	<i>Hor. Dist.</i>	<i>Vert. Dist.</i>
0.00	3.00	165	Steel		Plain casing	<i>Length Width</i>		

TESTING DETAILS:

<i>Description</i>	<i>Date</i>	<i>Durat. [min]</i>	<i>Depth to intk. [m]</i>	<i>Disch. rate[l/s]</i>	<i>Drawd. [m]</i>	<i>Recovery [m] %</i>	<i>T [m²/d]</i>	<i>Storage</i>	<i>Comment</i>
STEP TEST STEP 1	20140212	60	33.34	1.07	0.21				
STEP TEST STEP 2	20140212	60	33.34	2.04	0.42				
STEP TEST STEP 3	20140212	60	33.34	3.05	0.63				
STEP TEST STEP 4	20140212	60	33.34	4.00	0.92	100	90		



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Project No.: 11613568

PUMPING TEST REPORT

Date compiled: 23/07/2014

BASIC SITE INFORMATION: Site Identifier: 2823AAX0030 Number: SD2-GAA136 Site type: Well point

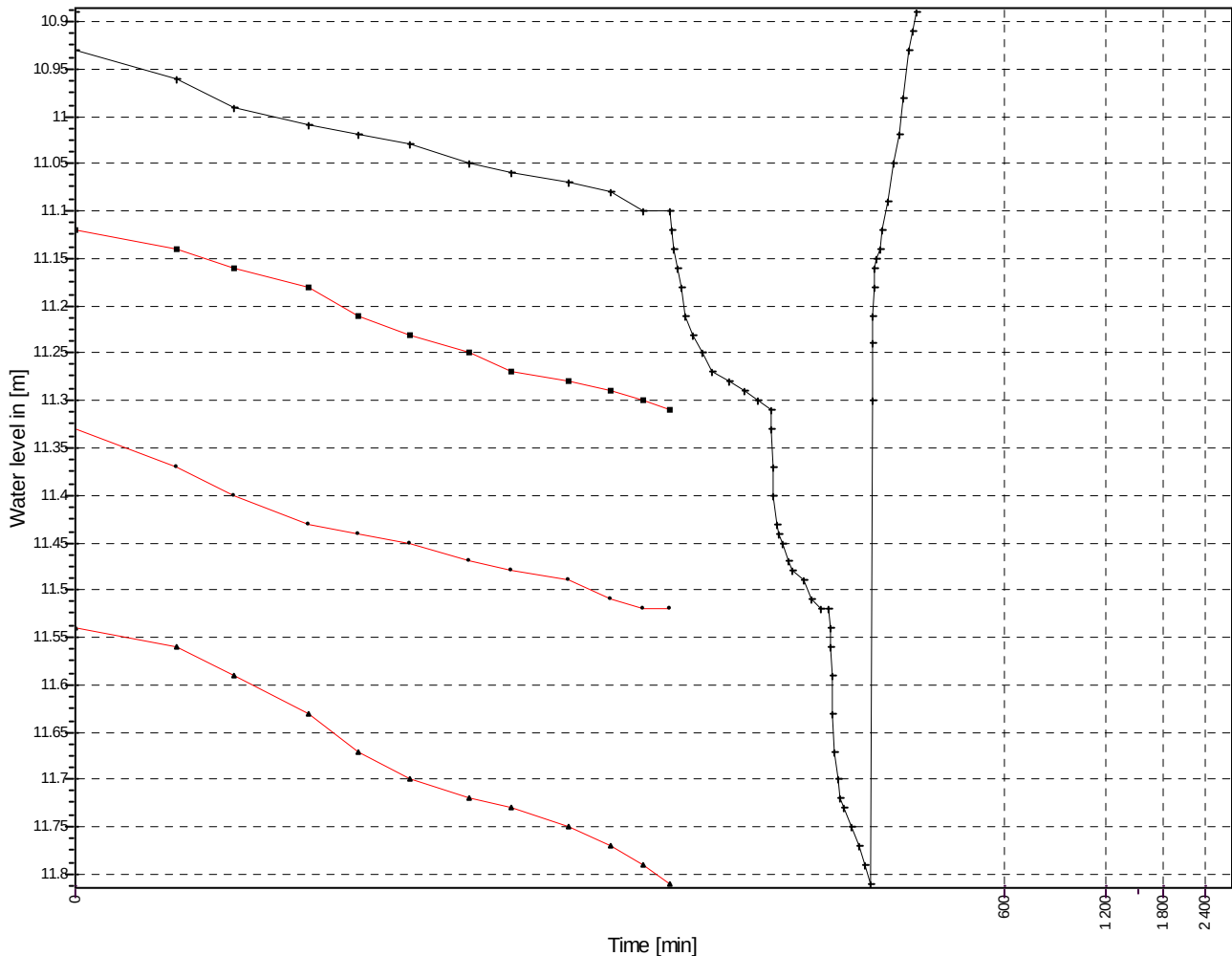
Distr./Farm No.: 444

Site Name/Des.: METSEATEN

Latitude [°]	28.202000	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	10.89
Longitude [°]	23.137880	Alt. No. 2:		Depth [m]:	36.80	Piezometer:	0
Altitude [m]:	1403.90	Rep. inst.: GOLD		Col. ht. [mm]:	0.25	Date WL meas.:	20140212

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	33.34	20140212	1450	20140212	2020			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	1450	60	33.34	1.07	0.21							5.10
STEP TEST STEP 2	1550	60	33.34	2.04	0.42							4.86
STEP TEST STEP 3	1650	60	33.34	3.05	0.63							4.84
STEP TEST STEP 4	1750	60	33.34	4.00	0.92		100	90				4.35



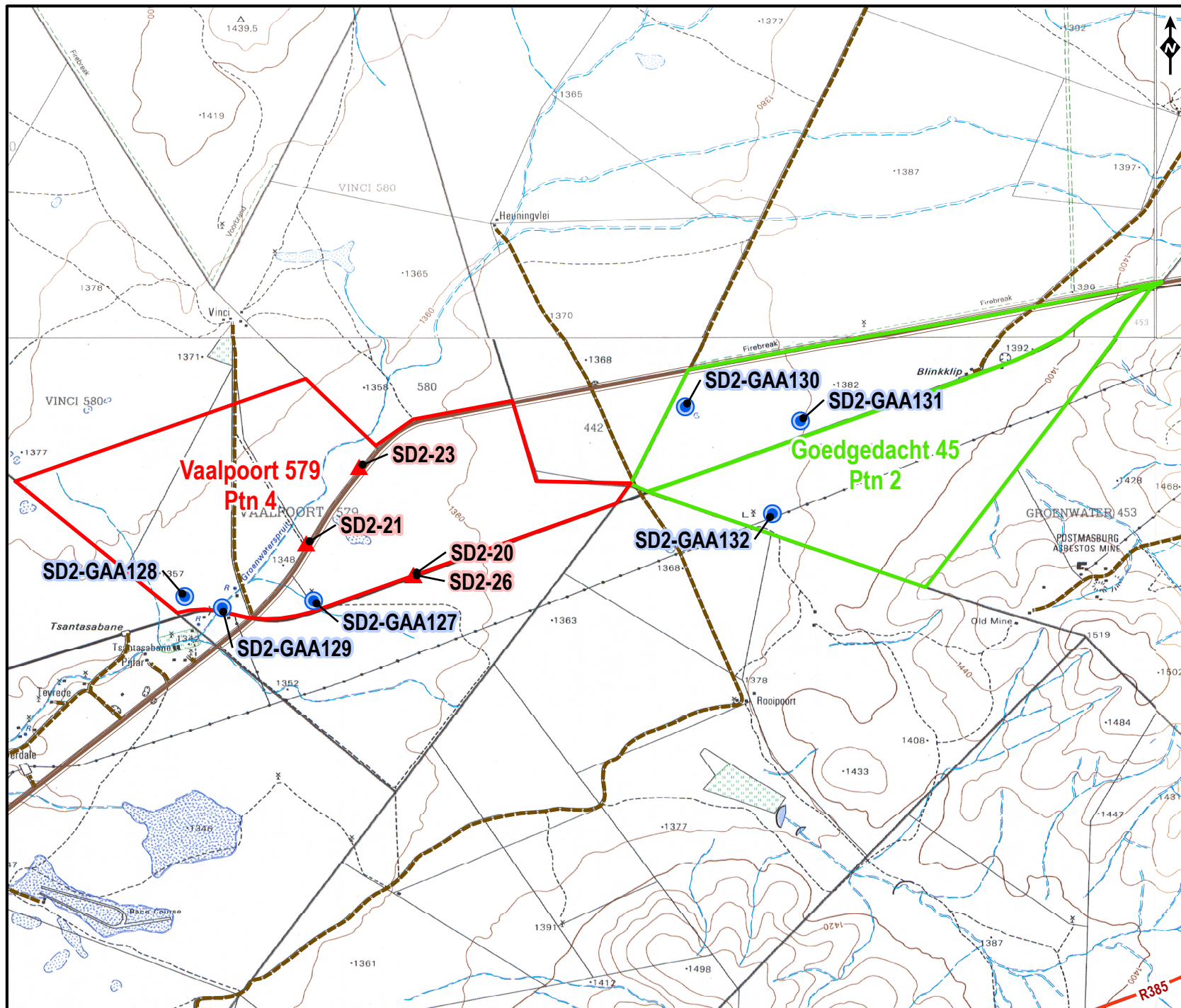
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Project No.: 11613568

JOSEPH ISAACS - BASIC SITE INFORMATION

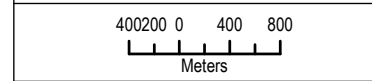
SITE LOCATION										GEOHYDROLOGY				MANAGEMENT RECOMMEND.			
Site Identifier:	Number:	District	Site name/Description	Site type:	Latitude [°]	Longitude [°]	Altitude [m]	Col. ht. [m]	Diam. [mm]	Depth [m]	Water l. [m]	Yield[l/s]	Rec. abs.[l/s]	Depth to Intk. [m]	Dis. rate[l/s]	Duty c. [hrs/d]	Daily abs. [m³/d]
2823AAX0031	SD2-GAA137	444	METSEATEN	B	28.20197967	23.138440001			165								
SUMMARY: Nr. of sites: 1 Site Type: B = Borehole Maximum: Minimum: Sum: Average:																	



2.18 Loekie van der Merwe



- LEGEND**
- ▲ Newly drilled borehole
 - Existing borehole survey
 - ▭ Vaalpoort 579 Ptn 4
 - ▭ Goedgedacht 452 Ptn 2
 - Arterial road
 - Secondary road
 - Other
 - ▨ Pan
 - Rivers - Non perennial



RESOURCES/NOTES
 Coordinate System: GCS WGS 1984
 Datum: WGS 1984

PROJECT
 GW ASSESSMENT VGG SCHEME

TITLE
VAALPOORT 579 PTN 4
GOEDGEDACHT 452 PTN 2
LOEKIE VAN DER MERWE

PROJECT No.	11613568	REV 0
SCALE	1:60 000	A4
GIS	MB	15/07/2014
CHECK	DB	15/07/2014
REVIEW	FW	15/07/2014



BASIC SITE INFORMATION: Site Identifier: 2823ACX0073 Number: SD2-20 Site type: Borehole

Distr./Farm No.: Site Name/Des.: POSTMASBURG

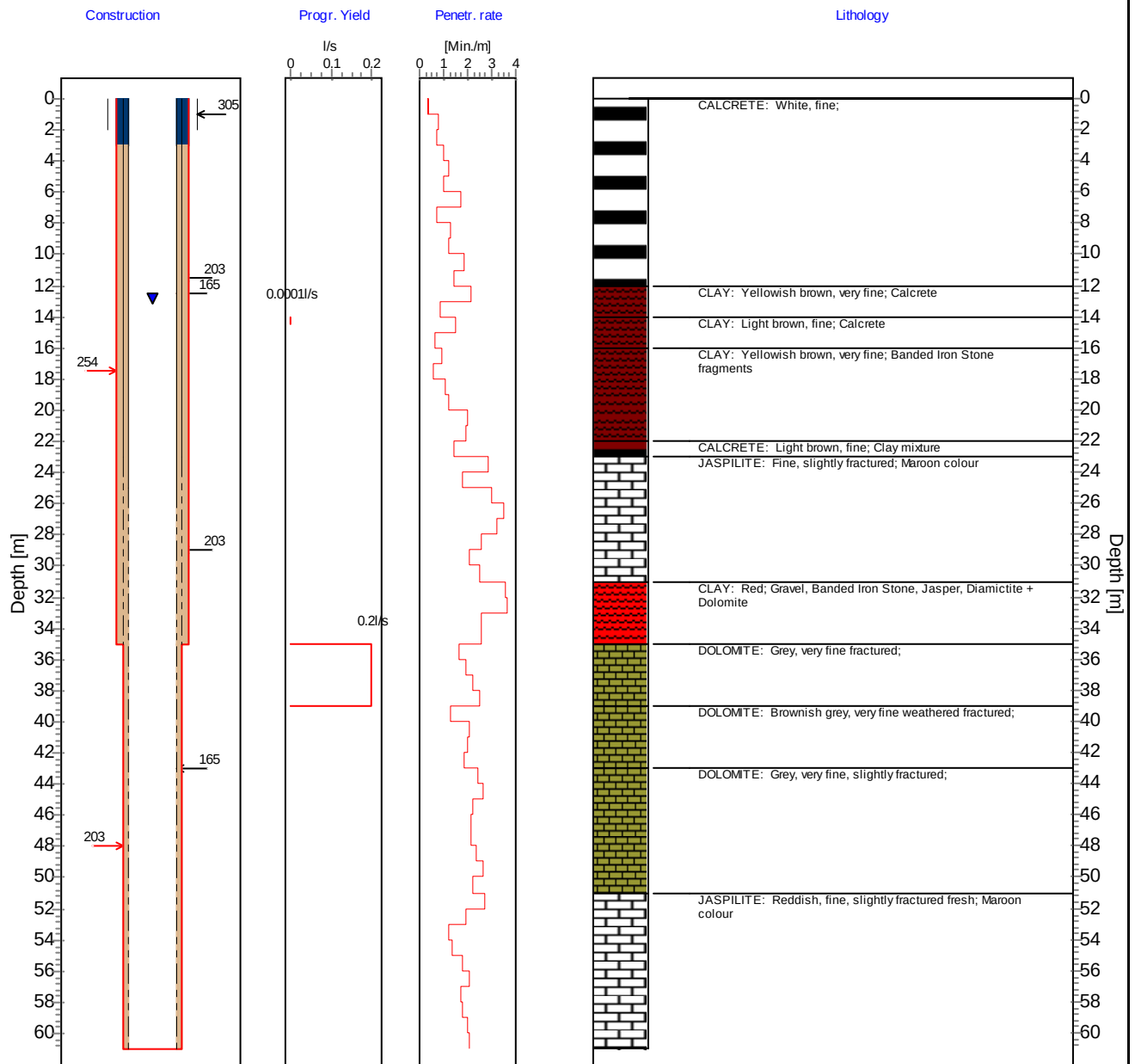
Region Type: Water supply authority Region Descr.: TSANTSABANE LM

Latitude [°]: 28.330009	Reg./BB.:	Topo-set.:	Depth [m]: 61.00
Longitude [°]: 23.095777	G-Nr.:	Site status: Unused	Col. ht. [m]: 0.40
Altitude [m]: 1319.07		Site purp.: Production (water supply)	Diam. [mm]: 165
Coord. acc.: Accurate to within 1 unit		Use applic.: Domestic - all purposes	Drain. reg.: D43A
Coord. meth.: Altimeter		Equipment: No equipment	Rep. inst.: GOLD

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Construction and Geohydrological Legend

	Hole	165 →	Hole diameter [mm]		Sanitary seal
	Casing (plain / perforated, slotted)	← 152	Casing diameter [mm]		Gravel (> 2mm)
	Screen / Mesh Screen	▼	Waterlevel measured: 05/10/13		
	Piezometer	0:50 →	Piezometer (Nr. & Diameter [mm])		



COMMENT:



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Project No.: 11613568

MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823ACX0073 Number: SD2-20 Site type: Borehole

Distr./Farm No.: Site Name/Descr.: POSTMASBURG

Latitude [°]:	28.330009	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	13.04
Longitude [°]:	23.095777	Alt. No. 2:		Depth [m]:	61.00	WL status:	Static
Altitude [m]:	1319.07	Rep. inst.: GOLD		Col. ht. [m]:	0.40	Date WL meas.:	20140121

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:		
Type of Inst.:	Pulley Diam. [mm]:	
Manufacturer:	Depth to Intk. [m]:	
Engine:		
Manufacturer:	Power Rating [kW]	
Type of Power:	Pulley Diam. [mm]:	

USE APPLICATION:

Site Status: Unused
Purpose: Production (water supply)
Consumer: Non-urban
Application: Domestic - all purposes

WATER CHEMISTRY:

Sample No.:	SD2-20	Date sampled:	20131005	Depth sampl. [m]:	0	Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters:		
pH:	7.24	Na:	50.4	Cl:	50.8	Langel.:	-0.27	E.Coli:
EC: [mS/m]	67.4	K:	4.86	NO3 as N:	1.98	Aggr-Ind:	11.79	Faec. co:
TDS:	446	Si:	6.37	SO4:	59.5	Ion-bal:	1.06	Total Co:
T. Alk.:	262	Al:	< 0.05	F:	0.272	CaCO3:	296.15	SPC:
Ca:	54.9	Fe:	< 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit ¡ Value exceeds minimum allowable limit				
Mg:	38.7	Mn:	0.53 †					

AQUIFER INFORMATION:

Depth to Top [m]	Depth to Bot. [m]	Yield[l/s]	Method meas.	Aquifer type	Comment
14.00	14.50	0.00010	Notch (V- or U-notch)		DAMP
35.00	39.00	0.20	Notch (V- or U-notch)		

CASING DETAILS:

Depth to Top [m]	to Bot. [m]	Diam. [mm]	Material	Thickn. [mm]	Type of openings	Openings [mm]: Length Width	Hor. Dist.	Vert. Dist.
0.00	2.00	305	Steel		Plain casing			
0.00	23.00	203	Steel		Plain casing			
23.00	35.00	203	Steel		Perforated or slotted			
0.00	25.00	165	Steel		Plain casing			
25.00	61.00	165	Steel		Perforated or slotted			

Borehole Construction and Geological Log

Date compiled: 08/01/2014

BASIC SITE INFORMATION: Site Identifier: 2823ACX0079 Number: SD2-21 Site type: Borehole

Distr./Farm No.: 579

Site Name/Des.: VAALPOORT

Region Type: Water supply authority

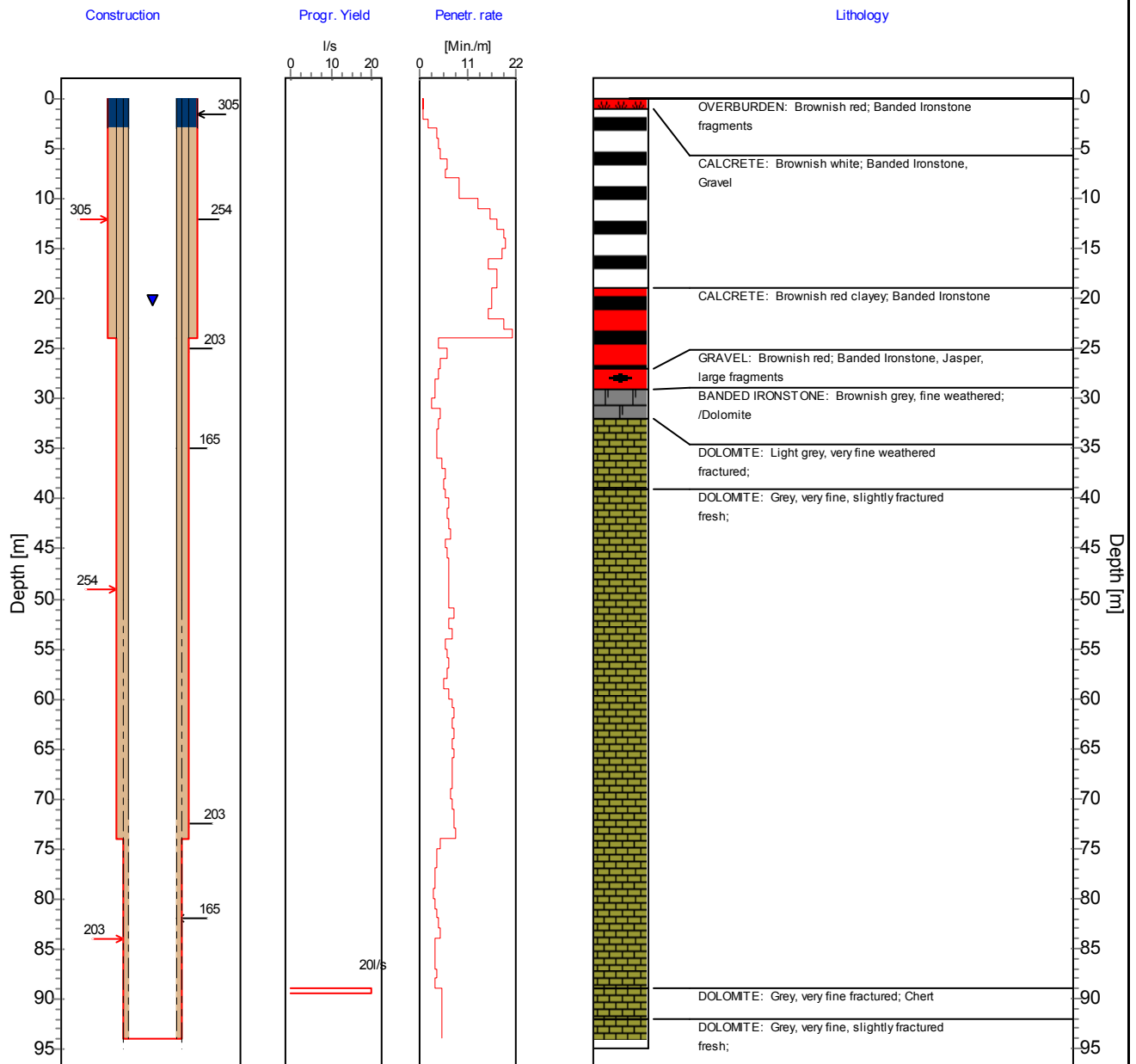
Region Descr.: TSANTABANE LM

Latitude [°]: 28.270995	Reg./BB.:	Topo-set.: Flat surface, plain	Depth [m]: 93.80
Longitude [°]: 23.163933	G-Nr.:	Site status: Unused	Col. ht. [m]: 0.45
Altitude [m]: 1352.70		Site purp.: Production (water supply)	Diam. [mm]: 165
Coord. acc.: Accurate to within 1 units		Use applic.: Domestic - all purposes	Drain. reg.: D73A
Coord. meth.: Altimeter		Equipment: No equipment	Rep. inst.: GOLD

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Construction and Geohydrological Legend

	Hole	165 →	Hole diameter [mm]		Sanitary seal
	Casing (plain / perforated, slotted)	← 152	Casing diameter [mm]		Gravel (> 2mm)
	Screen / Mesh Screen	▼	Waterlevel measured: 03/11/13		
	Piezometer	0:50 →	Piezometer (Nr. & Diameter [mm])		



COMMENT:



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MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823ACX0079 Number: SD2-21 Site type: Borehole

Distr./Farm No.: 579 Site Name/Descr.: VAALPOORT WELLFIELD

Latitude [°]:	28.270995	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	19.36
Longitude [°]:	23.163933	Alt. No. 2:		Depth [m]:	93.80	WL status:	Static
Altitude [m]:	1352.70	Rep. inst.:	GOLD	Col. ht. [m]:	0.45	Date WL meas.:	20140121

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:		Pulley Diam. [mm]:	
Type of Inst.:		Depth to Intk. [m]:	
Manufacturer:			
Engine:		Power Rating [kW]	
Manufacturer:		Pulley Diam. [mm]:	
Type of Power:			

USE APPLICATION:

Site Status: Unused
Purpose: Production (water supply)
Consumer: Non-urban
Application: Domestic - all purposes

WATER CHEMISTRY:

Sample No.: SD2-21		Date sampled: 20131106		Depth sampl. [m]: 82.50		Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters:		
pH:	7.72	Na:	16.8	Cl:	27.9	Langel.:	0.38	E.Coli:
EC: [mS/m]	59.9	K:	2.74	NO3 as N:	2.97	Aggr-Ind:	12.43	Faec. co:
TDS:	389	Si:	15.3	SO4:	16	Ion-bal:	1.77	Total Co:
T. Alk.:	291	Al:	< 0.05	F:	0.153	CaCO3:	330.90	SPC:
Ca:	71.3	Fe:	< 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit § Value exceeds minimum allowable limit				
Mg:	37.2	Mn:	< 0.05					

AQUIFER INFORMATION:

Depth to Top [m]	Depth to Bot. [m]	Yield[l/s]	Method meas.	Aquifer type	Comment
89.00	89.50	20.00	Notch (V- or U-notch)		

CASING DETAILS:

Depth to Top [m]	to Bot. [m]	Diam. [mm]	Material	Thickn. [mm]	Type of openings	Openings [mm]: Length Width	Hor. Dist.	Vert. Dist.
0.00	3.00	305	Steel		Plain casing			
0.00	24.00	254	Steel		Plain casing			
0.00	50.00	203	Steel		Plain casing			
0.00	70.00	165	Steel		Plain casing			
70.00	94.00	165	Steel		Perforated or slotted			
50.00	95.00	203	Steel		Perforated or slotted			

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery [m] %	[min]	T [m²/d]	Storage	Comment
STEP TEST STEP 1	20131103	60	82.50	5.14	3.83					
STEP TEST STEP 2	20131103	60	82.50	10.04	18.32					
STEP TEST STEP 3	20131103	60	82.50	15.06	42.41					
STEP TEST STEP 4	20131103	5	82.50	20.06	62.34	100	20			
PUMP INLET	20131103	4	82.50	18.40	62.36					
CONSTANT	20131103	4320	82.50	13.05	24.24	100	2	203	0.05	

RECOMMENDATIONS:

Prior.	Rec. equipm.	Depth to intk. [m]	Type of power	Duty cyc. [hrs]	Disch. rate [l/s]	Water quality	Dyn. water level [m]	Crit. water level [m]
1	Mono-type pump	54.00	Electric motor	24	5.00	CLASS 0	29.40	40.00

Note: 1. Production borehole
2. Install water level monitoring facility in borehole



Golder Associates Africa, Pretoria
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Tel: 012 - 364 4000
Fax: 012 - 364 4001
Project No.: 11613568

PUMPING TEST REPORT

Date compiled: 31/03/2014

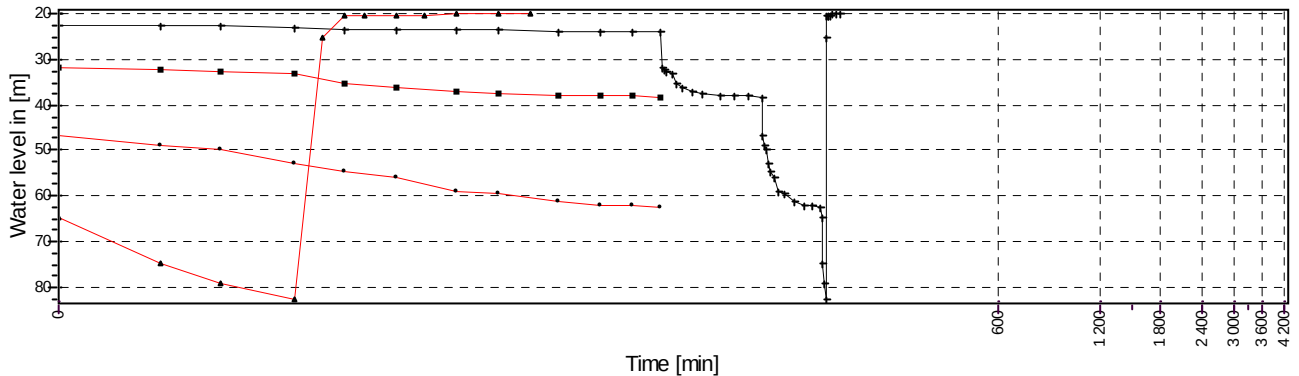
BASIC SITE INFORMATION: Site Identifier: 2823ACX0079 Number: SD2-21 Site type: Borehole

Distr./Farm No.: 579 Site Name/Des.: VAALPOORT

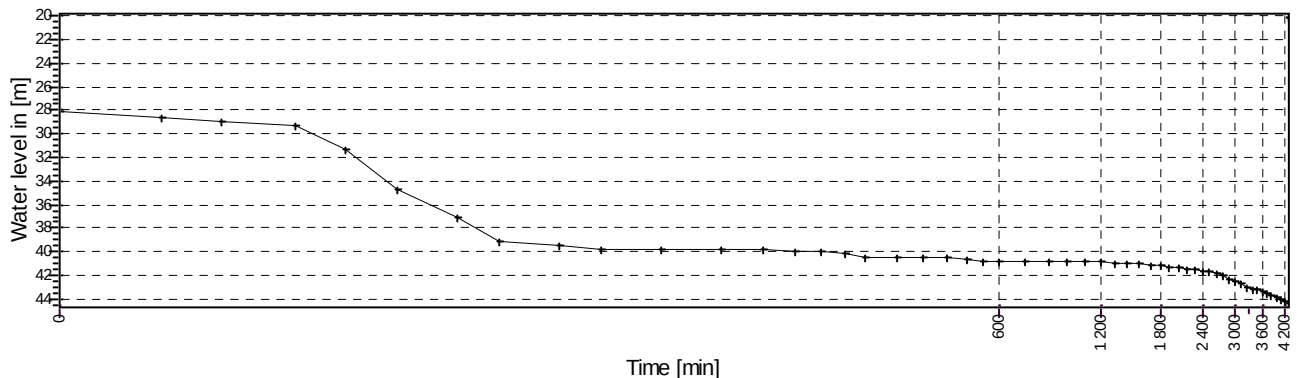
Latitude [°]	28.270995	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	19.36
Longitude [°]	23.163933	Alt. No. 2:		Depth [m]:	93.80	Piezometer:	0
Altitude [m]:	1352.70	Rep. inst.: GOLD		Col. ht. [mm]:	0.45	Date WL meas.:	20140121

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



Constant Rate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	82.50	20131103	0720	20131103	1045			
GOLD	Constant rate test	82.50	20131103	1400	20131106	1402			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	0720	60	82.50	5.14	3.83							1.34
STEP TEST STEP 2	0820	60	82.50	10.04	18.32							0.55
STEP TEST STEP 3	0920	60	82.50	15.06	42.41							0.36
STEP TEST STEP 4	1020	5	82.50	20.06	62.34		100	20				0.32
PUMP INLET	1045	4	82.50	18.40	62.36							0.30
CONSTANT	1400	4320	82.50	13.05	24.24		100	2				0.54



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Project No.: 11613568

Borehole Construction and Geological Log

Date compiled: 08/01/2014

BASIC SITE INFORMATION: Site Identifier: 2823ACX0080 Number: SD2-23 Site type: Borehole

Distr./Farm No.: 579

Site Name/Des.: VAALPOORT

Region Type: Water supply authority

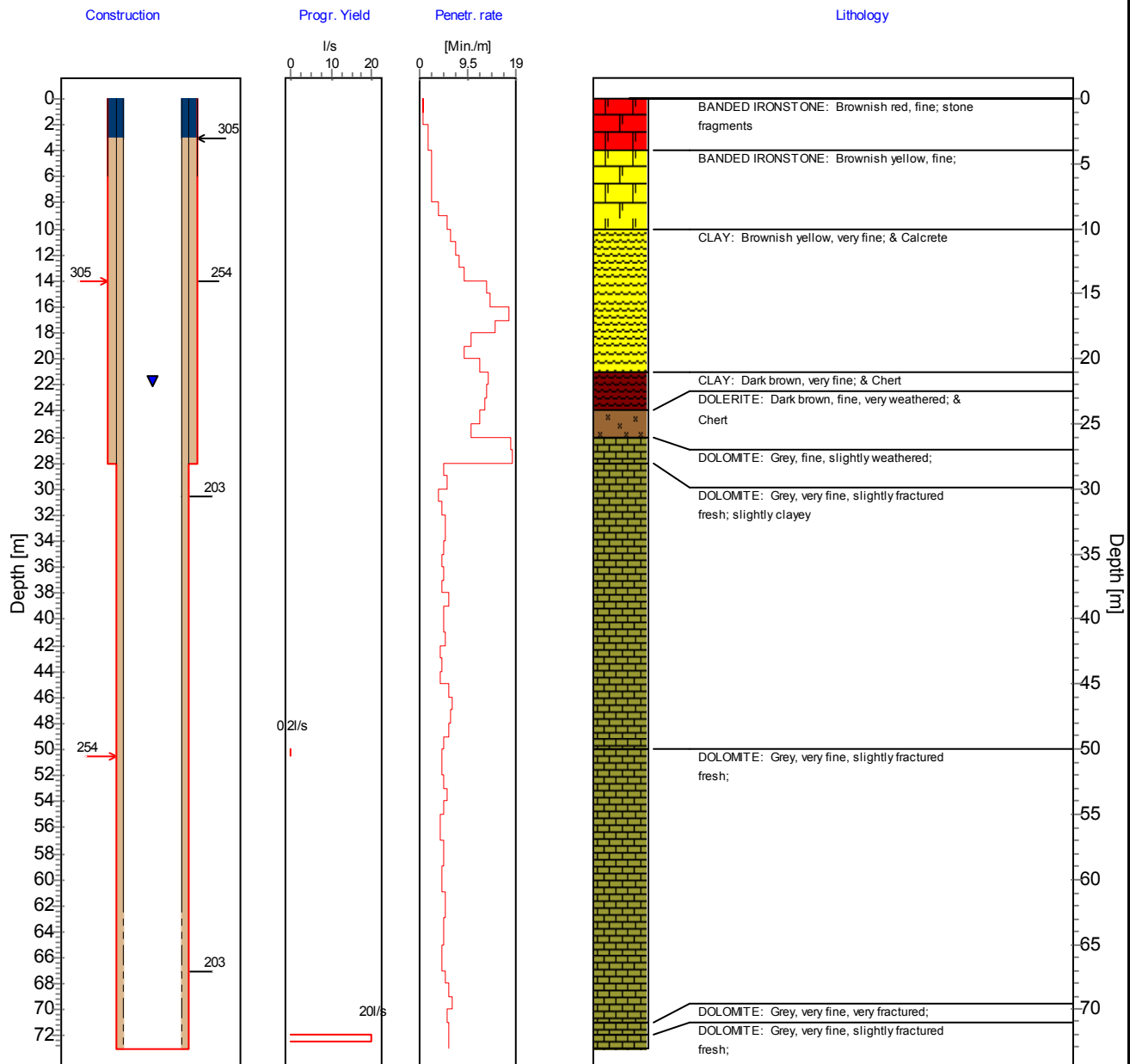
Region Descr.: TSANTSABANE LM

Latitude [°]: 28.263208	Reg./BB.:	Topo-set.:	Depth [m]: 71.05
Longitude [°]: 23.169540	G-Nr.:	Site status: Unused	Col. ht. [m]: 0.45
Altitude [m]: 1354.70		Site purp.: Production (water supply)	Diam. [mm]: 200
Coord. acc.: Accurate to within 1 units		Use applic.: Domestic - all purposes	Drain. reg.: D73A
Coord. meth.: Altimeter		Equipment: No equipment	Rep. inst.: GOLD

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartbeesthoek94 (WGS 84)

Construction and Geohydrological Legend

	Hole	165 →	Hole diameter [mm]		Sanitary seal
	Casing (plain / perforated, slotted)	← 152	Casing diameter [mm]		Gravel (> 2mm)
	Screen / Mesh Screen	▼	Waterlevel measured: 21/10/13		
	Piezometer	0:50 →	Piezometer (Nr. & Diameter [mm])		



COMMENT:



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Project No.: 11613568

MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823ACX0080 Number: SD2-23 Site type: Borehole

Distr./Farm No.: 579 Site Name/Descr.: VAALPOORT WELLFIELD

Latitude [°]:	28.263208	Alt. No. 1:		Diam. [mm]:	200	Water lev. [m]:	21.34
Longitude [°]:	23.169254	Alt. No. 2:		Depth [m]:	71.05	WL status:	Static
Altitude [m]:	1354.70	Rep. inst.: GOLD		Col. ht. [m]:	0.45	Date WL meas.:	20140121

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:		Pulley Diam. [mm]:	
Type of Inst.:		Depth to Intk. [m]:	
Manufacturer:			
Engine:		Power Rating [kW]	
Manufacturer:		Pulley Diam. [mm]:	
Type of Power:			

USE APPLICATION:

Site Status: Unused
Purpose: Production (water supply)
Consumer: Non-urban
Application: Domestic - all purposes

WATER CHEMISTRY:

Sample No.:	SD2-23	Date sampled:	20131102	Depth sampl. [m]:	58.50	Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters.		
pH:	7.78	Na:	14.7	Cl:	30.1	Langel.:	0.45	E.Coli:
EC: [mS/m]	65.7	K:	2.32	NO3 as N:	3.83	Aggr-Ind:	12.52	Faec. co:
TDS:	468	Si:	16.7	SO4:	16.7	Ion-bal:	-0.73	Total Co:
T. Alk.:	324	Al:	< 0.05	F:	0.188	CaCO3:	357.29	SPC:
Ca:	67.7	Fe:	< 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit ‡ Value exceeds minimim allowable limit				
Mg:	45.8	Mn:	< 0.05					

AQUIFER INFORMATION:

Depth to Top [m]	Depth to Bot. [m]	Yield[l/s]	Method meas.	Aquifer type	Comment
50.00	50.50	0.20	Notch (V- or U-notch)		
72.00	72.50	20.00	Notch (V- or U-notch)		

CASING DETAILS:

Depth to Top [m]	to Bot. [m]	Diam. [mm]	Material	Thickn. [mm]	Type of openings	Openings [mm]: Length Width	Hor. Dist.	Vert. Dist.
0.00	6.00	305	Steel		Plain casing			
0.00	28.00	254	Steel		Plain casing			
0.00	61.00	203	Steel		Plain casing			
61.00	73.00	203	Steel		Perforated or slotted			

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery [m] %	T [m²/d]	Storage	Comment
STEP TEST STEP 1	20131101	60	58.50	5.50	1.37				
STEP TEST STEP 2	20131101	60	58.50	10.01	2.99				
STEP TEST STEP 3	20131101	60	58.50	15.40	6.79				
STEP TEST STEP 4	20131101	60	58.50	20.06	12.22	100	7		
CONSTANT	20131101	1440	58.50	15.01	6.70	100	3	1338	0.05

RECOMMENDATIONS:

Prior.	Rec. equipm.	Depth to intk. [m]	Type of power	Duty cyc. [hrs]	Disch. rate [l/s]	Water quality	Dyn. water level [m]	Crit. water level [m]
1	Mono-type pump	54.00	Electric motor	24	10.00	CLASS 1	26.00	40.00

Note: 1. Production borehole
2. Install water level monitoring facility in borehole



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Project No.: 11613568

PUMPING TEST REPORT

Date compiled: 31/03/2014

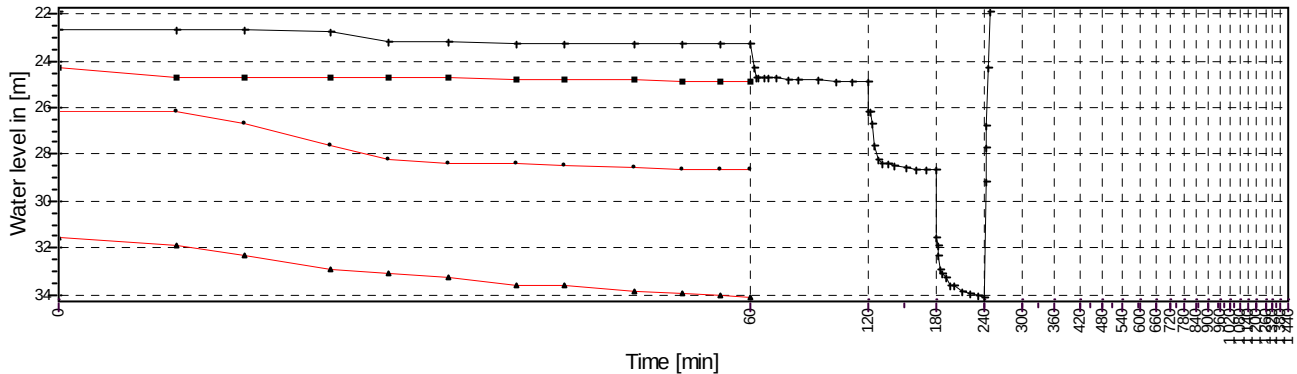
BASIC SITE INFORMATION: Site Identifier: 2823ACX0080 Number: SD2-23 Site type: Borehole

Distr./Farm No.: 579 Site Name/Des.: VAALPOORT

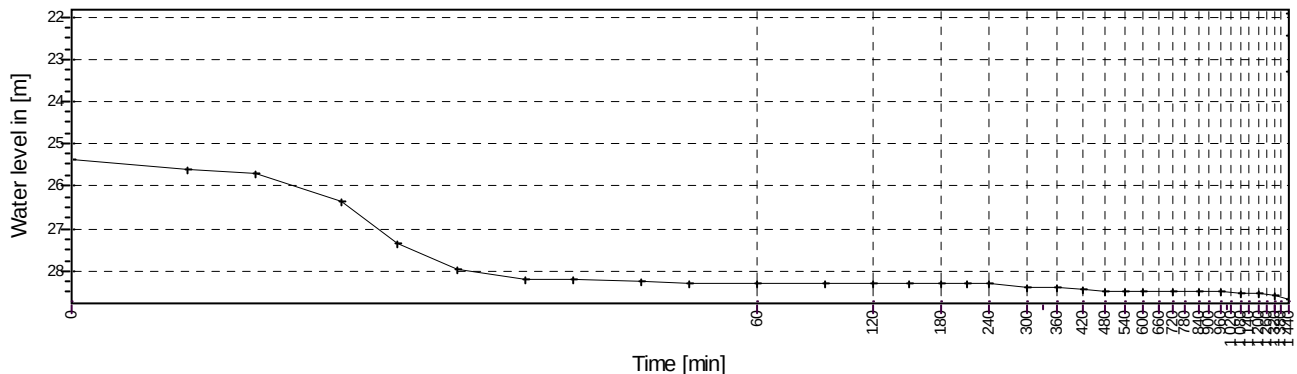
Latitude [°]	28.263208	Alt. No. 1:		Diam. [mm]:	200	Water lev. [m]:	21.34
Longitude [°]	23.169254	Alt. No. 2:		Depth [m]:	71.05	Piezometer:	0
Altitude [m]:	1354.70	Rep. inst.: GOLD		Col. ht. [mm]:	0.45	Date WL meas.:	20140121

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



Constant Rate Test



PUMPING TEST:		Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m²/d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	58.50	20131101	0600	20131101	1007			
GOLD	Constant rate test	58.50	20131101	1140	20131102	1143			

TESTING DETAILS:		Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	Rec. Dur. [min]	Trans. [m²/d]	Perm. [m/d]	Storat.	Q/st
Description	Time start.					%					
STEP TEST STEP 1	0600	60	58.50	5.50	1.37						4.01
STEP TEST STEP 2	0700	60	58.50	10.01	2.99						3.35
STEP TEST STEP 3	0800	60	58.50	15.40	6.79						2.27
STEP TEST STEP 4	0900	60	58.50	20.06	12.22	100	7				1.64
CONSTANT	1140	1440	58.50	15.01	6.70	100	3				2.24



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Project No.: 11613568

Borehole Construction and Geological Log

Date compiled: 11/04/2014

BASIC SITE INFORMATION: Site Identifier: 2823ACX0082 Number: SD2-26 Site type: Borehole

Distr./Farm No.: 579

Site Name/Des.: VAALPOORT

Region Type: Water supply authority

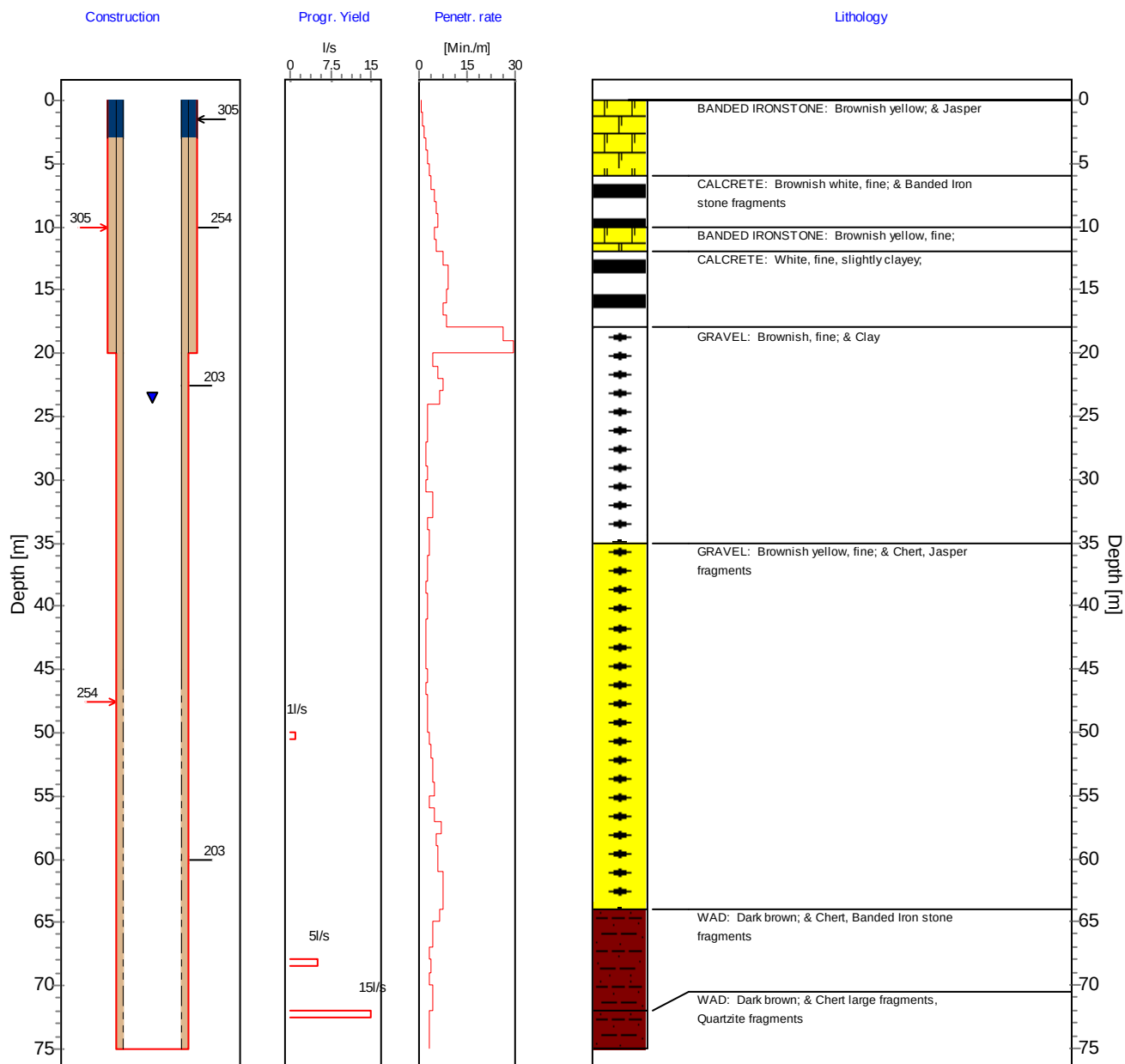
Region Descr.: TSANTSABANE LM

Latitude [°]: 28.274140	Reg./BB.:	Topo-set.:	Depth [m]: 71.64
Longitude [°]: 23.174700	G-Nr.:	Site status: Unused	Col. ht. [m]: 0.50
Altitude [m]: 1356.30		Site purp.: Production (water supply)	Diam. [mm]: 200
Coord. acc.: Accurate to within 1 unit		Use applic.: Domestic - all purposes	Drain. reg.: D73A
Coord. meth.: Altimeter		Equipment: No equipment	Rep. inst.: GOLD

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Construction and Geohydrological Legend

	Hole	165 →	Hole diameter [mm]		Sanitary seal
	Casing (plain / perforated, slotted)	← 152	Casing diameter [mm]		Gravel (> 2mm)
	Screen / Mesh Screen	▼	Waterlevel measured: 26/10/13		
	Piezometer	0:50 →	Piezometer (Nr. & Diameter [mm])		



COMMENT:



Golder Associates Africa, Pretoria
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Project No.: 11613568

MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823ACX0082 Number: SD2-26 Site type: Borehole

Distr./Farm No.: 579 Site Name/Descr.: VAALPOORT WELLFIELD

Latitude [°]:	28.274140	Alt. No. 1:		Diam. [mm]:	200	Water lev. [m]:	22.73
Longitude [°]:	23.174700	Alt. No. 2:		Depth [m]:	71.64	WL status:	Static
Altitude [m]:	1356.30	Rep. inst.: GOLD		Col. ht. [m]:	0.50	Date WL meas.:	20140121

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:

Type of Inst.: Pulley Diam. [mm]:
Manufacturer: Depth to Intk. [m]:

Engine:

Manufacturer: Power Rating [kW]
Type of Power: Pulley Diam. [mm]:

USE APPLICATION:

Site Status: Unused
Purpose: Production (water supply)
Consumer: Non-urban
Application: Domestic - all purposes

WATER CHEMISTRY:

Sample No.:	SD2-26	Date sampled:	20131110	Depth sampl. [m]:	64.50	Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters.		
pH:	7.57	Na:	15.9	Cl:	26.3	Langel.:	0.21	E.Coli:
EC: [mS/m]	58.5	K:	2.85	NO3 as N:	2.50769	Aggr-Ind:	12.25	Faec. co:
TDS:	372	Si:		SO4:	15.4	Ion-bal:	0.94	Total Co:
T. Alk.:	286	Al:	< 0.05	F:	0.128	CaCO3:	316.79	SPC:
Ca:	66.8	Fe:	< 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit ‡ Value exceeds minimum allowable limit				
Mg:	36.5	Mn:	< 0.05					

AQUIFER INFORMATION:

Depth to Top [m]	Depth to Bot. [m]	Yield[l/s]	Method meas.	Aquifer type	Comment
50.00	50.50	1.00	Notch (V- or U-notch)		
68.00	68.50	5.00	Notch (V- or U-notch)		
72.00	72.50	15.00	Notch (V- or U-notch)		

CASING DETAILS:

Depth to Top [m]	to Bot. [m]	Diam. [mm]	Material	Thickn. [mm]	Type of openings	Openings [mm]: Length Width	Hor. Dist.	Vert. Dist.
0.00	3.00	305	Steel		Plain casing			
0.00	20.00	254	Steel		Plain casing			
0.00	45.00	203	Steel		Plain casing			
45.00	75.00	203	Steel		Perforated or slotted			

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery [m] %	T [m²/d]	Storage	Comment
STEP TEST STEP 1	20131107	60	64.50	5.37	1.39				
STEP TEST STEP 2	20131107	60	64.50	10.55	4.37				
STEP TEST STEP 3	20131107	60	64.50	17.40	9.50				
STEP TEST STEP 4	20131107	60	64.50	25.04	16.68	100	10		
CONSTANT	20131107	4320	64.50	20.07	13.56	100	720	1500	0.05

RECOMMENDATIONS:

Prior.	Rec. equipm.	Depth to intk. [m]	Type of power	Duty cyc. [hrs]	Disch. rate [l/s]	Water quality	Dyn. water level [m]	Crit. water level [m]
1	Mono-type pump	54.00	Electric motor	24	12.00	CLASS 0	31.00	42.00

Note: 1. Production borehole
2. Install water level monitoring facility in borehole



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Project No.: 11613568

PUMPING TEST REPORT

Date compiled: 31/03/2014

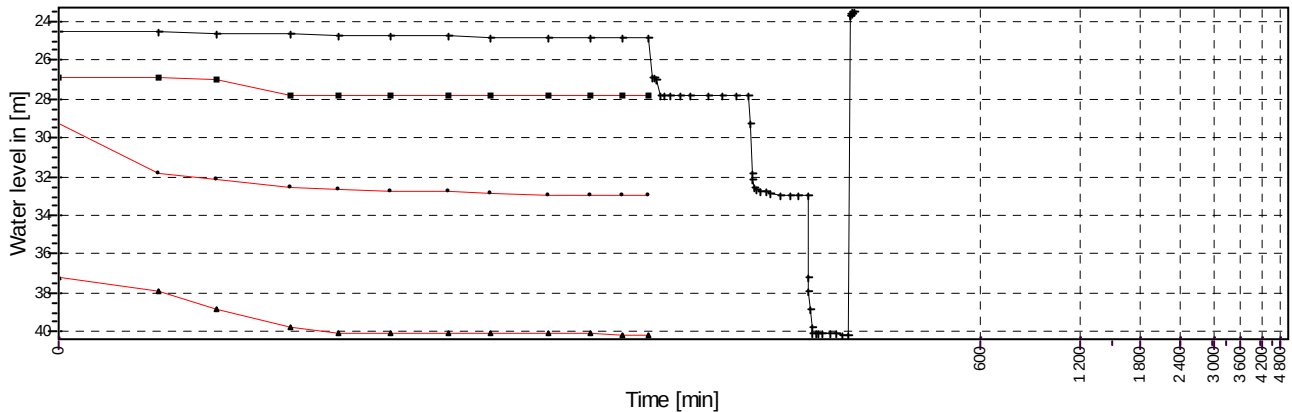
BASIC SITE INFORMATION: Site Identifier: 2823ACX0082 Number: SD2-26 Site type: Borehole

Distr./Farm No.: 579 Site Name/Des.: VAALPOORT

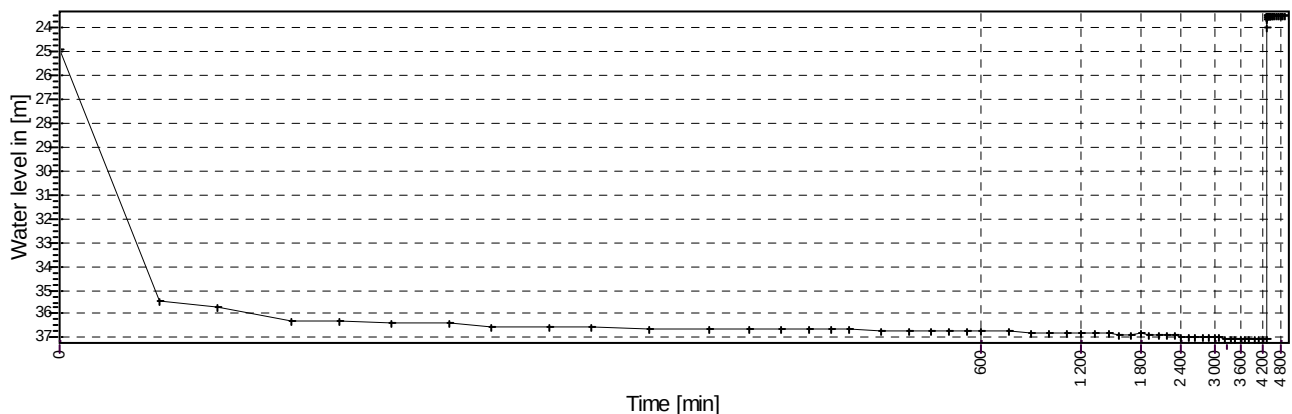
Latitude [°]	28.274140	Alt. No. 1:		Diam. [mm]:	200	Water lev. [m]:	22.73
Longitude [°]	23.174700	Alt. No. 2:		Depth [m]:	71.64	Piezometer:	0
Altitude [m]:	1356.30	Rep. inst.: GOLD		Col. ht. [mm]:	0.50	Date WL meas.:	20140121

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



Constant Rate Test



PUMPING TEST:		Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
Rep. Inst.	Meth. tested								
GOLD	Step test	64.50	20131107	1000	20131107	1410			
GOLD	Constant rate test	64.50	20131107	1530	20131111	0330			

TESTING DETAILS:		Durat. [min]	Depth to intk. [m]	Disch. rate [l/s]	Drawd. [m]	Recov. [m]	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
Description	Time start.					%					
STEP TEST STEP 1	1000	60	64.50	5.37	1.39						3.86
STEP TEST STEP 2	1100	60	64.50	10.55	4.37						2.41
STEP TEST STEP 3	1200	60	64.50	17.40	9.50						1.83
STEP TEST STEP 4	1300	60	64.50	25.04	16.68	100	10				1.50
CONSTANT	1530	4320	64.50	20.07	13.56	100	720				1.48



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Project No.: 11613568

LOEKIE VAN DER MERWER - BASIC SITE INFORMATION

SITE LOCATION										GEOHYDROLOGY				MANAGEMENT RECOMMEND.			
Site Identifier:	Number:	District	Site name/Description	Site type:	Latitude [°]	Longitude [°]	Altitude [m]	Col. ht. [m]	Diam. [mm]	Depth [m]	Water l. [m]	Yield[l/s]	Rec. abs.[l/s]	Depth to Intk. [m]	Dis. rate[l/s]	Duty c. [hrs/d]	Daily abs. [m³/d]
2823ACX0076	SD2-GAA127	579	VAALPOORT	B	28.27680967	23.164670001	1349.64	0.26	165		15.89						
2823ACX0077	SD2-GAA128	579	VAALPOORT	B	28.27636967	23.151683001	1348.07		165								
2823ACX0078	SD2-GAA129	579	VAALPOORT	B	28.27752967	23.155460001	1345.67	1.77	165		10.33						
2823ACX0090	SD2-GAA130	452	GOEDGEDACHT	B	28.25722967	23.202150001	1373.60		165								
2823ACX0091	SD2-GAA131	452	GOEDGEDACHT	B	28.25863967	23.213760001	1378.80	0.43	165		46.04						
2823ACX0092	SD2-GAA132	452	GOEDGEDACHT	B	28.26803967	23.210920001	1377.68	0.46	165		41.73						
SUMMARY:										Maximum:				46.04			
										Minimum:				10.33			
										Sum:							
Nr. of sites: 6										Average:				28.50			

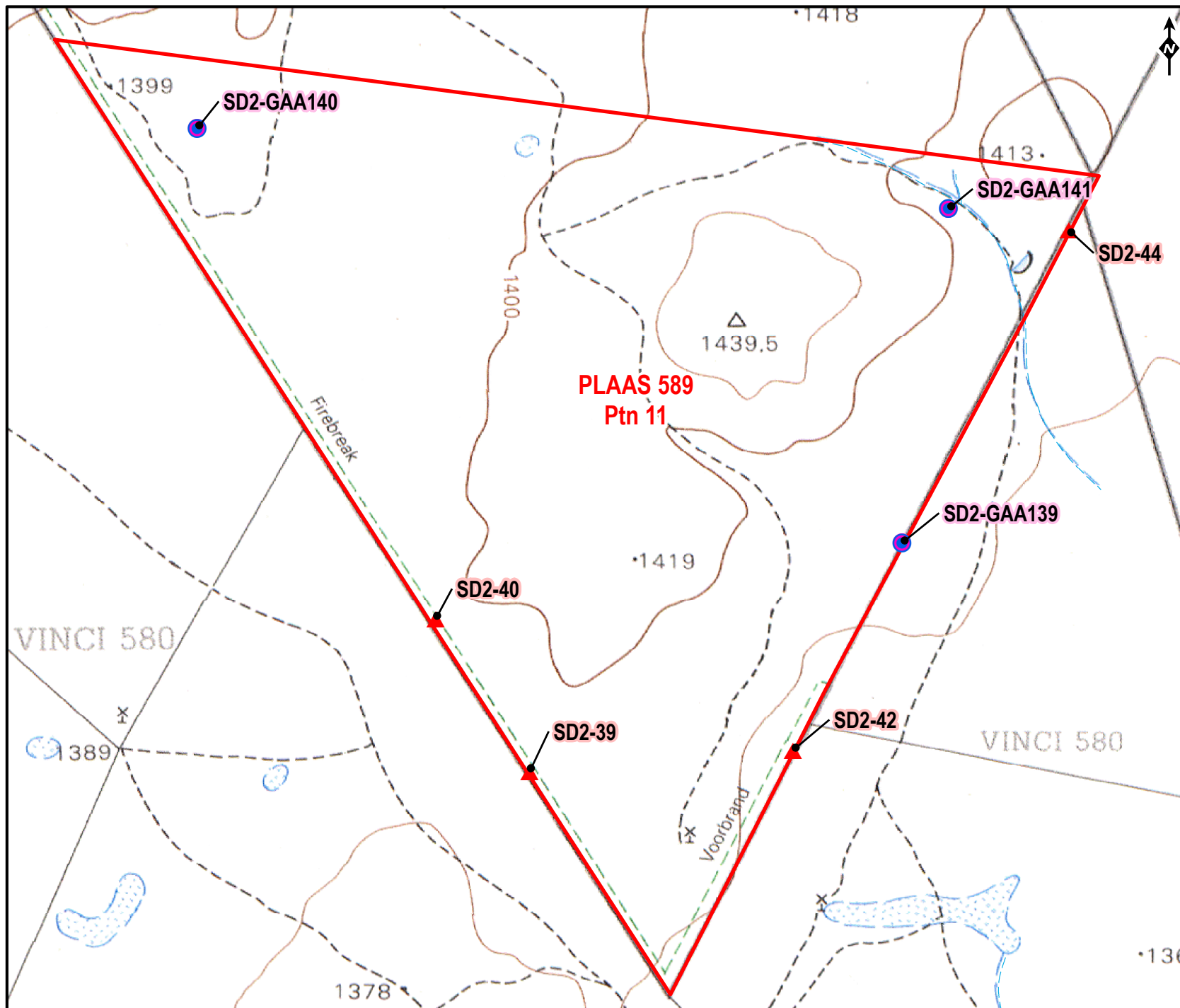
NOTE:
 "Yield" represents cumulative blow yield
 The recommended abstraction ("Rec. abs.")
 is based on a 24 hour duty cycle
 (based on test pumping result)



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 Project No.: 11613568

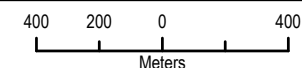


2.19 Lucas Kotze



LEGEND

- ▲ Newly drilled borehole
- Existing borehole tested
- ▭ Farm 589 Ptn 11
- Rivers - Non perennial



RESOURCES/NOTES

Coordinate System: GCS WGS 1984
Datum: WGS 1984

PROJECT

GW ASSESSMENT VGG SCHEME

TITLE

**FARM 589 PTN 11
LUCAS KOTZE**

PROJECT No. 11613568	REV 0
SCALE 1:24 000	A4
GIS MB	15/07/2014
CHECK DB	15/07/2014
REVIEW FW	15/07/2014



Borehole Construction and Geological Log

Date compiled: 28/03/2014

BASIC SITE INFORMATION: Site Identifier: 2823AAX0035 Number: SD2-39 Site type: Borehole

Distr./Farm No.: 444

Site Name/Des.: METSEATEN

Region Type: Water supply authority

Region Descr.: TSANTSABANE LM

Latitude [°]: 28.236360

Reg./BB.:

Topo-set.:

Depth [m]: 69.49

Longitude [°]: 23.149010

G-Nr.:

Site status: Unused

Col. ht. [m]: 0.44

Altitude [m]: 1386.70

Site purp.: Production (water supply)

Diam. [mm]: 165

Coord. acc.: Accurate to within 1 unit

Use applic.:

Drain. reg.: D73A

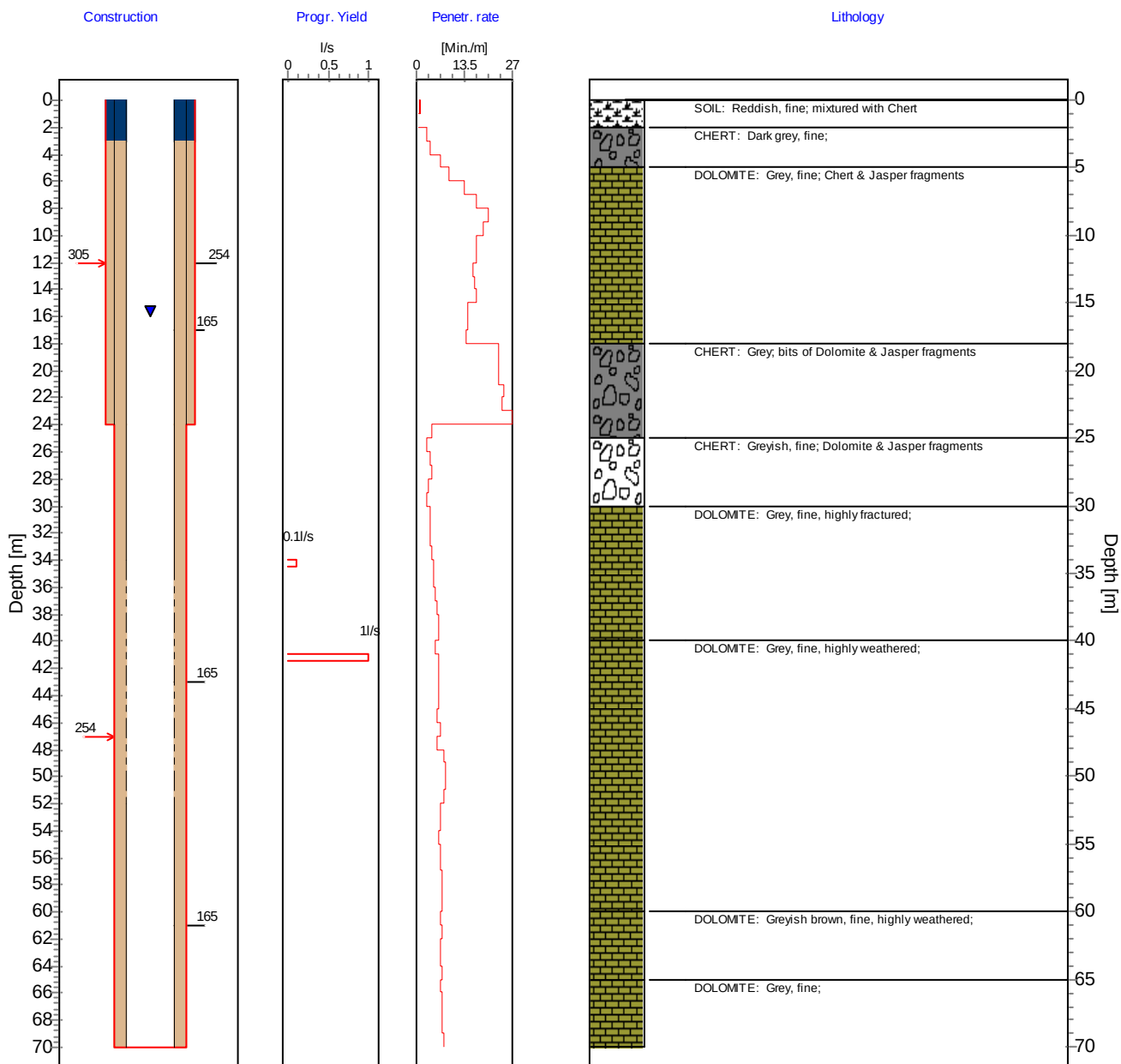
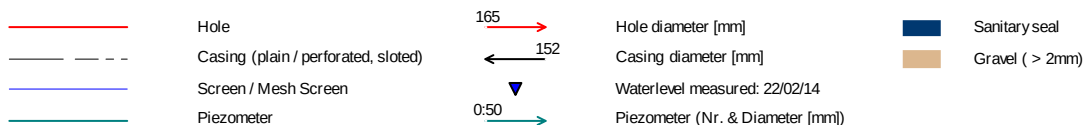
Coord. meth.: Altimeter

Equipment: No equipment

Rep. inst.: GOLD

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Construction and Geohydrological Legend



COMMENT:



Golder Associates Africa, Pretoria
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Project No.: 11613568

MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823AAX0035 Number: SD2-39 Site type: Borehole

Distr./Farm No.: 444 Site Name/Descr.: METSEATEN

Latitude [°]:	28.236360	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	15.96
Longitude [°]:	23.149010	Alt. No. 2:		Depth [m]:	69.49	WL status:	Static
Altitude [m]:	1386.70	Rep. inst.: GOLD		Col. ht. [m]:	0.44	Date WL meas.:	20140311

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:	
Type of Inst.:	Pulley Diam. [mm]:
Manufacturer:	Depth to Intk. [m]:
Engine:	
Manufacturer:	Power Rating [kW]
Type of Power:	Pulley Diam. [mm]:

USE APPLICATION:

Site Status: Unused
Purpose: Production (water supply)
Consumer: Non-urban
Application:

WATER CHEMISTRY:

Sample No.:	SD2-39	Date sampled:	20140311	Depth sampl. [m]:	64.80	Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters:		
pH:	7.2	Na:	35	Cl:	60.8	Langel.:	0.08	E.Coli:
EC: [mS/m]	98.6 †	K:	6.95	NO3 as N:	11.6 †	Aggr-Ind:	12.19	Faec. co:
TDS:	790 †	Si:		SO4:	42	Ion-bal:	3.34	Total Co:
T. Alk.:	436	Al:	< 0.05	F:	0.174	CaCO3:	564.36	SPC:
Ca:	89.7	Fe:	< 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit ¡ Value exceeds minimum allowable limit				
Mg:	82.8 †	Mn:	0.21 †					

AQUIFER INFORMATION:

Depth to Top [m]	Depth to Bot. [m]	Yield[l/s]	Method meas.	Aquifer type	Comment
34.00	34.50	0.10	Notch (V- or U-notch)		
41.00	41.50	1.00	Notch (V- or U-notch)		

CASING DETAILS:

Depth to Top [m]	to Bot. [m]	Diam. [mm]	Material	Thickn. [mm]	Type of openings	Openings [mm]: Length Width	Hor. Dist.	Vert. Dist.
0.00	24.00	254	Steel		Plain casing			
0.00	34.00	165	Steel		Plain casing			
34.00	52.00	165	Steel		Perforated or slotted			
52.00	70.00	165	Steel		Plain casing			

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery [m] %	[min]	T [m²/d]	Storage	Comment
STEP TEST STEP 1	20140311	60	64.80	0.52	4.81					
STEP TEST STEP 2	20140311	60	64.80	0.82	4.99					
STEP TEST STEP 3	20140311	60	64.80	1.22	16.60					
STEP TEST STEP 4	20140311	40	64.80	2.10	47.10	100	90			
PUMP INLET	20140311	4	64.80	1.74	48.40					



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Project No.: 11613568

PUMPING TEST REPORT

Date compiled: 28/03/2014

BASIC SITE INFORMATION:

Site Identifier: 2823AAX0035 Number: SD2-39

Site type: Borehole

Distr./Farm No.: 444

Site Name/Des.: METSEATEN

Latitude [°] 28.236360
Longitude [°] 23.149010
Altitude [m]: 1386.70

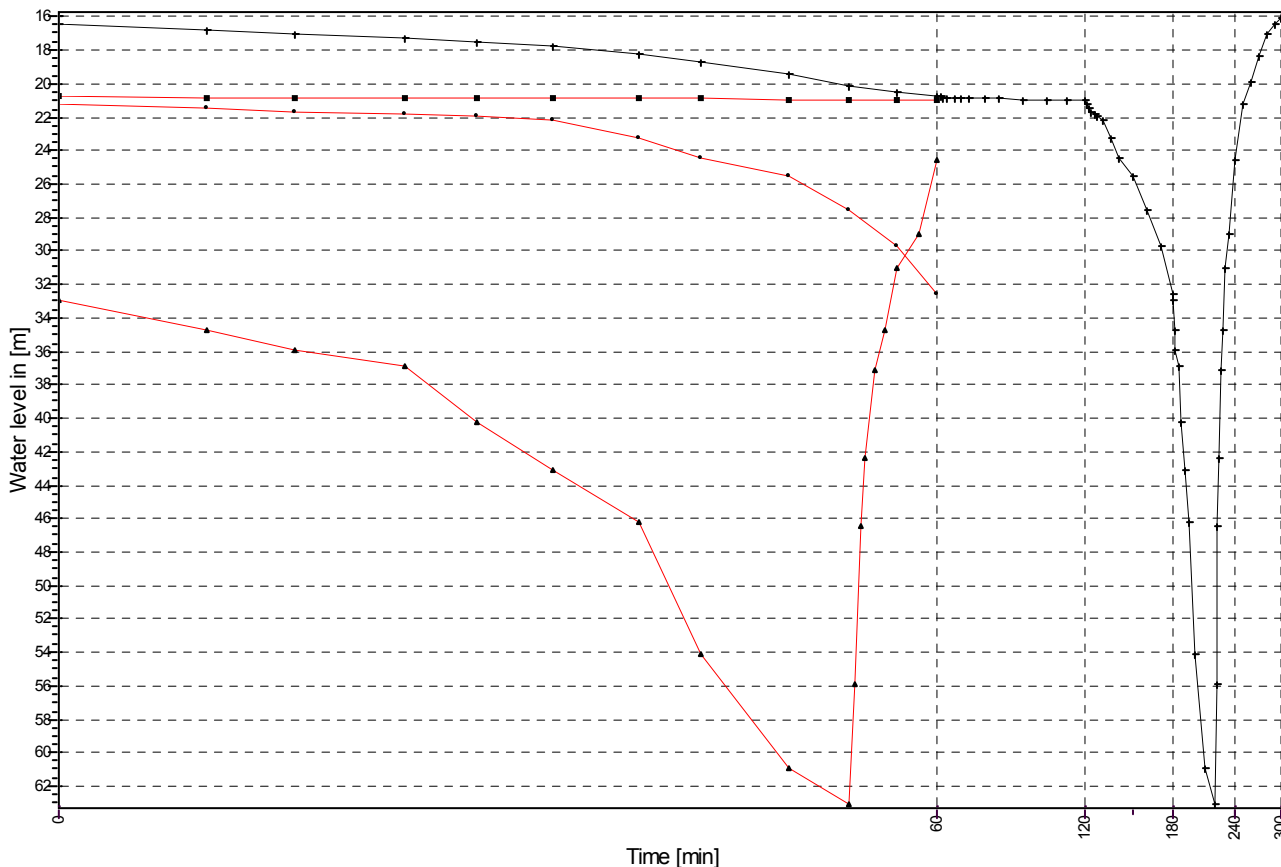
Alt. No. 1:
Alt. No. 2:
Rep. inst.: GOLD

Diam. [mm]: 165
Depth [m]: 69.49
Col. ht. [mm]: 0.44

Water lev. [m]: 15.96
Piezometer: 0
Date WL meas.: 20140311

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	64.80	20140311	0730	20140311	1240			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	0730	60	64.80	0.52	4.81							0.11
STEP TEST STEP 2	0830	60	64.80	0.82	4.99							0.16
STEP TEST STEP 3	0930	60	64.80	1.22	16.60							0.07
STEP TEST STEP 4	1030	40	64.80	2.10	47.10		100	90				0.04
PUMP INLET	1240	4	64.80	1.74	48.40							0.04



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Project No.: 11613568

Borehole Construction and Geological Log

Date compiled: 13/05/2014

BASIC SITE INFORMATION: Site Identifier: 2823AAX0036 Number: SD2-40 Site type: Borehole

Distr./Farm No.: 444

Site Name/Des.: METSEATEN

Region Type: Water supply authority

Region Descr.: TSANTSABANE LM

Latitude [°]: 28.230200	Reg./BB.:	Topo-set.:	Depth [m]: 60.00
Longitude [°]: 23.145220	G-Nr.:	Site status: Dry	Col. ht. [m]: 0.50
Altitude [m]: 1392.31		Site purp.:	Diam. [mm]: 203
Coord. acc.: Accurate to within 1 unit		Use applic.:	Drain. reg.: D73A
Coord. meth.: Altimeter		Equipment: No equipment	Rep. inst.: GOLD

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

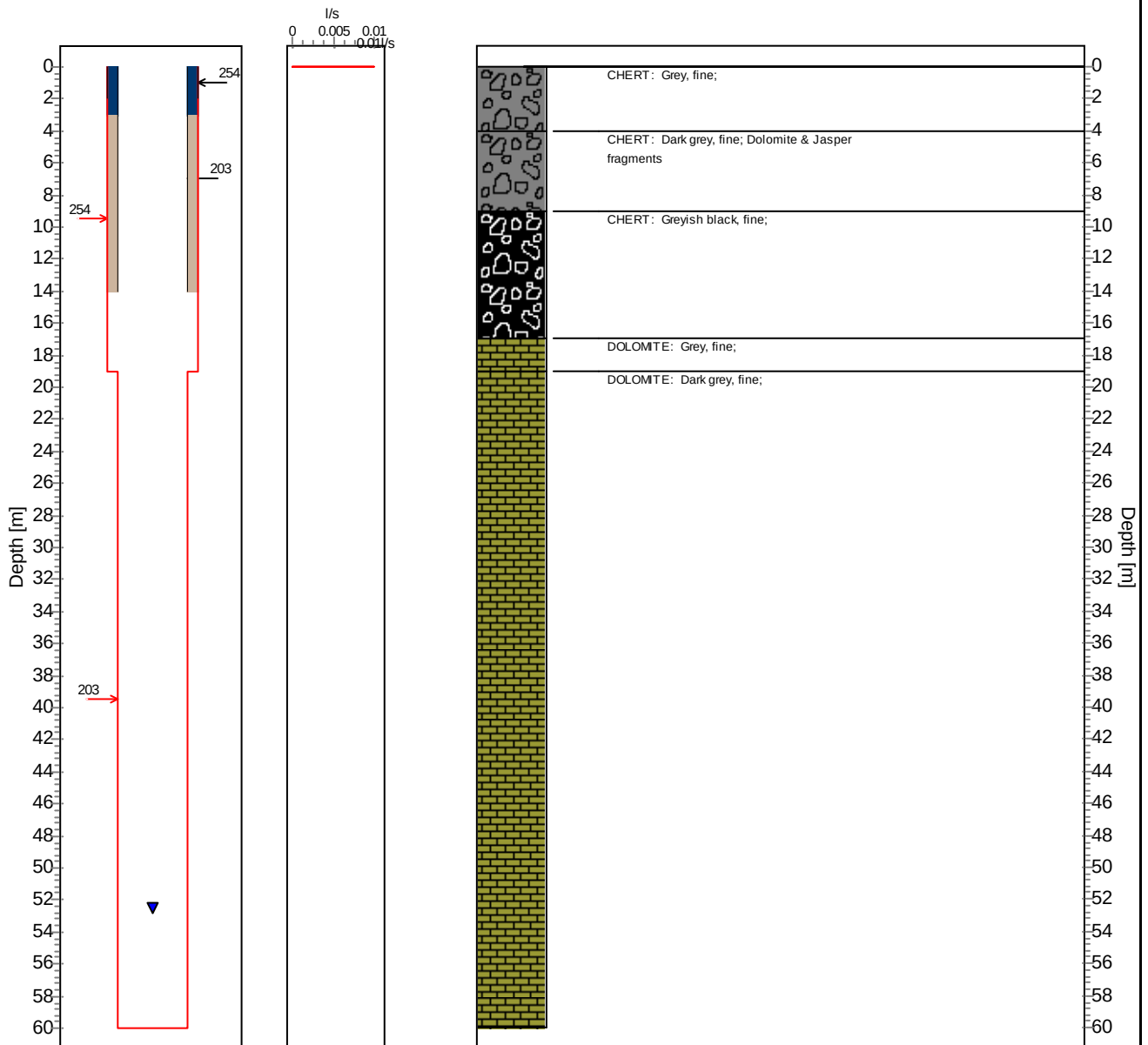
Construction and Geohydrological Legend

	Hole	165 →	Hole diameter [mm]		Sanitary seal
	Casing (plain / perforated, slotted)	← 152	Casing diameter [mm]		Drill cuttings
	Screen / Mesh Screen	▼	Waterlevel measured: 24/02/14		
	Piezometer	0:50 →	Piezometer (Nr. & Diameter [mm])		

Construction

Progr. Yield

Lithology



COMMENT:



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Project No.: 1163568

Borehole Construction and Geological Log

Date compiled: 27/03/2014

BASIC SITE INFORMATION: Site Identifier: 2823AAX0038 Number: SD2-42 Site type: Borehole

Distr./Farm No.: 444

Site Name/Des.: METSEATEN

Region Type: Water supply authority

Region Descr.: TSANTSABANE LM

Latitude [°]: 28.235490

Reg./BB.:

Topo-set:

Depth [m]: 39.00

Longitude [°]: 23.159640

G-Nr.:

Site status: Unused

Col. ht. [m]:

Altitude [m]: 1375.80

Site purp.: Production (water supply)

Diam. [mm]: 165

Coord. acc.: Accurate to within 1 unit

Use applic.: Domestic - all purposes

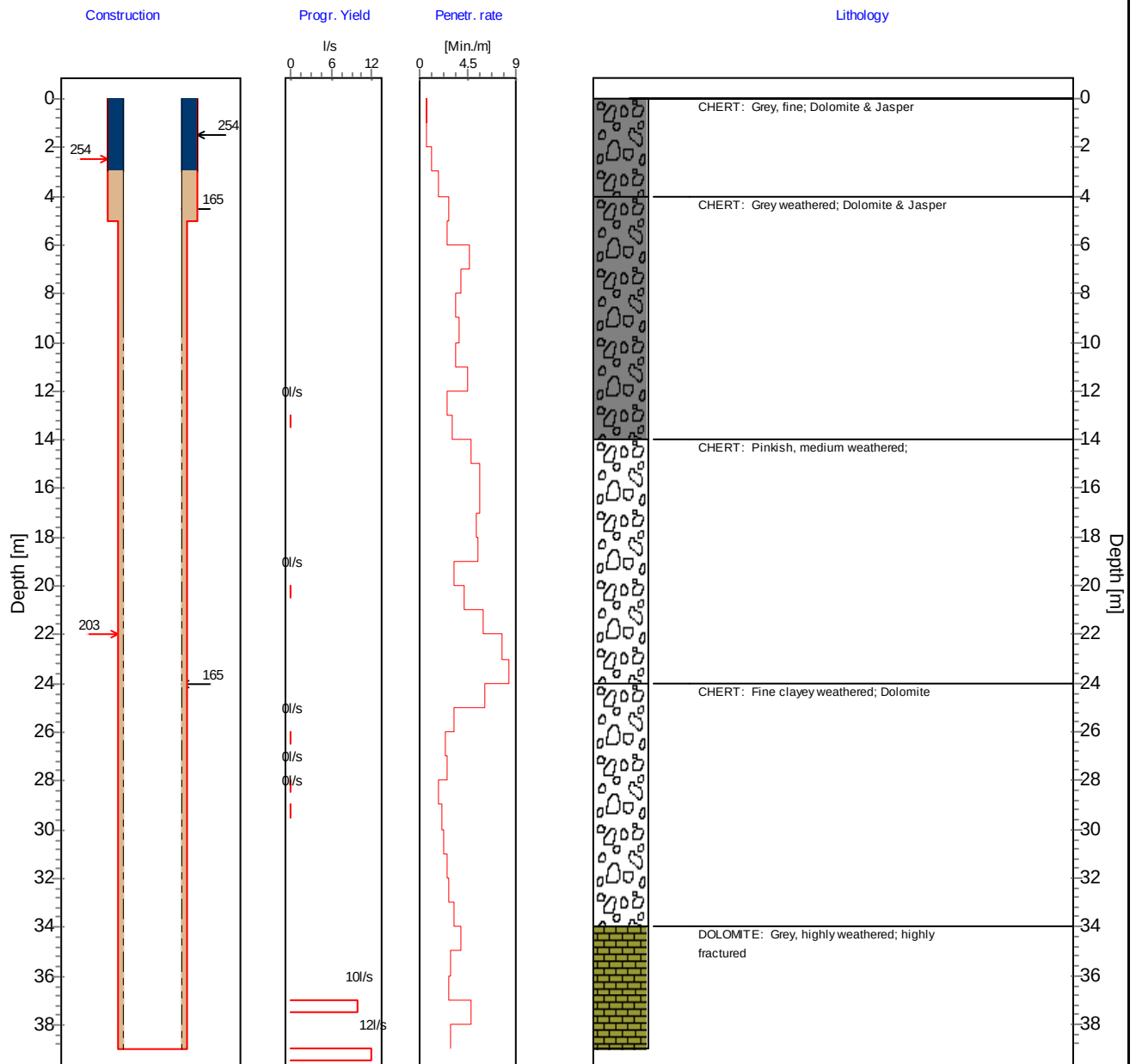
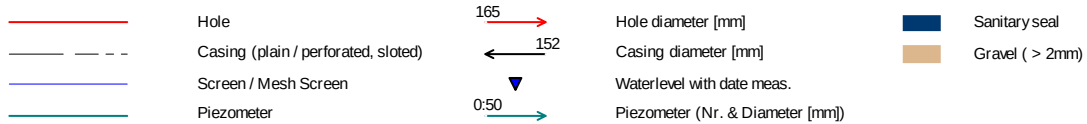
Drain. reg.: D73A

Coord. meth.: Altimeter

Equipment: No equipment

Rep. inst.: GOLD

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Construction and Geohydrological Legend

COMMENT:



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Project No.: 13615706

MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823AAX0038 Number: SD2-42 Site type: Borehole

Distr./Farm No.: 444 Site Name/Descr.: METSEATEN WELLFIELD

Latitude [°]:	28.235490	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	5.95
Longitude [°]:	23.159640	Alt. No. 2:		Depth [m]:	39.00	WL status:	Static
Altitude [m]:	1375.80	Rep. inst.:	GOLD	Col. ht. [m]:	0.50	Date WL meas.:	20140312

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:

Type of Inst.: Pulley Diam. [mm]:
Manufacturer: Depth to Intk. [m]:

Engine:

Manufacturer: Power Rating [kW]
Type of Power: Pulley Diam. [mm]:

USE APPLICATION:

Site Status: Unused
Purpose: Production (water supply)
Consumer: Non-urban
Application: Domestic - all purposes

WATER CHEMISTRY:

Sample No.:	SD2-42	Date sampled:	20140313	Depth sampl. [m]:	33.34	Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters:		
pH:	7.2	Na:	11.3	Cl:	26	Langel.:	0.11	E.Coli:
EC: [mS/m]	79.2 †	K:	2.27	NO3 as N:	7.26	Aggr-Ind:	12.19	Faec. co:
TDS:	572 †	Si:		SO4:	21.5	Ion-bal:	-0.86	Total Co:
T. Alk.:	409	Al:	< 0.05	F:	0.251	CaCO3:	458.67	SPC:
Ca:	96.3	Fe:	< 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit ‡ Value exceeds minimum allowable limit				
Mg:	53.1	Mn:	0.13 †					

AQUIFER INFORMATION:

Depth to Top [m]	Depth to Bot. [m]	Yield[l/s]	Method meas.	Aquifer type	Comment
13.00	13.50	0.00	Notch (V- or U-notch)		
20.00	20.50	0.00	Notch (V- or U-notch)		
26.00	26.50	0.00	Notch (V- or U-notch)		
28.00	28.50	0.00	Notch (V- or U-notch)		
29.00	29.50	0.00	Notch (V- or U-notch)		
37.00	37.50	10.00	Notch (V- or U-notch)		
39.00	39.50	12.00	Notch (V- or U-notch)		

CASING DETAILS:

Depth to Top [m]	to Bot. [m]	Diam. [mm]	Material	Thickn. [mm]	Type of openings	Openings [mm]: Length Width	Hor. Dist.	Vert. Dist.
0.00	3.00	254	Steel		Plain casing			
0.00	9.00	165	Steel		Plain casing			
9.00	39.00	165	Steel		Perforated or slotted			

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery [m] %	T [m²/d]	Storage	Comment
STEP TEST STEP 1	20140312	60	33.34	6.03	0.51				
STEP TEST STEP 2	20140312	60	33.34	10.02	1.09				
STEP TEST STEP 3	20140312	60	33.34	15.52	2.23				
STEP TEST STEP 4	20140312	60	33.34	20.58	3.35	100	60		
CONSTANT	20140313	4320	33.34	20.04	4.62	100	360	269	0.05

RECOMMENDATIONS:

Prior.	Rec. equipm.	Depth to intk. [m]	Type of power	Duty cyc. [hrs]	Disch. rate [l/s]	Water quality	Dyn. water level [m]	Crit. water level [m]
1	Mono-type pump	24.00	Electric motor	24	5.00	CLASS 1	6.36	20.00

Note: 1. Production borehole
2. Install water level monitoring facility in borehole



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Project No.: 11613568

PUMPING TEST REPORT

Date compiled: 17/04/2014

BASIC SITE INFORMATION:

Site Identifier: 2823AAX0038 Number: SD2-42

Site type: Borehole

Distr./Farm No.: 444

Site Name/Des.: METSEATEN

Latitude [°]: 28.235490

Alt. No. 1:

Diam. [mm]: 165

Water lev. [m]: 5.95

Longitude [°]: 23.159640

Alt. No. 2:

Depth [m]: 39.00

Piezometer: 0

Altitude [m]: 1375.80

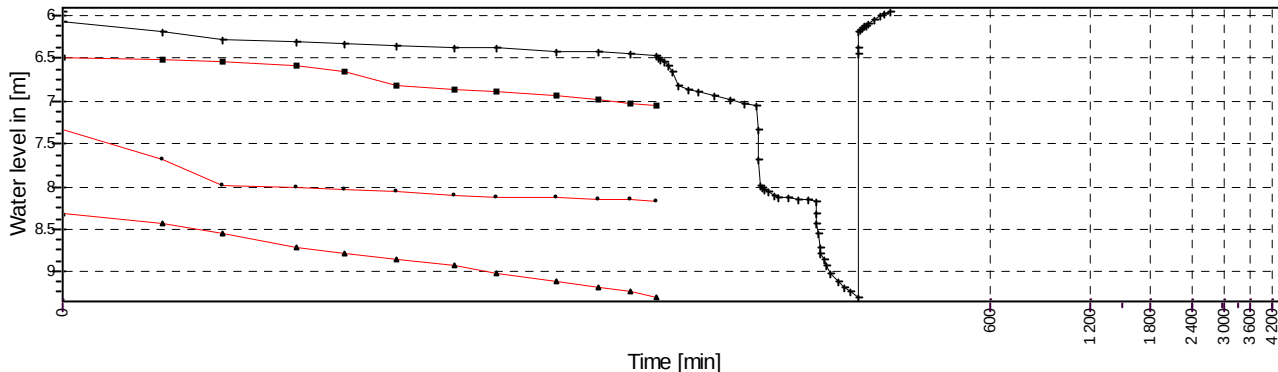
Rep. inst.: GOLD

Col. ht. [mm]: 0.50

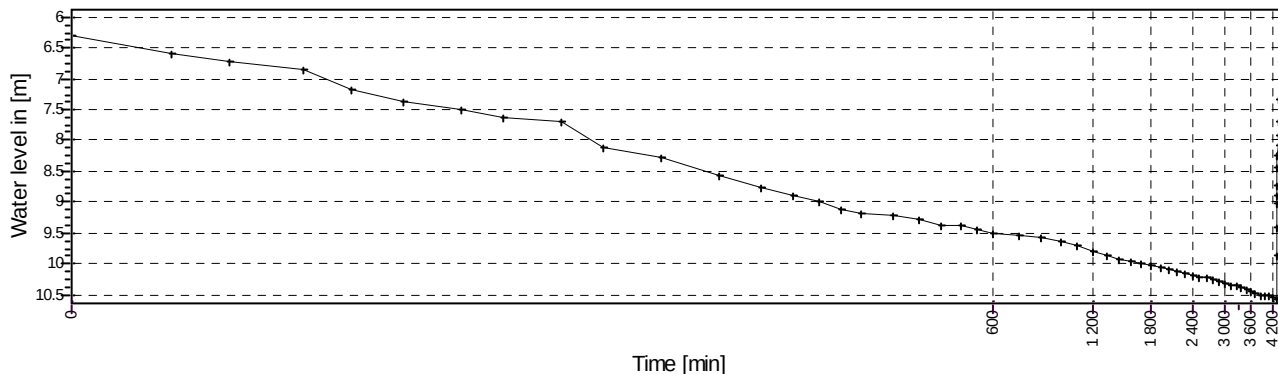
Date WL meas.: 20140312

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



Constant Rate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	33.34	20140312	1220	20140312	1720			
GOLD	Constant rate test	33.34	20140313	0900	20140316	1500			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	1220	60	33.34	6.03	0.51							11.82
STEP TEST STEP 2	1320	60	33.34	10.02	1.09							9.19
STEP TEST STEP 3	1420	60	33.34	15.52	2.23							6.96
STEP TEST STEP 4	1520	60	33.34	20.58	3.35	100		60				6.14
CONSTANT	0900	4320	33.34	20.04	4.62	100		360				4.34



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Borehole Construction and Geological Log

Date compiled: 13/05/2014

BASIC SITE INFORMATION: Site Identifier: 2823AAX0040 Number: SD2-44 Site type: Borehole

Distr./Farm No.: 444

Site Name/Des.: METSEATEN

Region Type: Water supply authority

Region Descr.: TSANTSABANE LM

Latitude [°]: 28.214480	Reg./BB.:	Topo-set.:	Depth [m]: 60.00
Longitude [°]: 23.170770	G-Nr.:	Site status: Dry	Col. ht. [m]:
Altitude [m]: 1397.80		Site purp.:	Diam. [mm]: 203
Coord. acc.: Accurate to within 1 unit		Use applic.:	Drain. reg.: D73A
Coord. meth.: Altimeter		Equipment: No equipment	Rep. inst.: GOLD

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

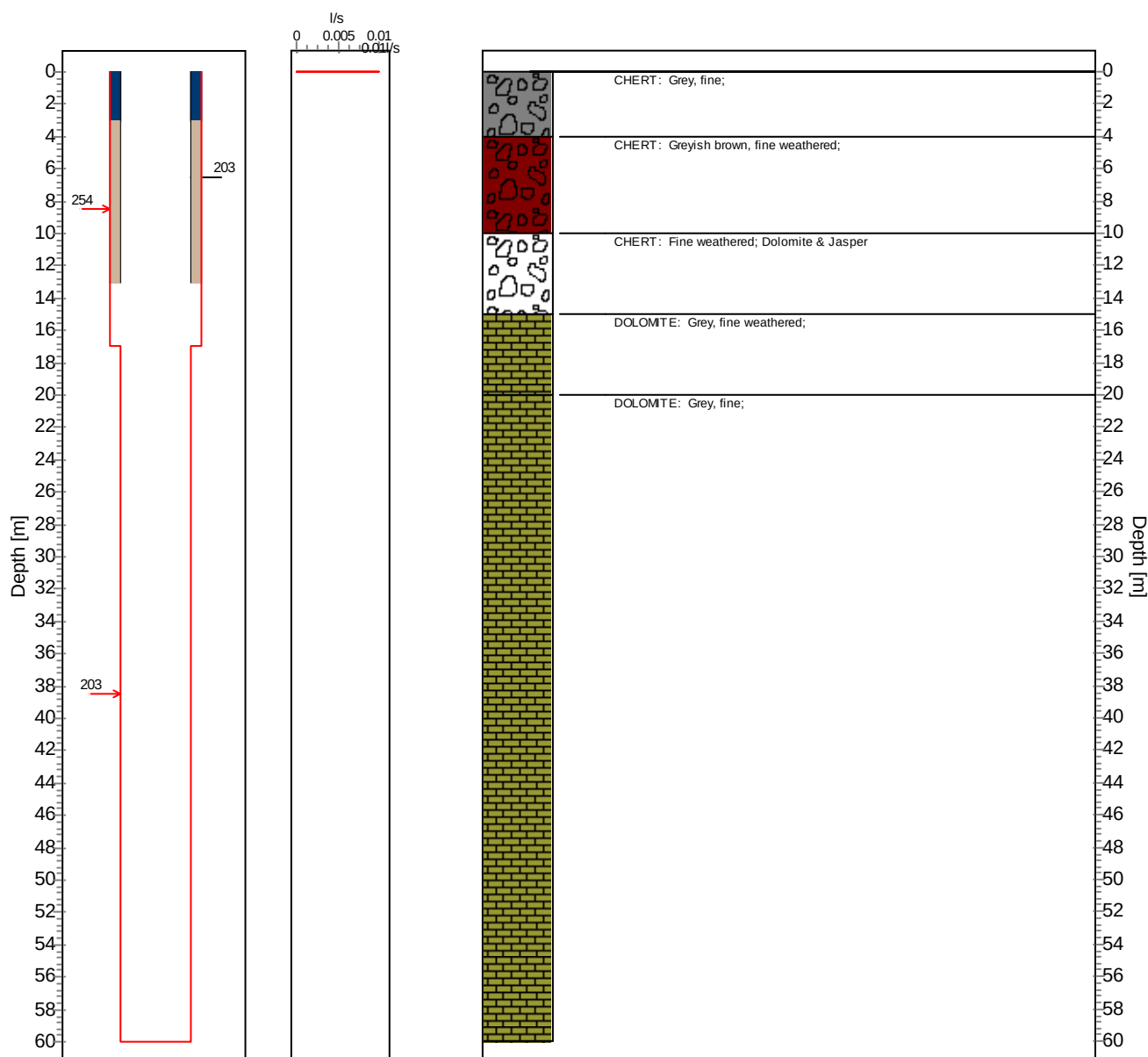
Construction and Geohydrological Legend

	Hole	165 →	Hole diameter [mm]		Sanitary seal
	Casing (plain / perforated, slotted)	← 152	Casing diameter [mm]		Drill cuttings
	Screen / Mesh Screen	▼	Waterlevel with date meas.		
	Piezometer	0:50 →	Piezometer (Nr. & Diameter [mm])		

Construction

Progr. Yield

Lithology



COMMENT:



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Project No.: 1163568

MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823AAX0033 Number: SD2-GAA139 Site type: Borehole

Distr./Farm No.: 580 Site Name/Descr.: VINCI

Latitude [°]:	28.227120	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	12.04
Longitude [°]:	23.164040	Alt. No. 2:		Depth [m]:	90.60	WL status:	Static
Altitude [m]:	1381.39	Rep. inst.: GOLD		Col. ht. [m]:	0.40	Date WL meas.:	20140216

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:		
Type of Inst.:		Pulley Diam. [mm]:
Manufacturer:		Depth to Intk. [m]:
Engine:		
Manufacturer:		Power Rating [kW]
Type of Power:		Pulley Diam. [mm]:

USE APPLICATION:

Site Status: Unused
Purpose: Production (water supply)
Consumer: Non-urban
Application:

WATER CHEMISTRY:

Sample No.:	SD2-	Date sampled:	20140216	Depth sampl. [m]:	81.34	Comment:	
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters:	
pH:	7.67	Na:	13.1	Cl:	19.8	Langel.:	0.23
EC: [mS/m]	58.3	K:	3.74	NO3 as N:	< 0.3	Aggr-Ind:	12.28
TDS:	382	Si:		SO4:	34.9	Ion-bal:	0.10
T. Alk.:	297	Al:	< 0.05	F:	0.747	CaCO3:	331.76
Ca:	54.5	Fe:	< 0.05				
Mg:	47.6	Mn:	0.05				

Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption
 † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit
 ! Value exceeds recommended minimum limit ‡ Value exceeds minimum allowable limit

CASING DETAILS:

Depth to Top [m]	to Bot. [m]	Diam. [mm]	Material	Thickn. [mm]	Type of openings	Openings [mm]: Length Width	Hor. Dist.	Vert. Dist.
0.00	30.20	165	Steel		Plain casing			

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery [m] %	T [m²/d]	Storage	Comment
STEP TEST STEP 1	20140216	60	81.34	0.55	14.91				
STEP TEST STEP 2	20140216	60	81.34	1.06	49.60				
STEP TEST STEP 3	20140216	7	81.34	1.56	68.97	1.09 98	180		
PUMP INLET	20140216	2	81.34	0.93	68.90				



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Project No.: 11613568

PUMPING TEST REPORT

Date compiled: 23/07/2014

BASIC SITE INFORMATION: Site Identifier: 2823AAX0033 Number: SD2-GAA139 Site type: Borehole

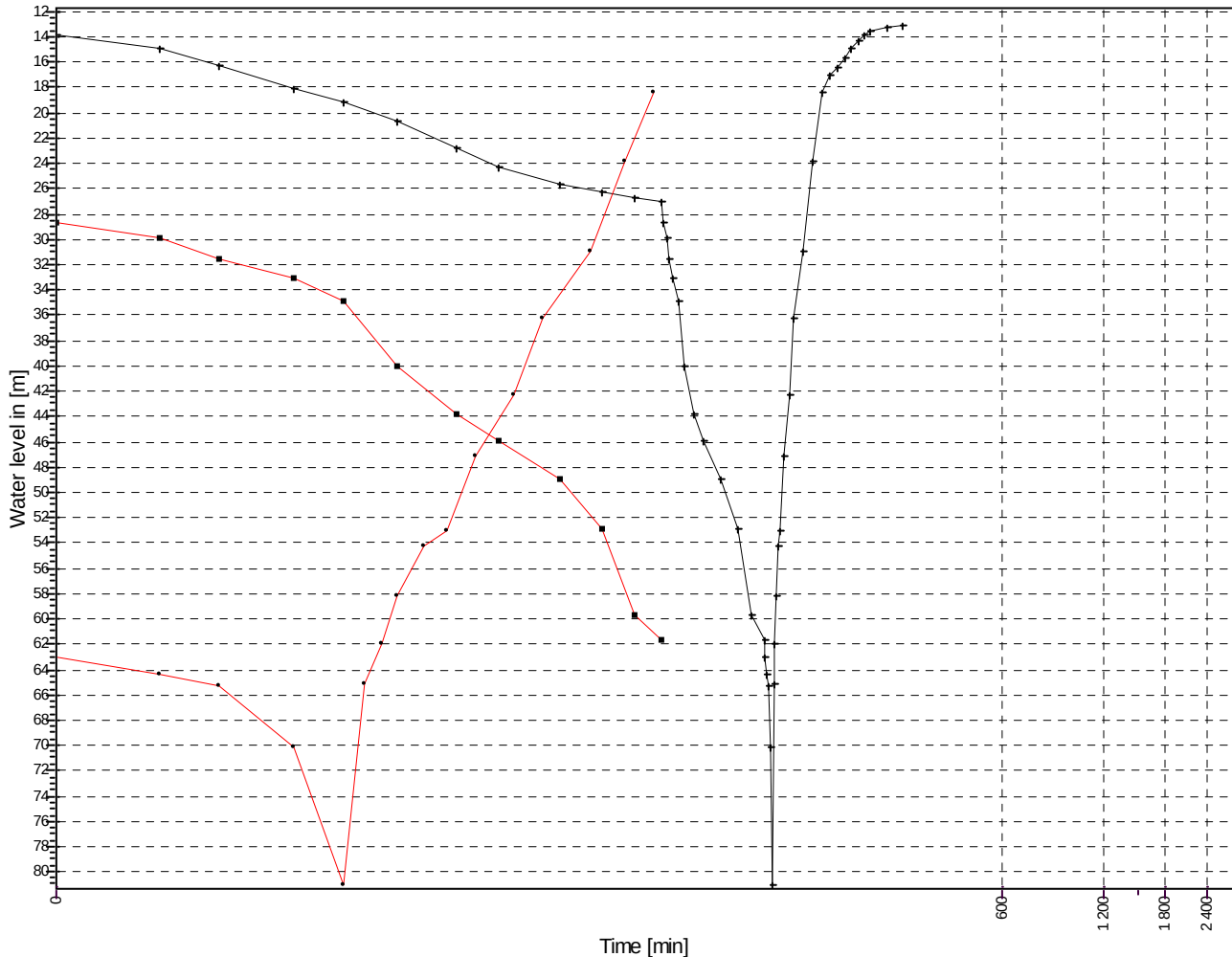
Distr./Farm No.: 580

Site Name/Des.: VINCI

Latitude [°]	28.227120	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	12.04
Longitude [°]	23.164040	Alt. No. 2:		Depth [m]:	90.60	Piezometer:	0
Altitude [m]:	1381.39	Rep. inst.: GOLD		Col. ht. [mm]:	0.40	Date WL meas.:	20140216

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	81.34	20140216	1300	20140216	1807			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate [l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	1300	60	81.34	0.55	14.91							0.04
STEP TEST STEP 2	1400	60	81.34	1.06	49.60							0.02
STEP TEST STEP 3	1500	7	81.34	1.56	68.97	1.09	98	180				0.02
PUMP INLET	1807	2	81.34	0.93	68.90							0.01



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MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823AAX0051 Number: SD2-GAA140 Site type: Borehole

Distr./Farm No.: 444 Site Name/Descr.: METSEATEN

Latitude [°]:	28.210380	Alt. No. 1:		Diam. [mm]:	140	Water lev. [m]:	14.21
Longitude [°]:	23.135600	Alt. No. 2:		Depth [m]:	58.20	WL status:	Static
Altitude [m]:	1401.54	Rep. inst.:	GOLD	Col. ht. [m]:	0.30	Date WL meas.:	20140217

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:

Type of Inst.: Pulley Diam. [mm]:
Manufacturer: Depth to Intk. [m]:

Engine:

Manufacturer: Power Rating [kW]
Type of Power: Pulley Diam. [mm]:

USE APPLICATION:

Site Status: Unused

Purpose: Production (water supply)

Consumer: Non-urban

Application: Domestic - all purposes

WATER CHEMISTRY:

Sample No.:	SD2-	Date sampled:	20140217	Depth sampl. [m]:	51.34	Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters:		
pH:	7.66	Na:	17.9	Cl:	28.9	Langel.:	0.52	E.Coli:
EC: [mS/m]	71.5 †	K:	7.22	NO3 as N:	< 0.3	Aggr-Ind:	12.60	Faec. co:
TDS:	470	Si:		SO4:	27.2	Ion-bal:	-2.39	Total Co:
T. Alk.:	404	Al:	0.31 †	F:	< 0.1	CaCO3:	404.11	SPC:
Ca:	86.3	Fe:	0.15 †	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit § Value exceeds minimum allowable limit				
Mg:	45.9	Mn:	0.54 †					

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery [m]	%	[min]	T [m²/d]	Storage	Comment
STEP TEST STEP 1	20140217	30	51.34	0.50	36.82	24.36	34	60			
PUMP INLET	20140217	4	51.34	0.30	36.83						



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Project No.: 11613568

PUMPING TEST REPORT

Date compiled: 24/06/2014

BASIC SITE INFORMATION: Site Identifier: 2823AAX0051 Number: SD2-GAA140 Site type: Borehole

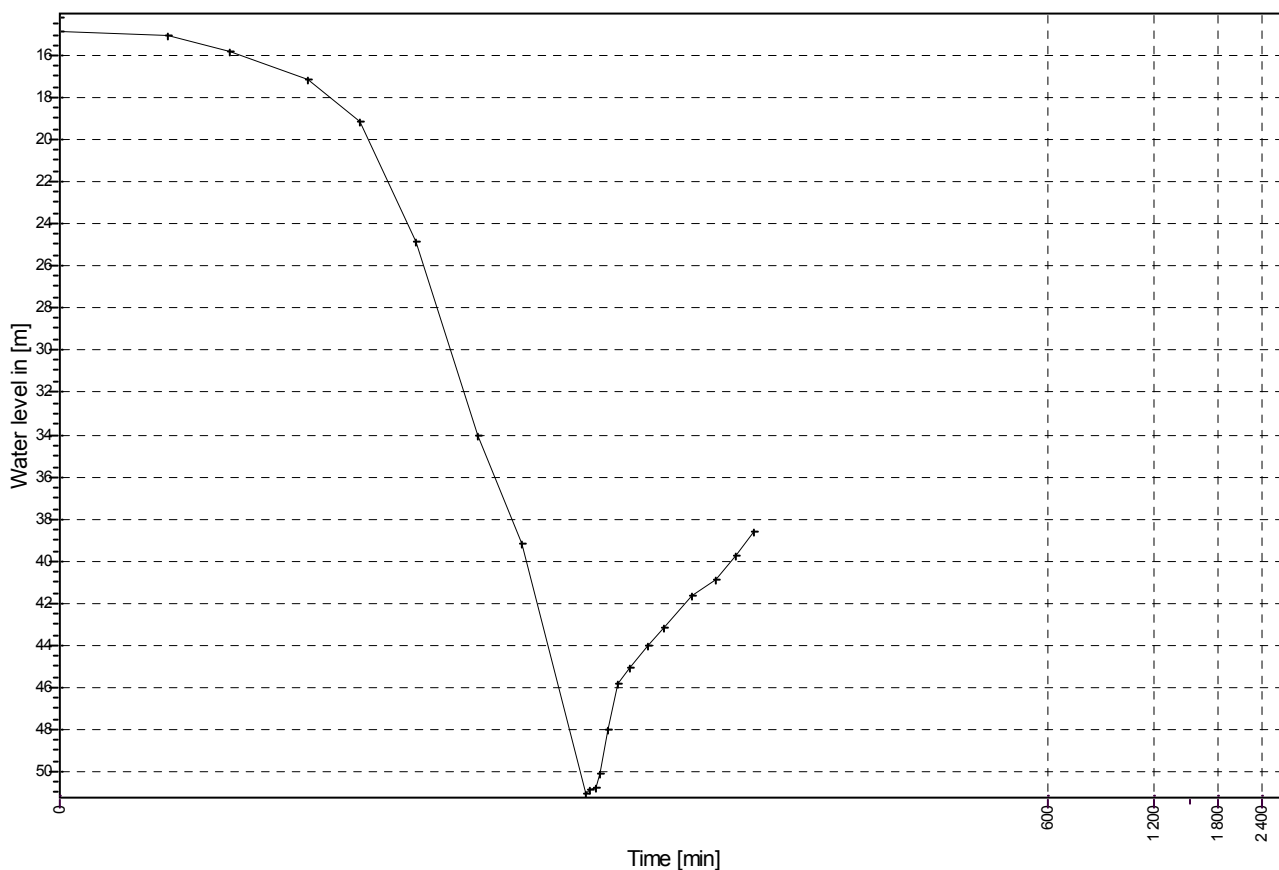
Distr./Farm No.: 444

Site Name/Des.: METSEATEN

Latitude [°]	28.210380	Alt. No. 1:		Diam. [mm]:	140	Water lev. [m]:	14.21
Longitude [°]	23.135600	Alt. No. 2:		Depth [m]:	58.20	Piezometer:	0
Altitude [m]:	1401.54	Rep. inst.: GOLD		Col. ht. [mm]:	0.30	Date WL meas.:	20140217

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m²/d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	51.34	20140217	1420	20140217	1550			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m²/d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	1420	30	51.34	0.50	36.82	24.36	34	60				0.01
PUMP INLET	1550	4	51.34	0.30	36.83							0.01



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Project No.: 11613568

MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823AAX0050 Number: SD2-GAA141 Site type: Borehole

Distr./Farm No.: 444 Site Name/Descr.: METSEATEN

Latitude [°]:	28.213630	Alt. No. 1:		Diam. [mm]:		Water lev. [m]:	
Longitude [°]:	23.165920	Alt. No. 2:		Depth [m]:	2.80	WL status:	
Altitude [m]:	1394.72	Rep. inst.: GOLD		Col. ht. [m]:		Date WL meas.:	

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:		
Type of Inst.:		Pulley Diam. [mm]:
Manufacturer:		Depth to Intk. [m]:
Engine:		
Manufacturer:		Power Rating [kW]
Type of Power:		Pulley Diam. [mm]:

USE APPLICATION:

Site Status: Dry
Purpose:
Consumer:
Application:

WATER CHEMISTRY:

Sample No.:	Date sampled:	Depth sampl. [m]:	Comment:	
Main Parameters:			Calculated Parameters:	Bacteriol. Parameters:
pH:	Na:	Cl:	Langel.:	E.Coli:
EC: [mS/m]	K:	NO3 as N:	Aggr-Ind:	Faec. co:
TDS:	Si:	SO4:	Ion-bal:	Total Co:
T. Alk.:	Al:	F:	CaCO3:	SPC:
Ca:	Fe:	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit ¡ Value exceeds minimum allowable limit		
Mg:	Mn:			

RECOMMENDATIONS:		Depth	Duty cyc.	Disch. rate		Dyn. water	Crit. water
Prior.	Rec. equipm.	to intk. [m]	Type of power	[hrs]	[l/s]	level [m]	level [m]

1

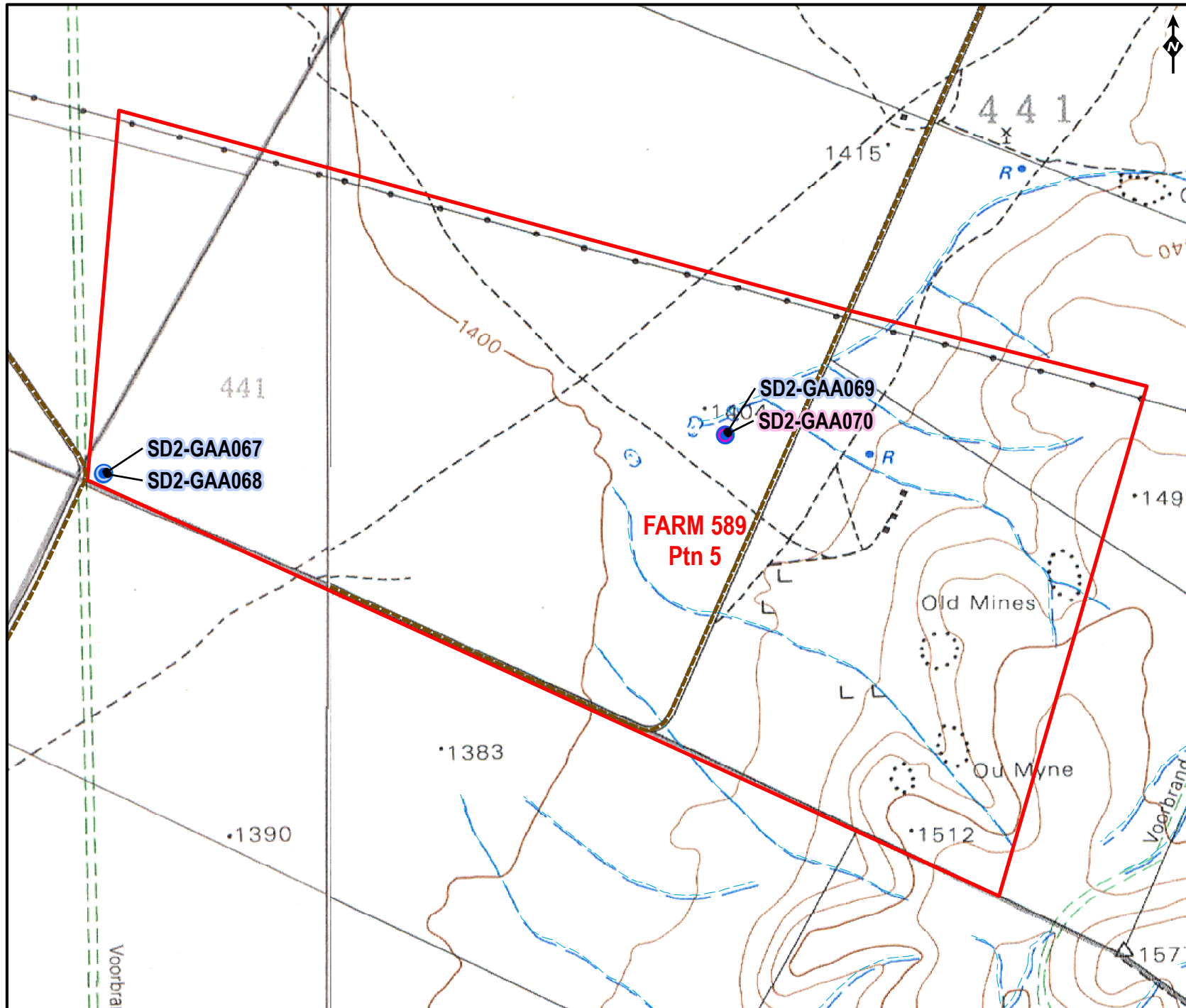
Note: 1. Borehole is dry @ depth 2.8m



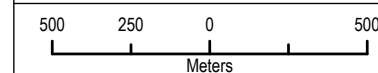
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Project No.: 11613568



2.20 Martiens Willemse



- LEGEND**
- Existing borehole survey
 - Existing borehole tested
 - Farm 589 Ptn 5
 - Other
 - Rivers - Non perennial



RESOURCES/NOTES
 Coordinate System: GCS WGS 1984
 Datum: WGS 1984

PROJECT
 GW ASSESSMENT VGG SCHEME

TITLE
FARM 589 PTN 5
MARTIENS WILLEMSE

PROJECT No. 11613568	REV 0
SCALE 1:24 000	A4
GIS MB	18/07/2014
CHECK DB	18/07/2014
REVIEW FW	18/07/2014



MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823ABX0011 Number: SD2-GAA070 Site type: Borehole

Distr./Farm No.: 441 Site Name/Descr.: FARM 441

Latitude [°]:	28.176860	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	56.26
Longitude [°]:	23.265400	Alt. No. 2:		Depth [m]:	146.00	WL status:	Static
Altitude [m]:	1408.00	Rep. inst.: GOLD		Col. ht. [m]:	0.25	Date WL meas.:	20140214

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:			
Type of Inst.:	Mono-type pump	Pulley Diam. [mm]:	250
Manufacturer:	RECIPROCAL	Depth to Intk. [m]:	87.50
Engine:			
Manufacturer:	LISTER	Power Rating [kW]	6.3
Type of Power:	Diesel engine	Pulley Diam. [mm]:	110

USE APPLICATION:

Site Status: In use
Purpose: Production (water supply)
Consumer: Non-urban
Application: Domestic - all purposes

WATER CHEMISTRY:

Sample No.:	SD2-	Date sampled:	20140214	Depth sampl. [m]:	93.34	Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters:		
pH:	7.64	Na:	11.5	Cl:	30	Langel.:	0.25	E.Coli:
EC: [mS/m]	54.6	K:	2.5	NO3 as N:	0.33	Aggr-Ind:	12.28	Faec. co:
TDS:	410	Si:		SO4:	51.3	Ion-bal:	2.45	Total Co:
T. Alk.:	232	Al:	< 0.05	F:	0.291	CaCO3:	318.03	SPC:
Ca:	76.2	Fe:	< 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit ¡ Value exceeds minimum allowable limit				
Mg:	31.1	Mn:	0.06 †					

CASING DETAILS:

Depth to Top [m] to Bot. [m]		Diam. [mm]	Material	Thickn. [mm]	Type of openings	Openings [mm]: Length Width		Hor. Dist.	Vert. Dist.
0.00	11.00	165	Steel		Plain casing				

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery [m] %	T [m ² /d]	Storage	Comment
STEP TEST STEP 1	20140214	50	93.34	0.51	36.83	0.93 97	90		
PUMP INLET	20140214	2	93.34	0.34	36.83				

PUMPING TEST REPORT

Date compiled: 28/03/2014

BASIC SITE INFORMATION: Site Identifier: 2823ABX0011 Number: SD2-GAA070 Site type: Borehole

Distr./Farm No.: 441

Site Name/Des.: FARM 441

Latitude [°] 28.176860
Longitude [°] 23.265400
Altitude [m]: 1408.00

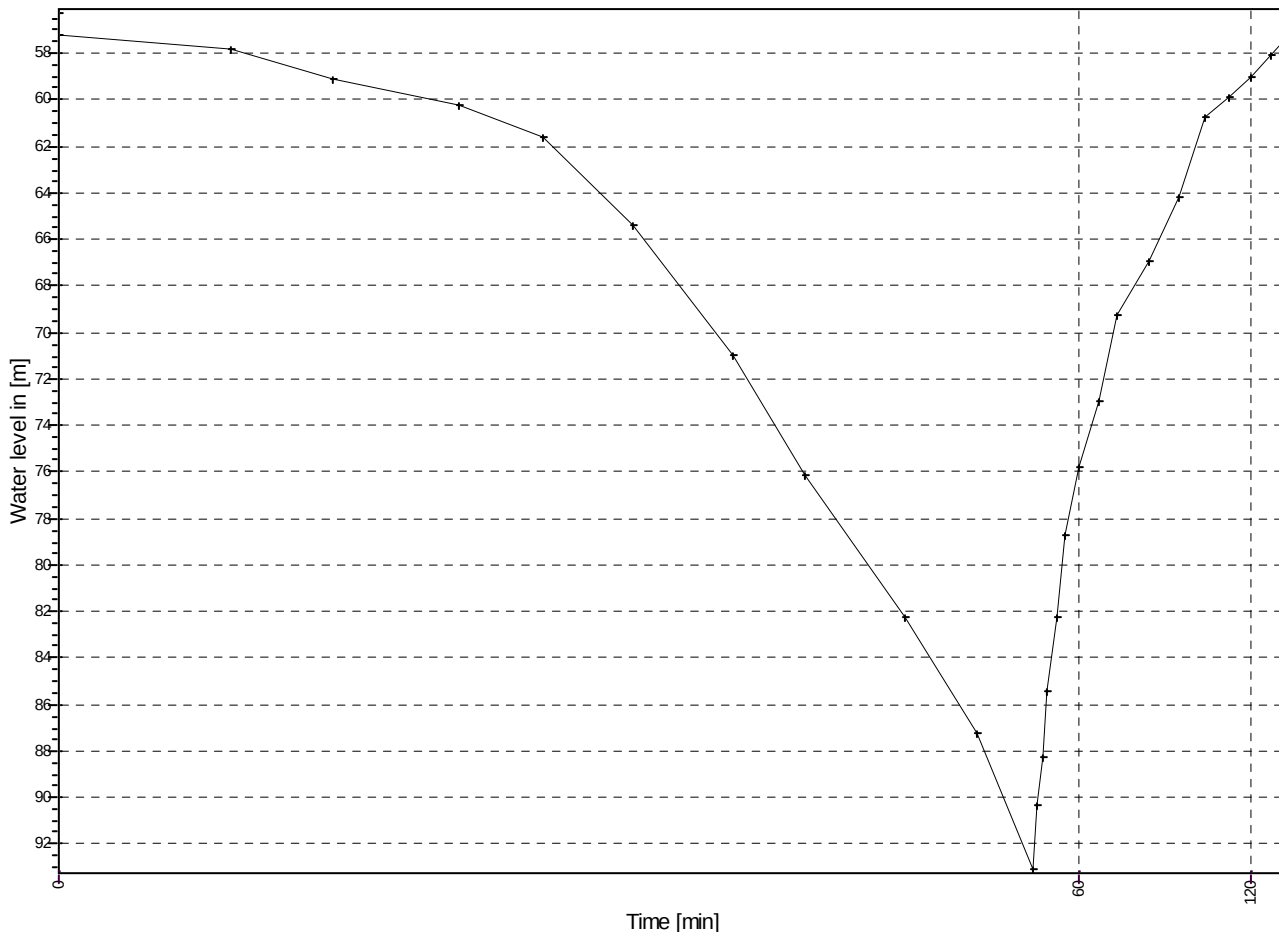
Alt. No. 1:
Alt. No. 2:
Rep. inst.: GOLD

Diam. [mm]: 165
Depth [m]: 146.00
Col. ht. [mm]: 0.25

Water lev. [m]: 56.26
Piezometer: 0
Date WL meas.: 20140214

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	93.34	20140214	1130	20140214	1350			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	1130	50	93.34	0.51	36.83	0.93	97	90				0.01
PUMP INLET	1350	2	93.34	0.34	36.83							0.01



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MARTIENS WILLEMSE - BASIC SITE INFORMATION

SITE LOCATION										GEOHYDROLOGY				MANAGEMENT RECOMMEND.			
Site Identifier:	Number:	District	Site name/Description	Site type:	Latitude [°]	Longitude [°]	Altitude [m]	Col. ht. [m]	Diam. [mm]	Depth [m]	Water l. [m]	Yield[l/s]	Rec. abs.[l/s]	Depth to Intk. [m]	Dis. rate[l/s]	Duty c. [hrs/d]	Daily abs. [m³/d]
2823AAX0010	SD2-GAA067	441	FARM 441	B	28.17842967	23.240400001	1394.00	0.36									
2823AAX0011	SD2-GAA068	441	FARM 441	B	28.17840967	23.240420001	1394.00	0.43									
2823AB00039	SD2-GAA069	441	FARM 441 PTN. 5	B	28.17680967	23.267210001	1412.00	0.53		76.20	64.12						
SUMMARY:										Maximum:		76.20	64.12				
										Minimum:		76.20	64.12				
										Sum:							
Nr. of sites: 3										Average:		76.20	64.12				

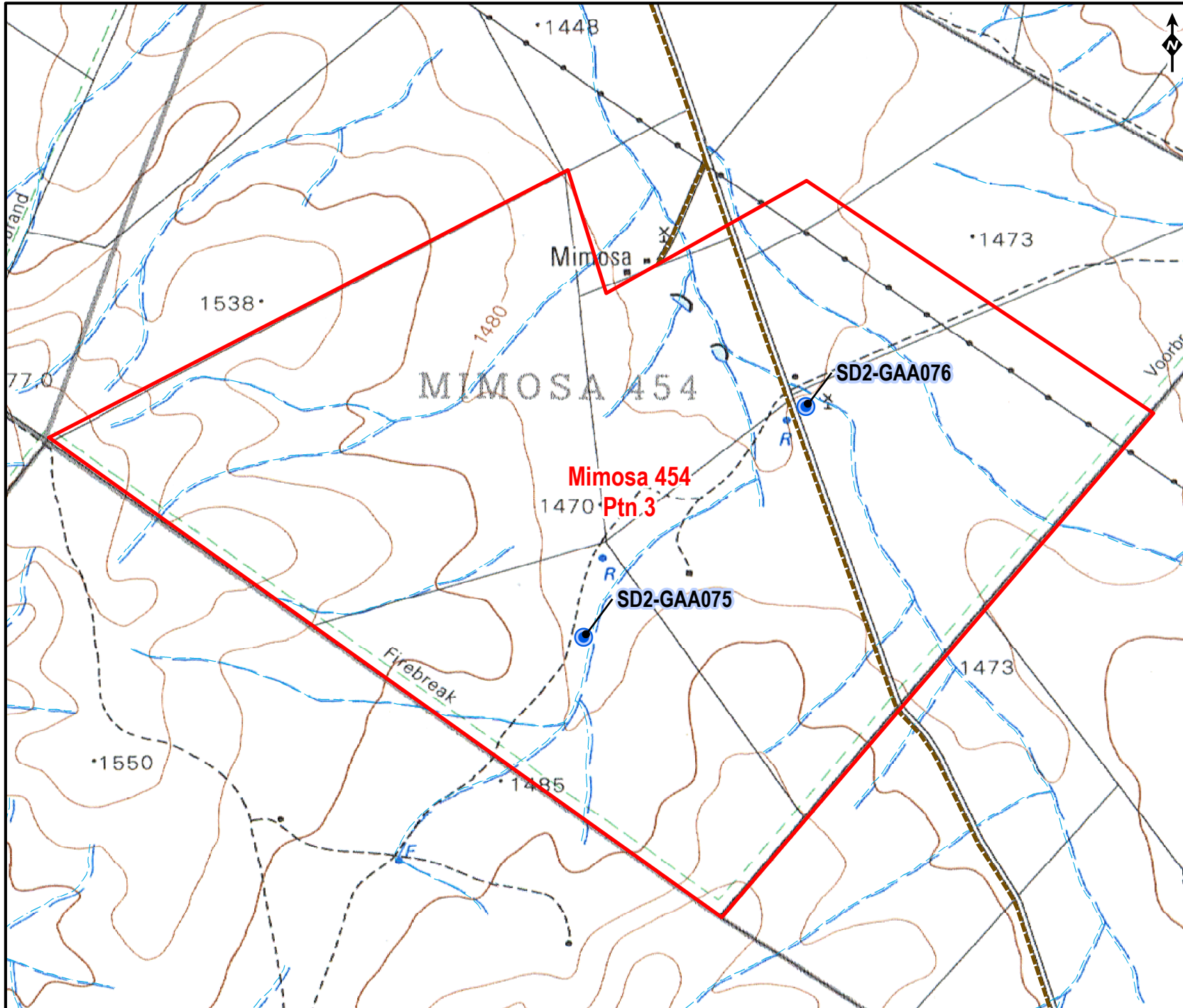
NOTE:
 "Yield" represents cumulative blow yield
 The recommended abstraction ("Rec. abs.")
 is based on a 24 hour duty cycle
 (based on test pumping result)



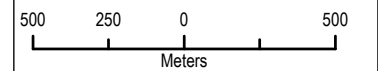
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 Project No.: 11613568



2.21 Michael Willemse



- LEGEND**
- Existing borehole survey
 - Mimosa 454 Ptn 3
 - Other
 - Rivers - Non perennial



RESOURCES/NOTES
Coordinate System: GCS WGS 1984
Datum: WGS 1984

PROJECT
GW ASSESSMENT VGG SCHEME

TITLE
MIMOSA 454 PTN 4
MICHEAL WILLEMSE

PROJECT No. 11613568	REV 0
SCALE 1:25 000	A4
GIS MB	07/07/2014
CHECK DB	07/07/2014
REVIEW FW	07/07/2014



MICHEAL WILLEMSE - BASIC SITE INFORMATION

SITE LOCATION										GEOHYDROLOGY				MANAGEMENT RECOMMEND.			
Site Identifier:	Number:	District	Site name/Description	Site type:	Latitude [°]	Longitude [°]	Altitude [m]	Col. ht. [m]	Diam. [mm]	Depth [m]	Water l. [m]	Yield[l/s]	Rec. abs.[l/s]	Depth to Intk. [m]	Dis. rate[l/s]	Duty c. [hrs/d]	Daily abs. [m³/d]
2823AB00037	SD2-GAA076	454	MIMOSA PTN. MICH-WILL	B	28.19885967	23.316670001	1463.00	0.23	165		6.77						
2823AB00038	SD2-GAA075	454	MIMOSA PTN. MICH-WILL	B	28.20851967	23.307370001	1479.00	0.30	165		33.39						
SUMMARY:		Site Type: B = Borehole							Maximum:		33.39						
									Minimum:		6.77						
Nr. of sites:		2							Sum:								
									Average:		20.08						

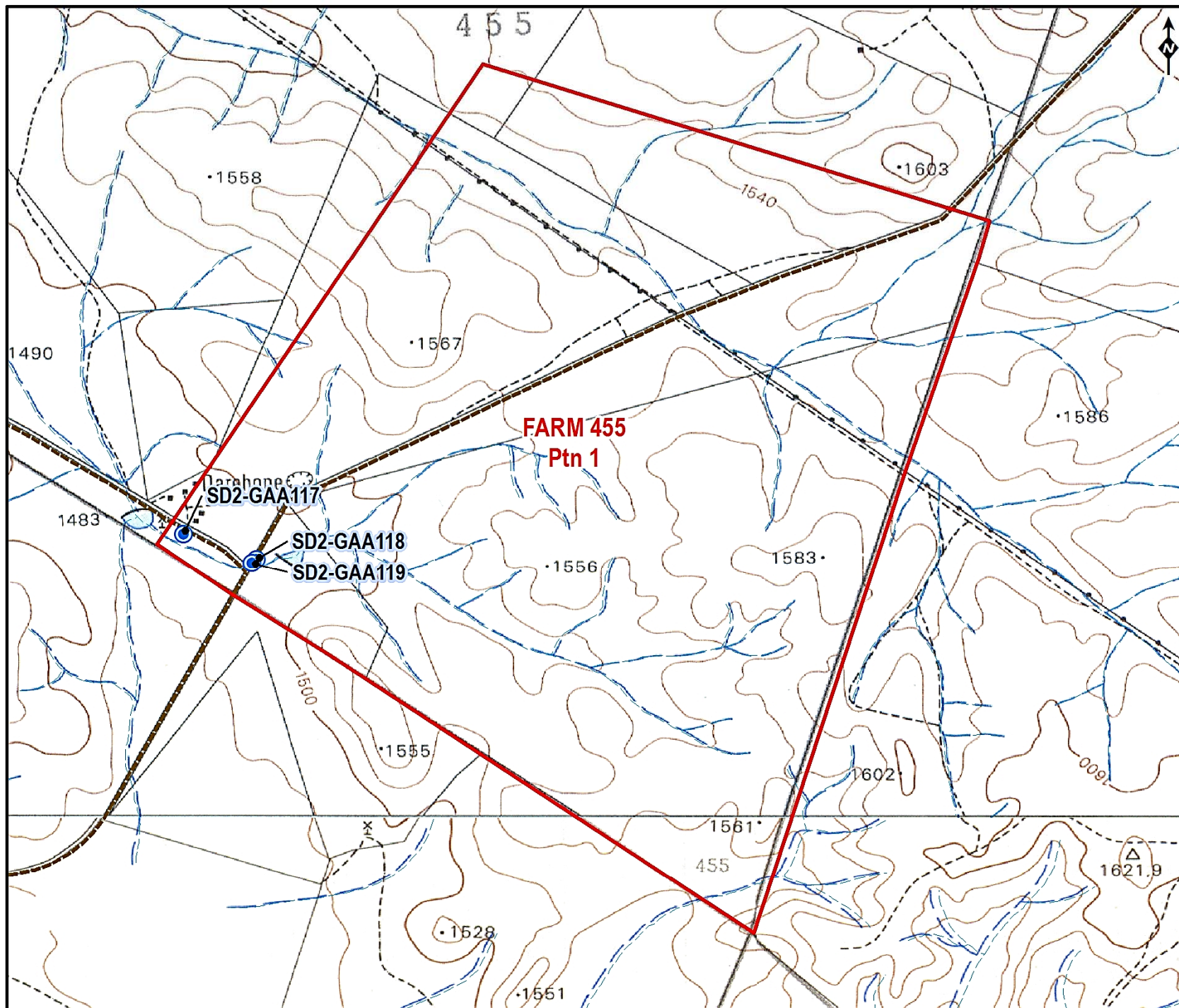
NOTE:
 "Yield" represents cumulative blow yield
 The recommended abstraction ("Rec. abs.")
 is based on a 24 hour duty cycle
 (based on test pumping result)



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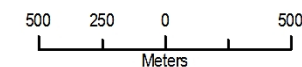


2.22 Mienkie Steenkamp



LEGEND

- Existing borehole survey
- Farm 455 Ptn 1
- Other
- Rivers - Non perennial



RESOURCES/NOTES

Coordinate System: GCS WGS 1984
Datum: WGS 1984

PROJECT

GW ASSESSMENT VGG SCHEME

TITLE

**FARM 455 PTN 1
MIENKIE STEENKAMP**

PROJECT No.	11613568	REV 0
SCALE	1:30 000	A4
GIS	MB	17/07/2014
CHECK	DB	17/07/2014
REVIEW	FW	17/07/2014



MIENKIE STEENKAMP - BASIC SITE INFORMATION

SITE LOCATION										GEOHYDROLOGY				MANAGEMENT RECOMMEND.			
Site Identifier:	Number:	District	Site name/Description	Site type:	Latitude [°]	Longitude [°]	Altitude [m]	Col. ht. [m]	Diam. [mm]	Depth [m]	Water l. [m]	Yield[l/s]	Rec. abs.[l/s]	Depth to Intk. [m]	Dis. rate[l/s]	Duty c. [hrs/d]	Daily abs. [m³/d]
2823ABX0006	SD2-GAA118	455	FARM 455 PTN. DAREHOPE	B	28.23734967	23.344500001	1492.63	0.30	165		27.44						
2823ABX0015	SD2-GAA117	455	FARM 455 PTN. DAREHOPE	B	28.23606967	23.340820001	1485.75	0.27	165		23.03						
2823ABX0016	SD2-GAA119	455	FARM 455 PTN. DAREHOPE	B	28.23752967	23.344290001	1491.97		165		21.69						
SUMMARY:										Maximum:				27.44			
										Minimum:				21.69			
										Sum:							
Nr. of sites: 3										Average:				24.05			

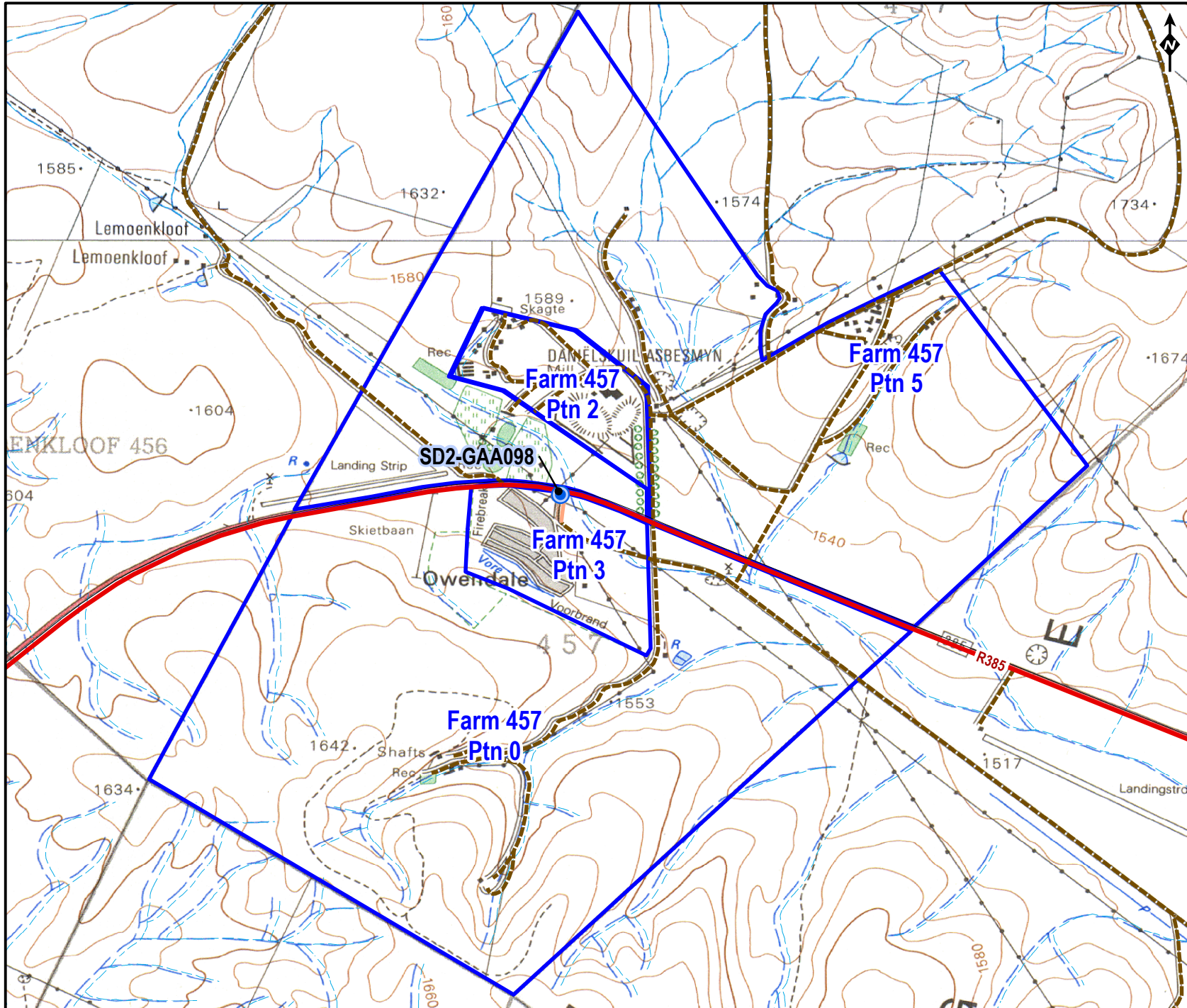
NOTE:
 "Yield" represents cumulative blow yield
 The recommended abstraction ("Rec. abs.")
 is based on a 24 hour duty cycle
 (based on test pumping result)



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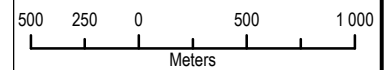


2.23 Piet du Toit



LEGEND

- Existing borehole survey
- Farm 457
- Arterial road
- Main road
- Other
- Rivers - Non perennial



RESOURCES/NOTES

Coordinate System: GCS WGS 1984
Datum: WGS 1984

PROJECT

GW ASSESSMENT VGG SCHEME

TITLE

**FARM 457
PTN 3
PIET DU TOIT**

PROJECT No. 11613568	REV 0
SCALE 1:35 000	A4
GIS MB	02/07/2014
CHECK DB	02/07/2014
REVIEW FW	02/07/2014



MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823AD00013 Number: SD2-GAA098 Site type: Borehole

Distr./Farm No.: 457 Site Name/Descr.: FARM 457 PTN. OWENDALE

Latitude [°]:	28.265280	Alt. No. 1:		Diam. [mm]:	0	Water lev. [m]:	25.50
Longitude [°]:	23.422610	Alt. No. 2:		Depth [m]:	80.00	WL status:	Static
Altitude [m]:	1536.90	Rep. inst.:	GOLD	Col. ht. [m]:	0.20	Date WL meas.:	20130614

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:

Type of Inst.: Submersible pump Pulley Diam. [mm]:
Manufacturer: Depth to Intk. [m]:

Engine:

Manufacturer: Power Rating [kW]
Type of Power: Electric motor Pulley Diam. [mm]:

USE APPLICATION:

Site Status: Unused
Purpose: Production (water supply)
Consumer: Non-urban
Application: Domestic - all purposes

WATER CHEMISTRY:

Sample No.:		Date sampled: 19800423		Depth sampl. [m]:		Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters.		
pH:	6.73	Na:	8.9	Cl:	16.2	Langel.:	-1.14	E.Coli:
EC: [mS/m]	32.3	K:	2.02	NO3 as N:	0.88	Aggr-Ind:		Faec. co:
TDS:	242	Si:	4.18	SO4:	7.5	Ion-bal:	67.39 ‡	Total Co:
T. Alk.:	125.9	Al:		F:	0.17	CaCO3:	153.83	SPC:
Ca:	30.5	Fe:		Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit § Value exceeds minimim allowable limit				
Mg:	18.9	Mn:						

AQUIFER INFORMATION:

Depth to Top [m]	Depth to Bot. [m]	Yield[l/s]	Method meas.	Aquifer type	Comment
38.70	0.00	0.00			

CASING DETAILS:

Depth to Top [m]	to Bot. [m]	Diam. [mm]	Material	Thickn. [mm]	Type of openings	Openings [mm]: Length Width	Hor. Dist.	Vert. Dist.
0.00	54.86	152		0				



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PIET DU TOIT - BASIC SITE INFORMATION

SITE LOCATION										GEOHYDROLOGY				MANAGEMENT RECOMMEND.			
Site Identifier:	Number:	District	Site name/Description	Site type:	Latitude [°]	Longitude [°]	Altitude [m]	Col. ht. [m]	Diam. [mm]	Depth [m]	Water l. [m]	Yield[l/s]	Rec. abs.[l/s]	Depth to Intk. [m]	Dis. rate[l/s]	Duty c. [hrs/d]	Daily abs. [m³/d]
2823AD00013	SD2-GAA098	457	FARM 457 PTN. OWENDALE	B	28.26527967	23.422610001	1536.90	0.20		80.00	25.50						
SUMMARY:										Maximum:	80.00	25.50					
										Minimum:	80.00	25.50					
										Sum:							
Nr. of sites: 1										Average:	80.00	25.50					

NOTE:
 "Yield" represents cumulative blow yield
 The recommended abstraction ("Rec. abs.")
 is based on a 24 hour duty cycle
 (based on test pumping result)



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PIET DU TOIT - TIME DEPENDENT CHEMISTRY REPORT

Site Identifier: 2823AD00013 **Number:** SD2-GAA098 **Site Name:** FARM 457 PTN. OWENDALE

Samp. Nr./Type	Date/Time samp.	pH	EC	TDS	Ca	Mg	Na	K	Si	T. Alk.	Cl	SO4	NO3 as N	F
	19800423 1100	6.45	23.2	164	18.4	11.8	7.9	1.52	6.36	78.1	12.7	6.8	2.08	0.17
	19800423 1130	6.97	29.8	226	24.6	17.7	8.9	1.4	5.88	127.1	10.3	7.3	0.05	0.4
	19800423 1215	6.73	32.3	242	30.5	18.9	8.9	2.02	4.18	125.9	16.2	7.5	0.88	0.17

Chemistry Standard: SABS for human consumption
† Value exceeds recommended maximum limit
‡ Value exceeds maximum allowable limit
! Value exceeds recommended minimum limit
j Value exceeds minimum allowable limit

Concentrations in [mg/l] where applicable
EC [mS/m]
Nitrate as N

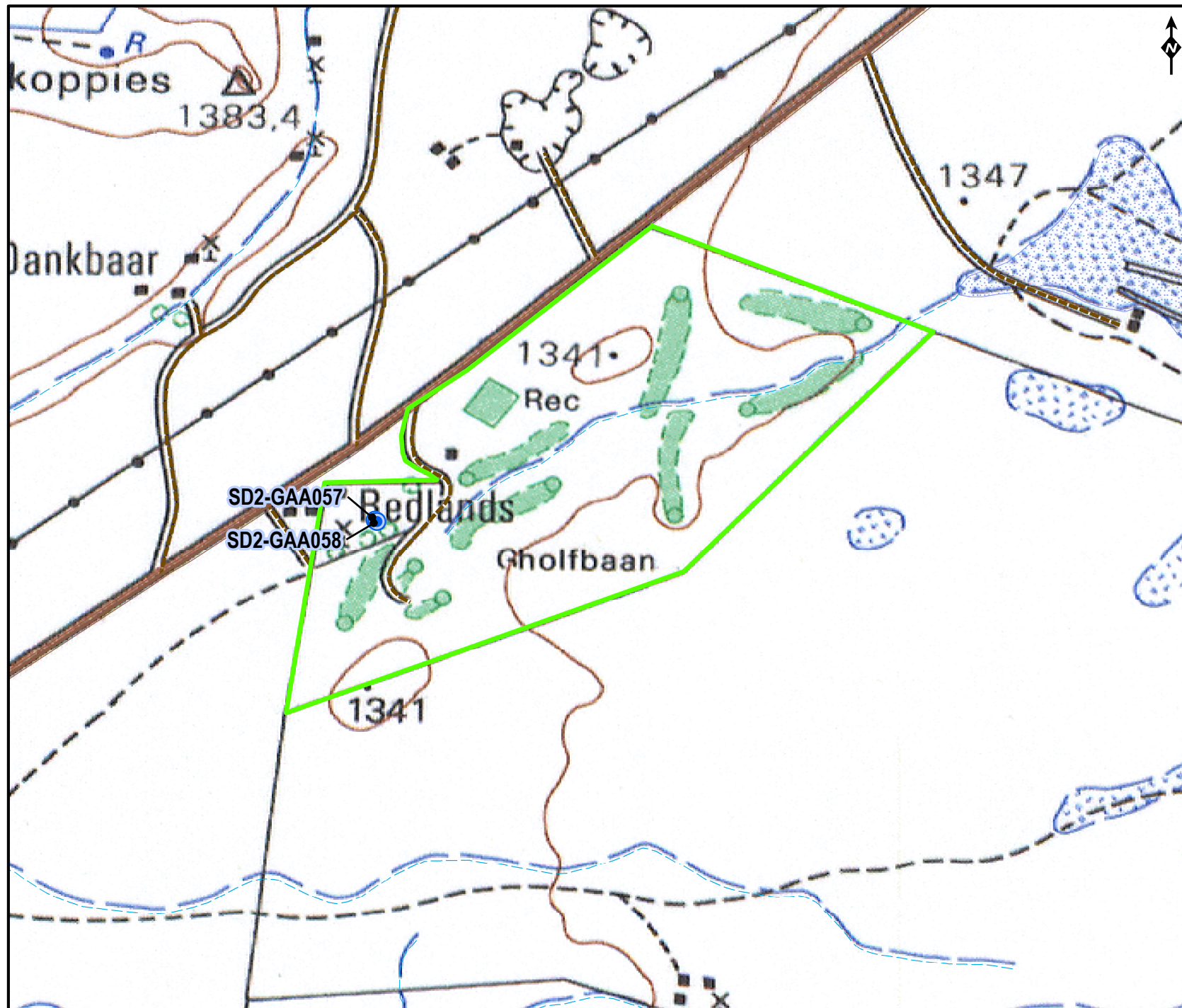
Sample Type Code Explanation:
D: Drinking water
E: Effluent
K: Sewage
O: Organic
P: Pressed or pellet
R: Rock
S: Soil
X: Other source



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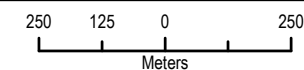


2.24 Piet Stafford



LEGEND

- Existing borehole survey
- Gholfbaan
- Secondary road
- Other
- Pan
- Rivers - Non perennial



RESOURCES/NOTES

Coordinate System: GCS WGS 1984
Datum: WGS 1984

PROJECT

GW ASSESSMENT VGG SCHEME

TITLE

**GHOLFBAAN
PIET STAFFORD**

PROJECT No. 11613568	REV 0
SCALE 1:15 000	A4
GIS MB	18/07/2014
CHECK DB	18/07/2014
REVIEW FW	18/07/2014



PIET STAFFORD - BASIC SITE INFORMATION

SITE LOCATION										GEOHYDROLOGY				MANAGEMENT RECOMMEND.			
Site Identifier:	Number:	District	Site name/Description	Site type:	Latitude [°]	Longitude [°]	Altitude [m]	Col. ht. [m]	Diam. [mm]	Depth [m]	Water l. [m]	Yield[l/s]	Rec. abs.[l/s]	Depth to Intk. [m]	Dis. rate[l/s]	Duty c. [hrs/d]	Daily abs. [m³/d]
2823ACX0026	SD2-GAA057		POSTMASBURG PTN. REDLANDS	B	28.31208967	23.118380001	1333.67	0.40	165		11.59						
2823ACX0027	SD2-GAA058		POSTMASBURG PTN. REDLANDS	B	28.31211967	23.118430001	1333.72		165						0	0	
SUMMARY: Nr. of sites: 2										Maximum: 11.59 Minimum: 11.59 Sum: Average: 11.59							

Site Type:
B = Borehole

NOTE:
"Yield" represents cumulative blow yield
The recommended abstraction ("Rec. abs.")
is based on a 24 hour duty cycle
(based on test pumping result)



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2.25 Postmasburg Municipality: (Tenants: Booï Pieterse, Hans van Wyk, Vytjie Neels, Nooi de Bruin)



Borehole Construction and Geological Log

Date compiled: 19/12/2013

BASIC SITE INFORMATION: Site Identifier: 2823ACX0053 Number: SD2-1 Site type: Borehole

Distr./Farm No.: Site Name/Des.: POSTMASBURG

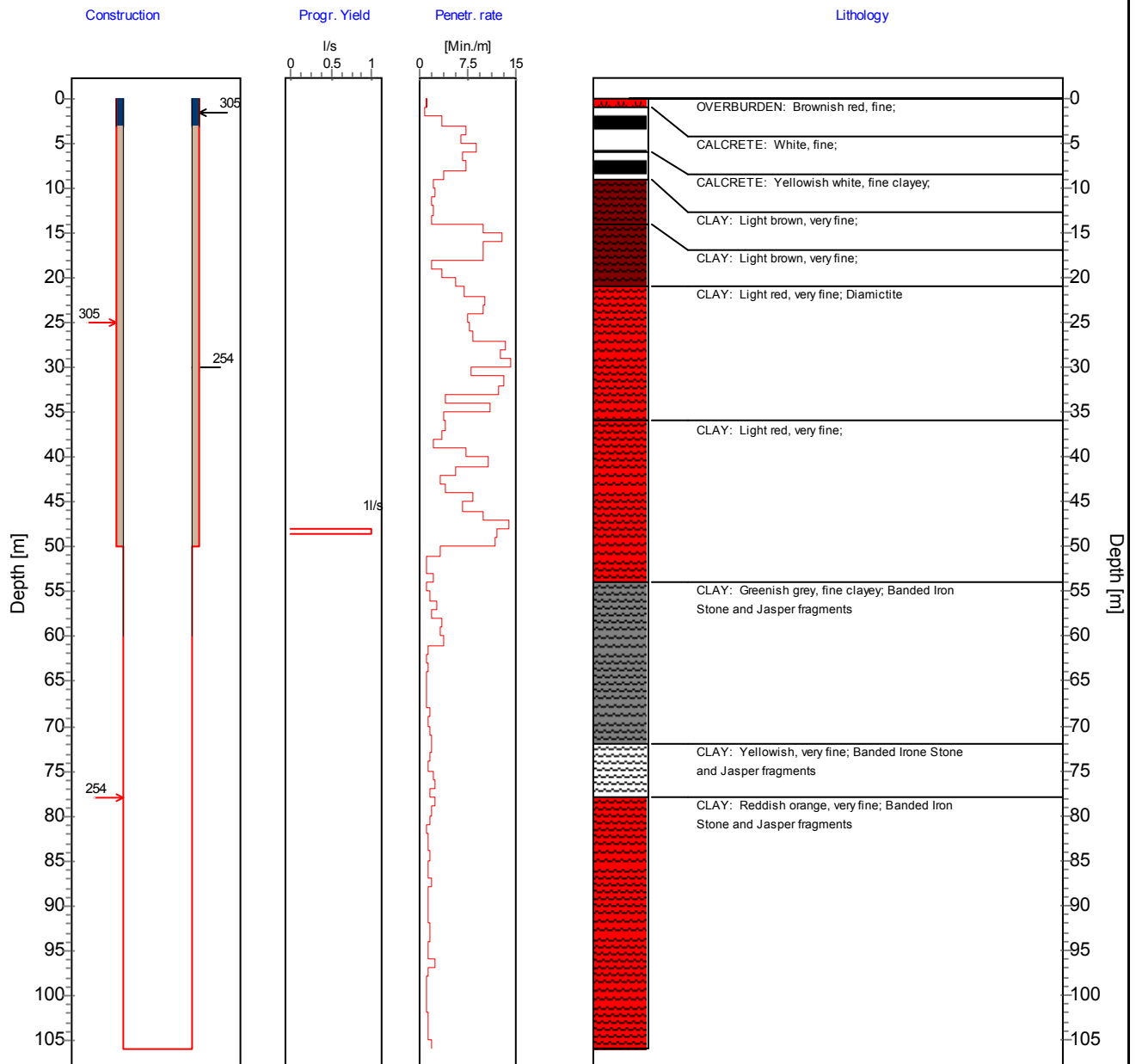
Region Type: Water supply authority Region Descr.: TSANTSABANE LM

Latitude [°]: 28.337554	Reg./BB.:	Topo-set.:	Depth [m]: 106.00
Longitude [°]: 23.140891	G-Nr.:	Site status: Unused	Col. ht. [m]: 0.50
Altitude [m]: 1354.66		Site purp.: Production (water supply)	Diam. [mm]: 254
Coord. acc.: Accurate to within 1 units		Use applic.: Domestic - all purposes	Drain. reg.: D73A
Coord. meth.: Altimeter		Equipment: No equipment	Rep. inst.: GOLD

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Construction and Geohydrological Legend

	Hole	165 →	Hole diameter [mm]		Sanitary seal
	Casing (plain / perforated, slotted)	← 152	Casing diameter [mm]		Drill cuttings
	Screen / Mesh Screen	▼	Waterlevel with date meas.		
	Piezometer	0:50 →	Piezometer (Nr. & Diameter [mm])		



COMMENT:



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BASIC SITE INFORMATION: Site Identifier: 2823ACX0063 Number: SD2-10 Site type: Borehole

Distr./Farm No.: Site Name/Des.: POSTMASBURG

Region Type: Water supply authority

Region Descr.: TSANTSABANE LM

Latitude [°]: 28.309325

Reg./BB.:

Topo-set.:

Depth [m]: 70.50

Longitude [°]: 23.138496

G-Nr.:

Site status: Unused

Col. ht. [m]: 0.40

Altitude [m]: 1345.85

Site purp.: Production (water supply)

Diam. [mm]: 165

Coord. acc.: Accurate to within 1 units

Use applic.: Domestic - all purposes

Drain. reg.: D73A

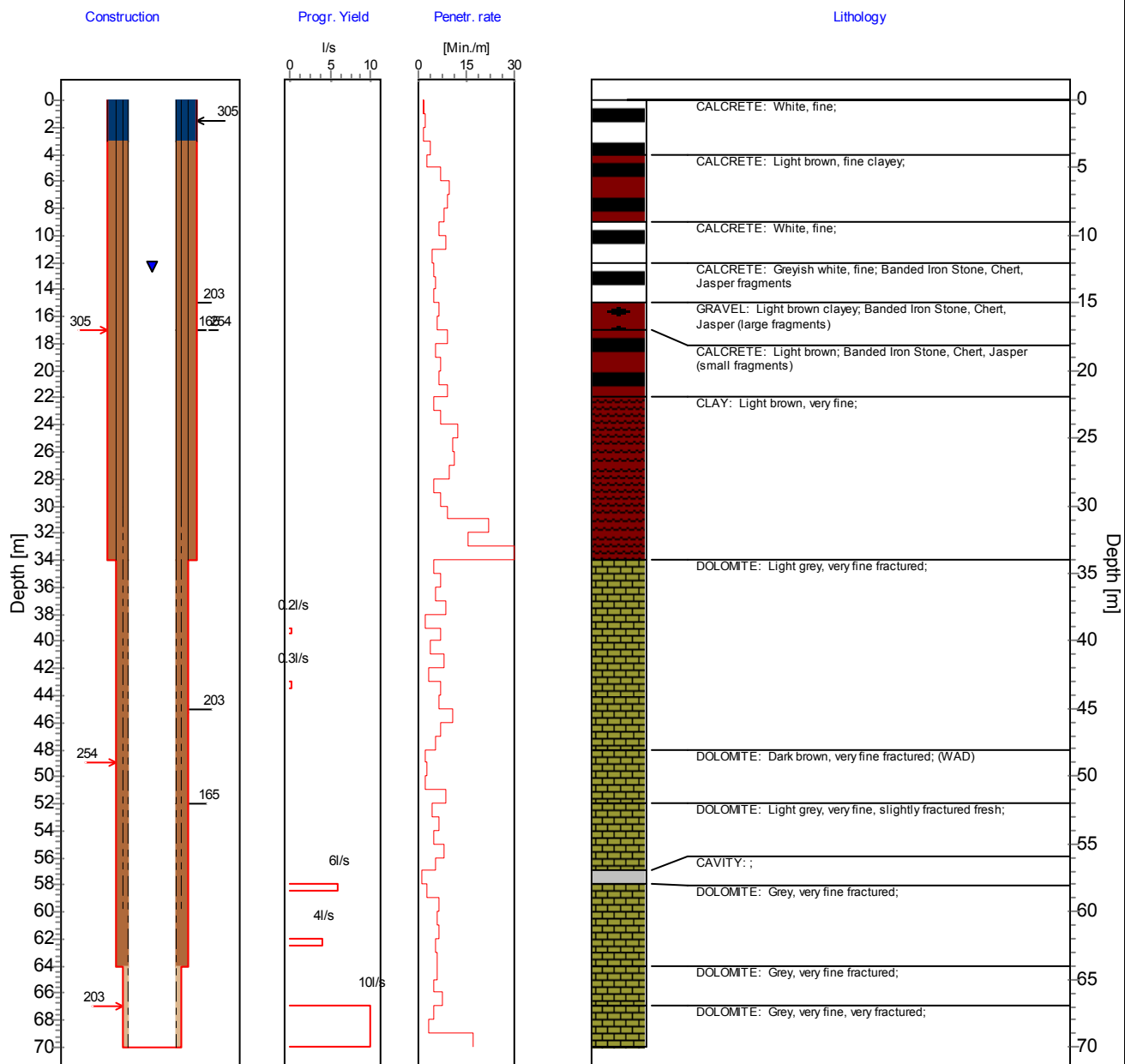
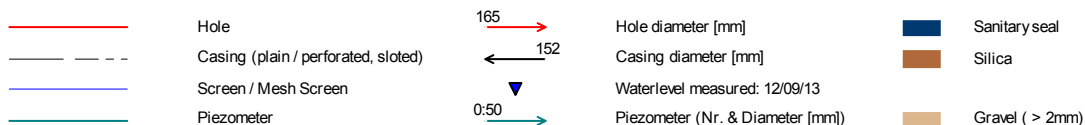
Coord. meth.: Altimeter

Equipment: No equipment

Rep. inst.: GOLD

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Construction and Geohydrological Legend



COMMENT:



Golder Associates Africa, Pretoria
P O Box 13776, Hatfield, 00285
Tel: 012 - 364 4000
Fax: 012 - 364 4001
Project No.: 11613568

MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823ACX0063 Number: SD2-10 Site type: Borehole

Distr./Farm No.: Site Name/Descr.: POSTMASBURG WELLFIELD

Latitude [°]:	28.309325	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	12.60
Longitude [°]:	23.138496	Alt. No. 2:		Depth [m]:	70.50	WL status:	Static
Altitude [m]:	1345.85	Rep. inst.:	GOLD	Col. ht. [m]:	0.40	Date WL meas.:	20140121

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:	
Type of Inst.:	Pulley Diam. [mm]:
Manufacturer:	Depth to Intk. [m]:
Engine:	
Manufacturer:	Power Rating [kW]
Type of Power:	Pulley Diam. [mm]:

USE APPLICATION:

Site Status: Unused
Purpose: Production (water supply)
Consumer: Non-urban
Application: Domestic - all purposes

WATER CHEMISTRY:

Sample No.:	SD2-10	Date sampled:	20131013	Depth sampl. [m]:	58.50	Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters:		
pH:	7.74	Na:	19.4	Cl:	28	Langel.:	0.35	E.Coli:
EC: [mS/m]	56.9	K:	2.84	NO3 as N:	1.93	Aggr-Ind:	12.40	Faec. co:
TDS:	362	Si:	14.6	SO4:	20	Ion-bal:	2.12	Total Co:
T. Alk.:	274	Al:	< 0.05	F:	0.161	CaCO3:	310.62	SPC:
Ca:	66.8	Fe:	< 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit ¡ Value exceeds minimum allowable limit				
Mg:	35	Mn:	0.05					

AQUIFER INFORMATION:

Depth to Top [m]	Depth to Bot. [m]	Yield[l/s]	Method meas.	Aquifer type	Comment
39.00	39.50	0.20	Notch (V- or U-notch)		
43.00	43.50	0.30	Notch (V- or U-notch)		
58.00	58.50	6.00	Notch (V- or U-notch)		
62.00	62.50	4.00	Notch (V- or U-notch)		
67.00	70.00	10.00	Notch (V- or U-notch)		

CASING DETAILS:

Depth to Top [m]	to Bot. [m]	Diam. [mm]	Material	Thickn. [mm]	Type of openings	Openings [mm]: Length Width	Hor. Dist.	Vert. Dist.
0.00	3.00	305	Steel		Plain casing			
0.00	34.00	254	Steel		Plain casing			
0.00	30.00	203	Steel		Plain casing			
30.00	60.00	203	Steel		Perforated or slotted			
0.00	34.00	165	Steel		Plain casing			
34.00	70.00	165	Steel		Perforated or slotted			

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery [m]	%	[min]	T [m²/d]	Storage	Comment
STEP TEST STEP 1	20131011	60	58.50	4.04	1.20						
STEP TEST STEP 2	20131011	60	58.50	10.01	6.91						
STEP TEST STEP 3	20131011	60	58.50	15.21	10.09						
STEP TEST STEP 4	20131011	60	58.50	20.31	17.59	0.10	99	3			
CONSTANT	20131012	1440	58.50	15.09	9.82		100	40	3788	0.05	

RECOMMENDATIONS:

Prior.	Rec. equipm.	Depth to intk. [m]	Type of power	Duty cyc. [hrs]	Disch. rate [l/s]	Water quality	Dyn. water level [m]	Crit. water level [m]
1	Mono-type pump	48.00	Electric motor	24	10.00	CLASS 0	19.00	36.00

Note: 1. Production borehole
2. Install water level monitoring facility in borehole



Golder Associates Africa, Pretoria
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Project No.: 11613568

PUMPING TEST REPORT

Date compiled: 31/03/2014

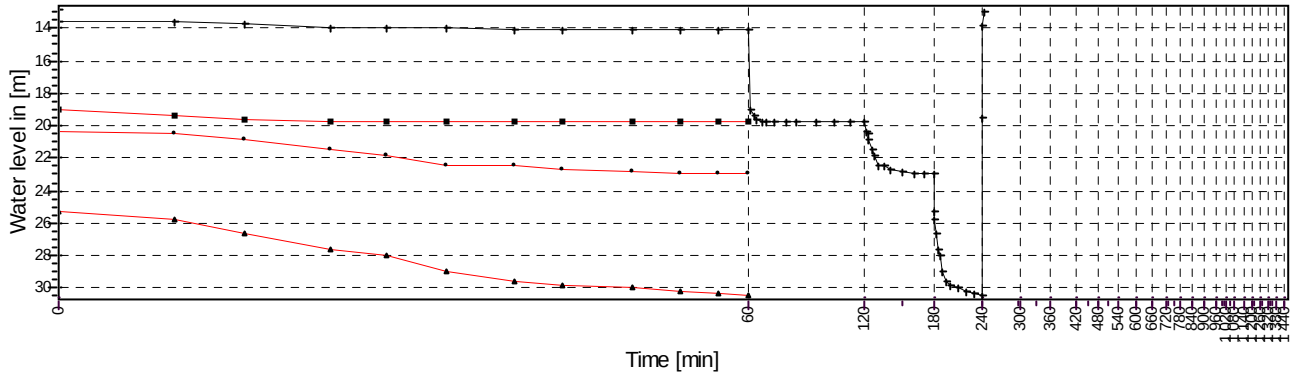
BASIC SITE INFORMATION: Site Identifier: 2823ACX0063 Number: SD2-10 Site type: Borehole

Distr./Farm No.: Site Name/Des.: POSTMASBURG

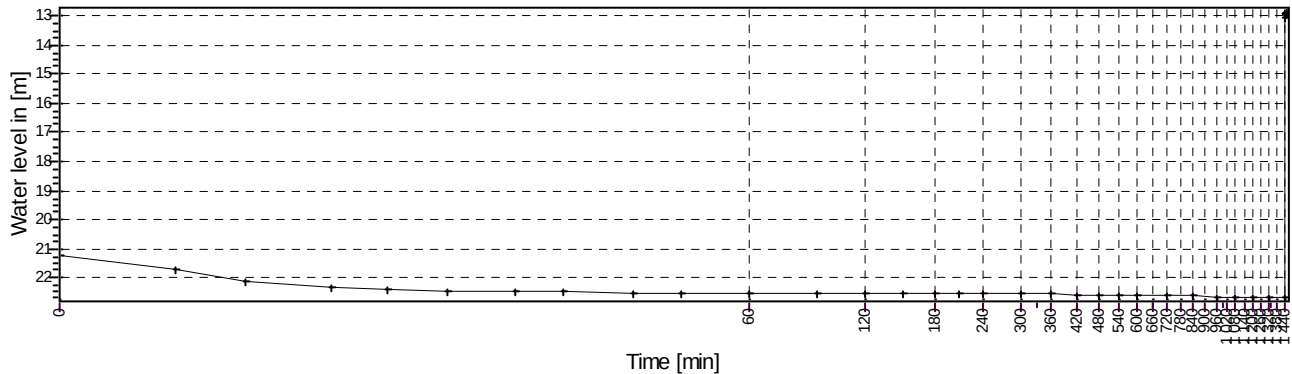
Latitude [°]	28.309325	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	12.60
Longitude [°]	23.138496	Alt. No. 2:		Depth [m]:	70.50	Piezometer:	0
Altitude [m]:	1345.85	Rep. inst.: GOLD		Col. ht. [mm]:	0.40	Date WL meas.:	20140121

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



Constant Rate Test



PUMPING TEST:		Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
Rep. Inst.	Meth. tested								
GOLD	Step test	58.50	20131011	1450	20131011	1853			
GOLD	Constant rate test	58.50	20131012	0800	20131013	0840			

TESTING DETAILS:		Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
Description	Time start.											
STEP TEST STEP 1	1450	60	58.50	4.04	1.20							3.37
STEP TEST STEP 2	1550	60	58.50	10.01	6.91							1.45
STEP TEST STEP 3	1650	60	58.50	15.21	10.09							1.51
STEP TEST STEP 4	1750	60	58.50	20.31	17.59	0.10	99	3				1.15
CONSTANT	0800	1440	58.50	15.09	9.82		100	40				1.54



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Project No.: 11613568

BASIC SITE INFORMATION: Site Identifier: 2823ACX0064 Number: SD2-11 Site type: Borehole

Distr./Farm No.: Site Name/Des.: POSTMASBURG

Region Type: Water supply authority

Region Descr.: TSANTSABANE LM

Latitude [°]: 28.304981

Reg./BB.:

Topo-set:

Depth [m]: 34.00

Longitude [°]: 23.126510

G-Nr.:

Site status: Unused

Col. ht. [m]: 0.48

Altitude [m]: 1337.65

Site purp.: Production (water supply)

Diam. [mm]: 203

Coord. acc.: Accurate to within 1 units

Use applic.: Domestic - all purposes

Drain. reg.: D73A

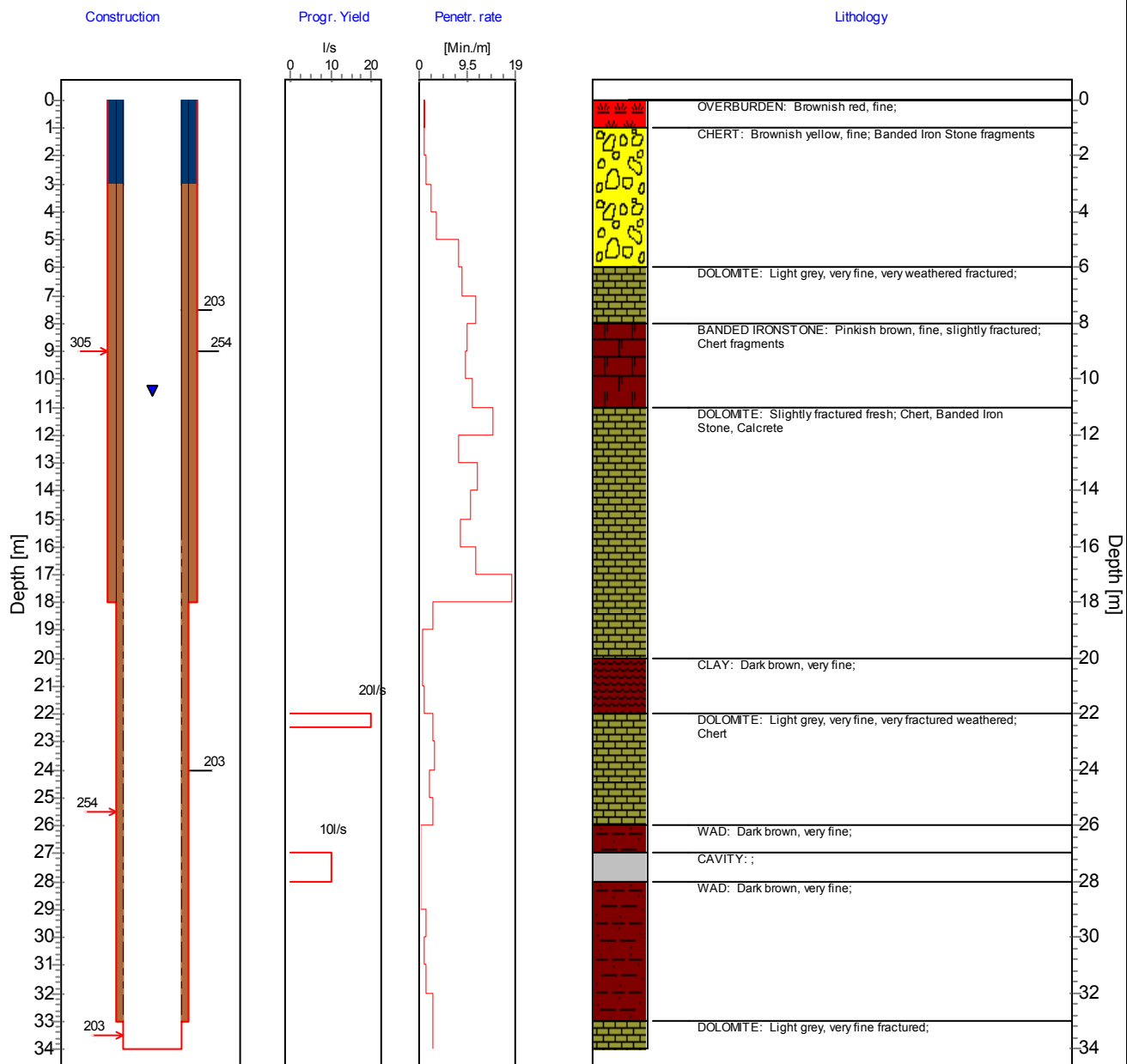
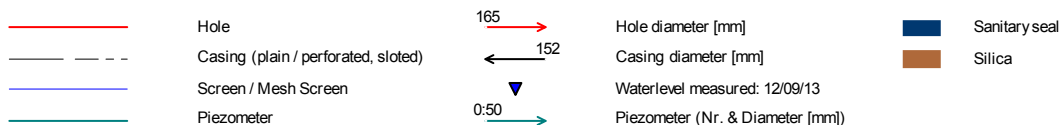
Coord. meth.: Altimeter

Equipment: No equipment

Rep. inst.: GOLD

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Construction and Geohydrological Legend



COMMENT:



Golder Associates Africa, Pretoria
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Fax: 012 - 364 4001
Project No.: 11613568

MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823ACX0064 Number: SD2-11 Site type: Borehole

Distr./Farm No.: Site Name/Descr.: POSTMASBURG WELLFIELD

Latitude [°]:	28.304981	Alt. No. 1:		Diam. [mm]:	203	Water lev. [m]:	10.47
Longitude [°]:	23.126510	Alt. No. 2:		Depth [m]:	34.00	WL status:	Static
Altitude [m]:	1337.65	Rep. inst.:	GOLD	Col. ht. [m]:	0.48	Date WL meas.:	20140121

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:	
Type of Inst.:	Pulley Diam. [mm]:
Manufacturer:	Depth to Intk. [m]:
Engine:	
Manufacturer:	Power Rating [kW]
Type of Power:	Pulley Diam. [mm]:

USE APPLICATION:

Site Status: Unused
Purpose: Production (water supply)
Consumer: Non-urban
Application: Domestic - all purposes

WATER CHEMISTRY:

Sample No.:	SD2-11	Date sampled:	20130912	Depth sampl. [m]:	28.80	Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters:		
pH:	7.78	Na:	23	Cl:	33.1	Langel.:	0.45	E.Coli:
EC: [mS/m]	65.1	K:	2.85	NO3 as N:	2.42	Aggr-Ind:	12.51	Faec. co:
TDS:	460	Si:	15.5	SO4:	24.5	Ion-bal:	2.10	Total Co:
T. Alk.:	301	Al:	< 0.05	F:	0.226	CaCO3:	345.13	SPC:
Ca:	71.4	Fe:	< 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit ‡ Value exceeds minimum allowable limit				
Mg:	40.6	Mn:	< 0.05					

AQUIFER INFORMATION:

Depth to Top [m]	Depth to Bot. [m]	Yield[l/s]	Method meas.	Aquifer type	Comment
22.00	22.50	20.00	Notch (V- or U-notch)		
27.00	28.00	10.00	Notch (V- or U-notch)		

CASING DETAILS:

Depth to Top [m]	to Bot. [m]	Diam. [mm]	Material	Thickn. [mm]	Type of openings	Openings [mm]: Length Width	Hor. Dist.	Vert. Dist.
0.00	18.00	254	Steel		Plain casing			
0.00	15.00	203	Steel		Plain casing			
15.00	33.00	203	Steel		Perforated or slotted			

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery [m] %	[min]	T [m²/d]	Storage	Comment
STEP TEST STEP 1	20130920	60	28.80	8.55	0.11					
STEP TEST STEP 2	20130920	60	28.80	16.49	0.28					
STEP TEST STEP 3	20130920	60	28.80	24.20	0.85					
STEP TEST STEP 4	20130920	60	28.80	30.40	1.33	100	60			
CONSTANT	20130921	2880	28.80	30.10	1.68	100	1440	834	0.05	

RECOMMENDATIONS:

Prior.	Rec. equipm.	Depth to intk. [m]	Type of power	Duty cyc. [hrs]	Disch. rate [l/s]	Water quality	Dyn. water level [m]	Crit. water level [m]
1	Mono-type pump	30.00	Electric motor	20	1.00	CLASS 1	12.00	21.00

Note: 1. Production borehole
2. Install water level monitoring facility in borehole



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Project No.: 11613568

PUMPING TEST REPORT

Date compiled: 31/03/2014

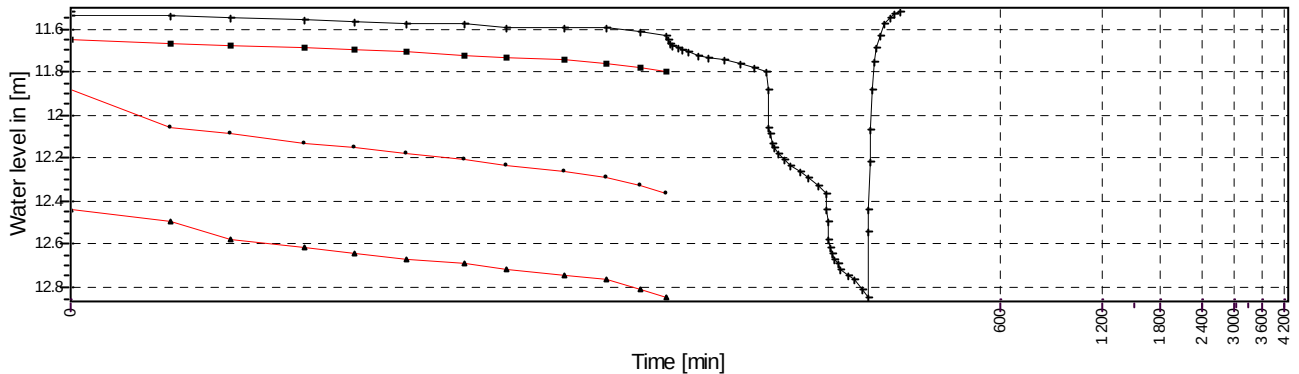
BASIC SITE INFORMATION: Site Identifier: 2823ACX0064 Number: SD2-11 Site type: Borehole

Distr./Farm No.: Site Name/Des.: POSTMASBURG

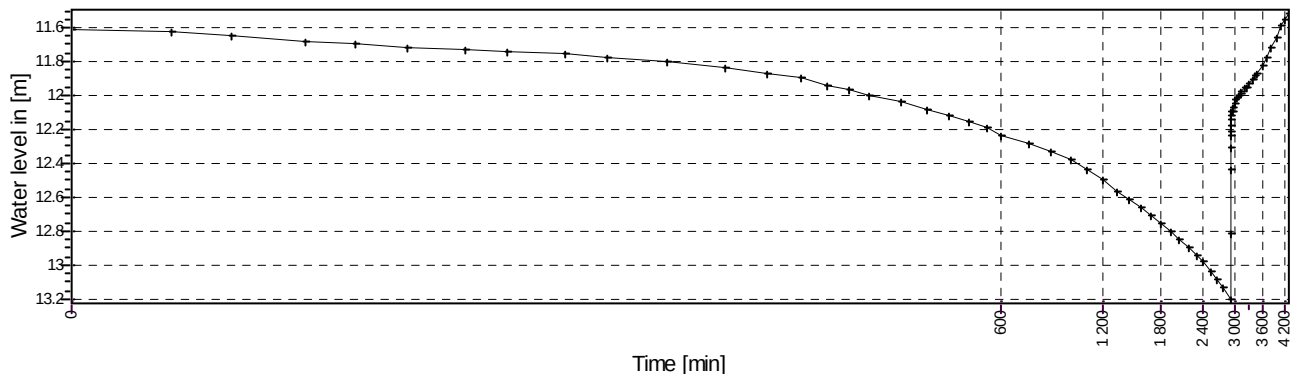
Latitude [°]	28.304981	Alt. No. 1:	Diam. [mm]:	203	Water lev. [m]:	10.47
Longitude [°]	23.126510	Alt. No. 2:	Depth [m]:	34.00	Piezometer:	0
Altitude [m]:	1337.65	Rep. inst.: GOLD	Col. ht. [mm]:	0.48	Date WL meas.:	20140121

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



Constant Rate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m²/d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	28.80	20130920	1400	20130920	1900			
GOLD	Constant rate test	28.80	20130921	1100	20130924	1100			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m²/d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	1400	60	28.80	8.55	0.11							77.73
STEP TEST STEP 2	1500	60	28.80	16.49	0.28							58.89
STEP TEST STEP 3	1600	60	28.80	24.20	0.85							28.47
STEP TEST STEP 4	1700	60	28.80	30.40	1.33	100	60					22.86
CONSTANT	1100	2880	28.80	30.10	1.68	100	1440					17.92



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Project No.: 11613568

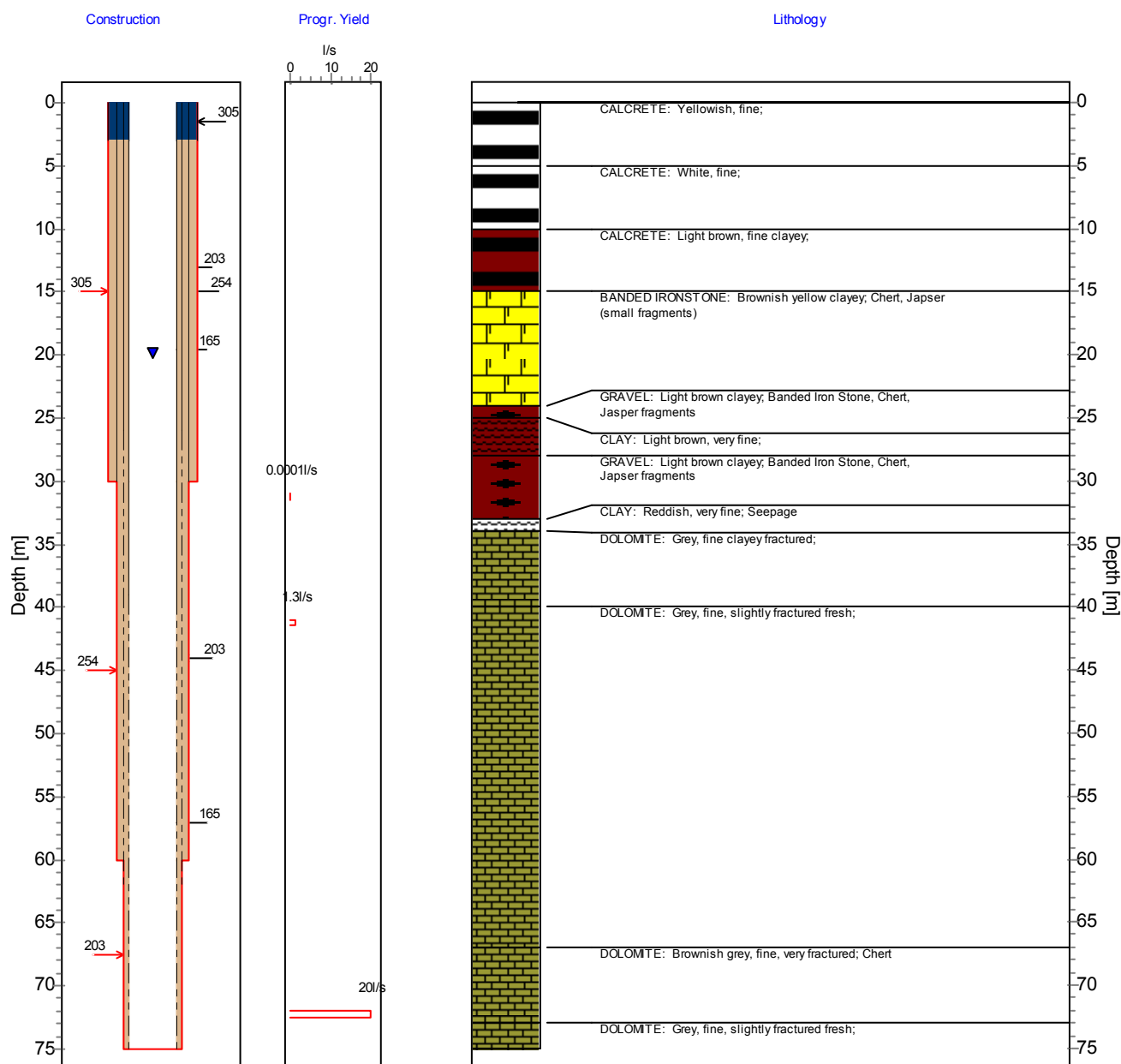
Date compiled: 19/12/2013

Region Type: Water supply authority **Region Descr.:** TSANTSABANE LM

Rep. inst.: GOLD

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

	Hole		Hole diameter [mm]		Sanitary seal
	Casing (plain / perforated, slotted)		Casing diameter [mm]		Gravel (> 2mm)
	Screen / Mesh Screen		Waterlevel measured: 15/09/13		
	Piezometer		Piezometer (Nr. & Diameter [mm])		



COMMENT:



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Project No.: 11613568

MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823ACX0065 Number: SD2-12 Site type: Borehole

Distr./Farm No.: Site Name/Descr.: POSTMASBURG WELLFIELD

Latitude [°]:	28.308063	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	20.23
Longitude [°]:	23.161201	Alt. No. 2:		Depth [m]:	74.06	WL status:	Static
Altitude [m]:	1353.00	Rep. inst.:	GOLD	Col. ht. [m]:	0.50	Date WL meas.:	20140222

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:

Type of Inst.: Pulley Diam. [mm]:
Manufacturer: Depth to Intk. [m]:

Engine:

Manufacturer: Power Rating [kW]
Type of Power: Pulley Diam. [mm]:

USE APPLICATION:

Site Status: Unused
Purpose: Production (water supply)
Consumer: Non-urban
Application: Domestic - all purposes

WATER CHEMISTRY:

Sample No.:	SD2-12	Date sampled:	20130919	Depth sampl. [m]:	70.80	Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters:		
pH:	7.65	Na:	23.5	Cl:	29	Langel.:	0.23	E.Coli:
EC: [mS/m]	57.2	K:	2.88	NO3 as N:	2.74	Aggr-Ind:	12.28	Faec. co:
TDS:	378	Si:	14	SO4:	20.5	Ion-bal:	1.20	Total Co:
T. Alk.:	274	Al:	< 0.05	F:	0.215	CaCO3:	300.23	SPC:
Ca:	62.8	Fe:	< 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit ‡ Value exceeds minimum allowable limit				
Mg:	34.9	Mn:	< 0.05					

AQUIFER INFORMATION:

Depth to Top [m]	Depth to Bot. [m]	Yield[l/s]	Method meas.	Aquifer type	Comment
31.00	31.50	0.00010	Notch (V- or U-notch)		SEEPAGE
41.00	41.50	1.30	Notch (V- or U-notch)		
72.00	72.50	20.00	Notch (V- or U-notch)		

CASING DETAILS:

Depth to Top [m]	to Bot. [m]	Diam. [mm]	Material	Thickn. [mm]	Type of openings	Openings [mm]: Length Width	Hor. Dist.	Vert. Dist.
0.00	3.00	305	Steel		Plain casing			
0.00	30.00	254	Steel		Plain casing			
0.00	26.00	203	Steel		Plain casing			
26.00	62.00	203	Steel		Perforated or slotted			
0.00	39.00	165	Steel		Plain casing			
39.00	75.00	165	Steel		Perforated or slotted			

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery [m] %	[min]	T [m²/d]	Storage	Comment
STEP TEST STEP 1	20130917	60	70.80	5.50	0.30					
STEP TEST STEP 2	20130917	60	70.80	10.54	1.23					
STEP TEST STEP 3	20130917	60	70.80	15.22	2.02					
STEP TEST STEP 4	20130917	60	70.80	21.18	5.02	100	60			
CONSTANT (1)	20130918	1440	70.80	20.10	4.63	100	300			
CONSTANT (2)	20140222	4320	70.00	20.12	4.80	100	1	4120	0.05	

RECOMMENDATIONS:

Prior.	Rec. equipm.	Depth to intk. [m]	Type of power	Duty cyc. [hrs]	Disch. rate [l/s]	Water quality	Dyn. water level [m]	Crit. water level [m]
1	Mono-type pump	48.00	Electric motor	24	10.00	CLASS 0	23.00	34.00

Note: 1. Production borehole
2. Install water level monitoring facility in borehole



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Project No.: 11613568

PUMPING TEST REPORT

Date compiled: 17/04/2014

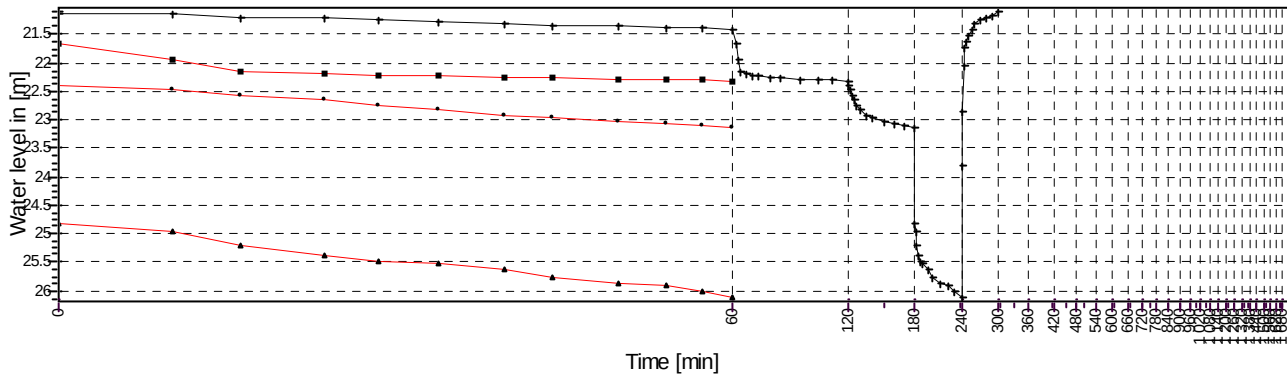
BASIC SITE INFORMATION: Site Identifier: 2823ACX0065 Number: SD2-12 Site type: Borehole

Distr./Farm No.: Site Name/Des.: POSTMASBURG

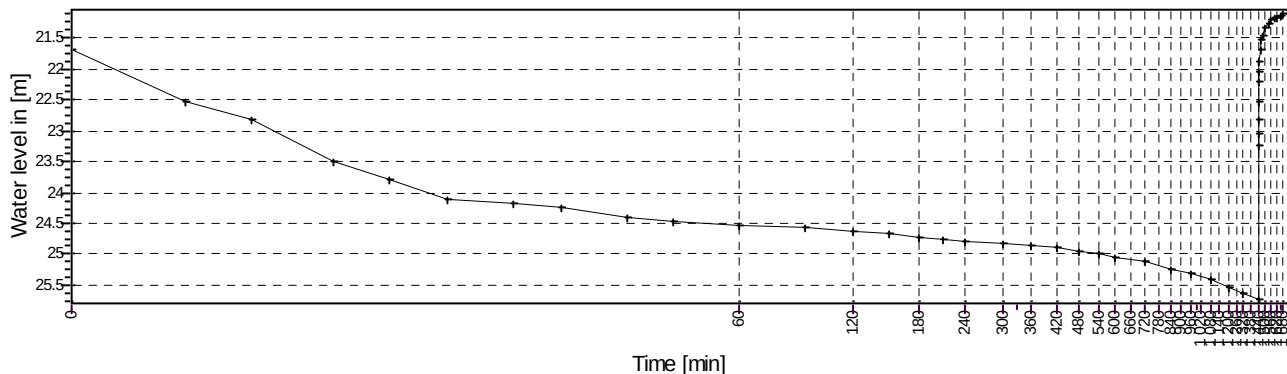
Latitude [°]	28.308063	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	20.23
Longitude [°]	23.161201	Alt. No. 2:		Depth [m]:	74.06	Piezometer:	0
Altitude [m]:	1353.00	Rep. inst.: GOLD		Col. ht. [mm]:	0.50	Date WL meas.:	20140222

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



Constant Rate Test



PUMPING TEST:		Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m²/d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	70.80	20130917	1400	20130917	1900			
GOLD	Constant rate test	70.80	20130918	0800	20130919	1300			

TESTING DETAILS:		Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	Rec. Dur. [min]	Trans. [m²/d]	Perm. [m/d]	Storat.	Q/st
Description	Time start.					%					
STEP TEST STEP 1	1400	60	70.80	5.50	0.30						18.33
STEP TEST STEP 2	1500	60	70.80	10.54	1.23						8.57
STEP TEST STEP 3	1600	60	70.80	15.22	2.02						7.53
STEP TEST STEP 4	1700	60	70.80	21.18	5.02	100	60				4.22
CONSTANT (1)	0800	1440	70.80	20.10	4.63	100	300				4.34



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Project No.: 11613568

PUMPING TEST REPORT

Date compiled: 17/04/2014

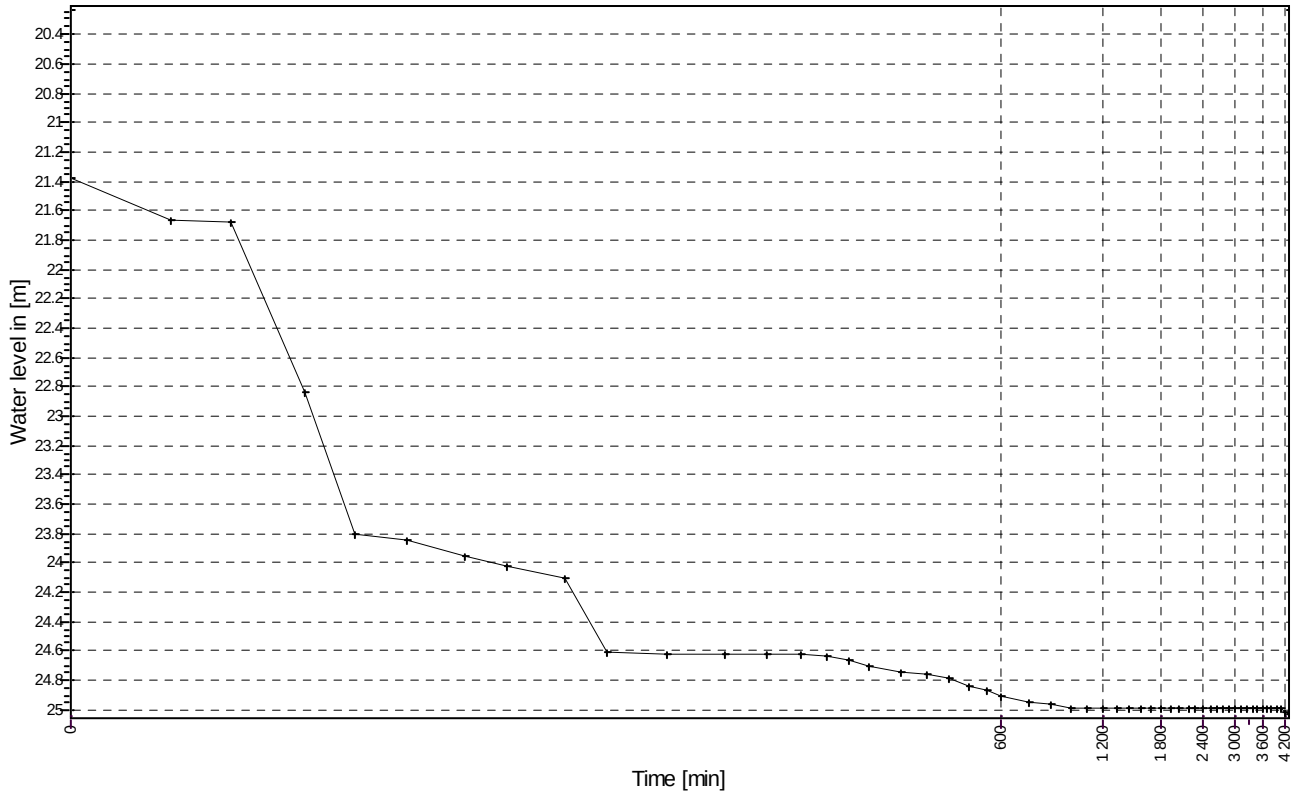
BASIC SITE INFORMATION: Site Identifier: 2823ACX0065 Number: SD2-12 Site type: Borehole

Distr./Farm No.: Site Name/Des.: POSTMASBURG

Latitude [°]	28.308063	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	20.23
Longitude [°]	23.161201	Alt. No. 2:		Depth [m]:	74.06	Piezometer:	0
Altitude [m]:	1353.00	Rep. inst.: GOLD		Col. ht. [mm]:	0.50	Date WL meas.:	20140222

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Constant Rate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	70.80	20130917	1400	20130917	1900			
GOLD	Constant rate test	70.80	20130918	0800	20130919	1300			
GOLD	Constant rate test	70.00	20140222	1710	20140225	1711			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	1400	60	70.80	5.50	0.30							18.33
STEP TEST STEP 2	1500	60	70.80	10.54	1.23							8.57
STEP TEST STEP 3	1600	60	70.80	15.22	2.02							7.53
STEP TEST STEP 4	1700	60	70.80	21.18	5.02	100	60					4.22
CONSTANT (1)	0800	1440	70.80	20.10	4.63	100	300					4.34
CONSTANT (2)	1710	4320	70.00	20.12	4.80	100	1					4.19



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Project No.: 11613568

BASIC SITE INFORMATION: Site Identifier: 2823ACX0066 Number: SD2-13 Site type: Borehole

Distr./Farm No.: Site Name/Des.: POSTMASBURG

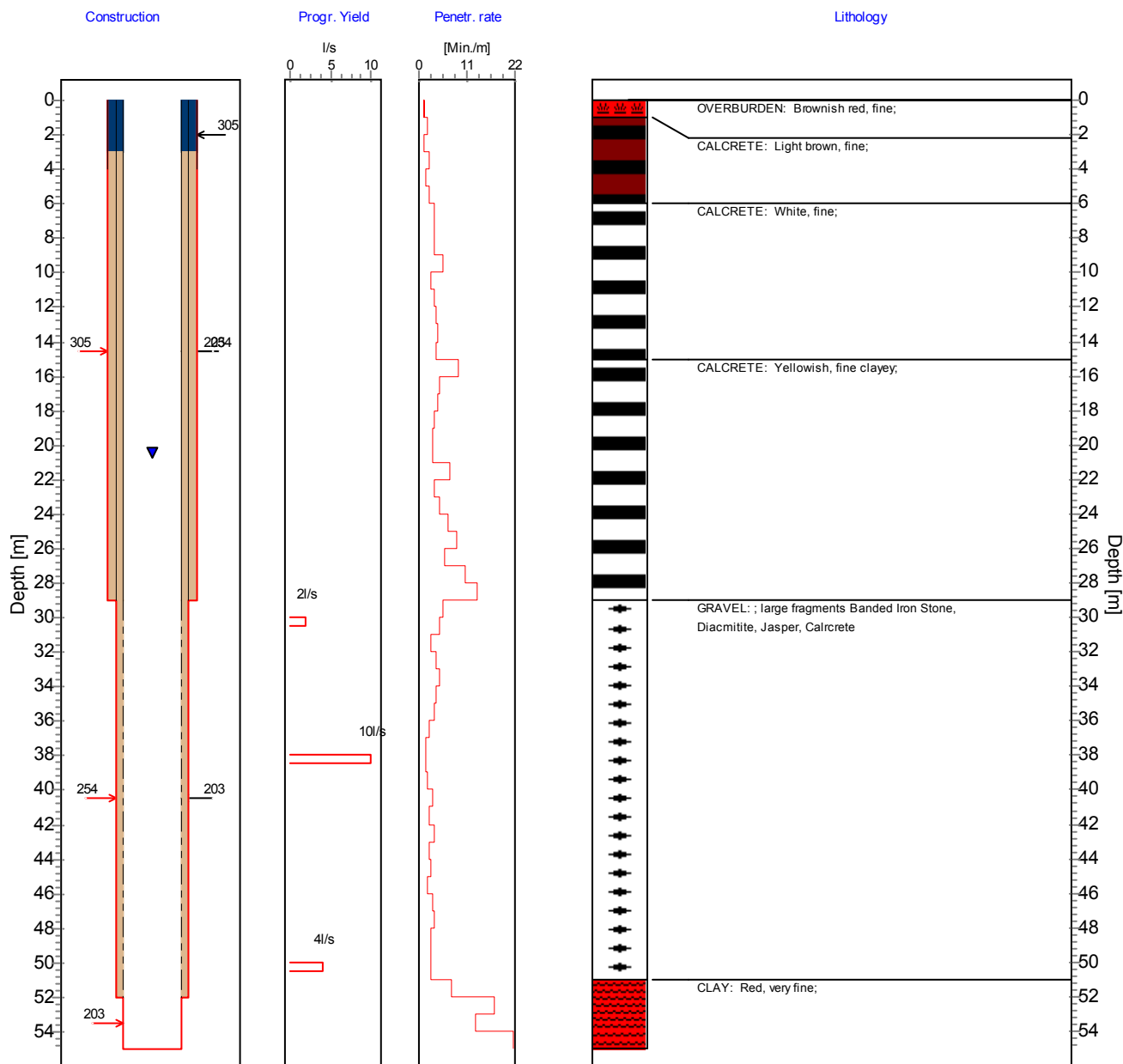
Region Type: Water supply authority Region Descr.: TSANTSABANE LM

Latitude [°]: 28.298704	Reg./BB.:	Topo-set.:	Depth [m]: 52.60
Longitude [°]: 23.163611	G-Nr.:	Site status: Unused	Col. ht. [m]: 0.35
Altitude [m]: 1353.17		Site purp.: Production (water supply)	Diam. [mm]: 200
Coord. acc.: Accurate to within 1 units		Use applic.: Domestic - all purposes	Drain. reg.: D73A
Coord. meth.: Altimeter		Equipment: No equipment	Rep. inst.: GOLD

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Construction and Geohydrological Legend

	Hole	165 →	Hole diameter [mm]		Sanitary seal
	Casing (plain / perforated, slotted)	← 152	Casing diameter [mm]		Gravel (> 2mm)
	Screen / Mesh Screen	▼	Waterlevel measured: 17/10/13		
	Piezometer	0:50 →	Piezometer (Nr. & Diameter [mm])		



COMMENT:



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Project No.: 11613568

MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823ACX0066 Number: SD2-13 Site type: Borehole

Distr./Farm No.: Site Name/Descr.: POSTMASBURG WELLFIELD

Latitude [°]:	28.298704	Alt. No. 1:		Diam. [mm]:	200	Water lev. [m]:	19.93
Longitude [°]:	23.163611	Alt. No. 2:		Depth [m]:	52.60	WL status:	Static
Altitude [m]:	1353.17	Rep. inst.:	GOLD	Col. ht. [m]:	0.35	Date WL meas.:	20140121

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:	
Type of Inst.:	Pulley Diam. [mm]:
Manufacturer:	Depth to Intk. [m]:
Engine:	
Manufacturer:	Power Rating [kW]
Type of Power:	Pulley Diam. [mm]:

USE APPLICATION:

Site Status: Unused
Purpose: Production (water supply)
Consumer: Non-urban
Application: Domestic - all purposes

WATER CHEMISTRY:

Sample No.:	SD2-13	Date sampled:	20131021	Depth sampl. [m]:	46.50	Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters:		
pH:	7.67	Na:	19	Cl:	19.8	Langel.:	0.39	E.Coli:
EC: [mS/m]	56.9	K:	3.23	NO3 as N:	3.34	Aggr-Ind:	12.44	Faec. co:
TDS:	338	Si:	20.7	SO4:	24.2	Ion-bal:	0.48	Total Co:
T. Alk.:	279	Al:	< 0.05	F:	0.207	CaCO3:	302.49	SPC:
Ca:	85.3	Fe:	< 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit § Value exceeds minimum allowable limit				
Mg:	21.8	Mn:	< 0.05					

AQUIFER INFORMATION:

Depth to Top [m]	Depth to Bot. [m]	Yield[l/s]	Method meas.	Aquifer type	Comment
30.00	30.50	2.00	Notch (V- or U-notch)		
38.00	38.50	10.00	Notch (V- or U-notch)		
50.00	50.50	4.00	Notch (V- or U-notch)		

CASING DETAILS:

Depth to Top [m]	to Bot. [m]	Diam. [mm]	Material	Thickn. [mm]	Type of openings	Openings [mm]: Length Width	Hor. Dist.	Vert. Dist.
0.00	4.00	305	Steel		Plain casing			
0.00	29.00	254	Steel		Plain casing			
0.00	29.00	203	Steel		Plain casing			
29.00	52.00	203	Steel		Perforated or slotted			

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery [m] %	T [m²/d]	Storage	Comment
STEP TEST STEP 1	20131017	60	46.50	6.00	1.73				
STEP TEST STEP 2	20131017	60	46.50	10.09	3.97				
STEP TEST STEP 3	20131017	60	46.50	17.27	7.84				
STEP TEST STEP 4	20131017	20	46.50	30.04	26.08	0 100	720		
PUMP INLET	20131017	4	46.50	28.40	26.09				
CONSTANT	20131019	2880	46.50	20.02	16.58	1.43 91	2880	570	0.05

RECOMMENDATIONS:

Prior.	Rec. equipm.	Depth to intk. [m]	Type of power	Duty cyc. [hrs]	Disch. rate [l/s]	Water quality	Dyn. water level [m]	Crit. water level [m]
1	Mono-type pump	48.00	Electric motor	20	10.00	CLASS 0	28.67	32.00

Note: 1. Production borehole
2. Install water level monitoring facility in borehole



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Project No.: 11613568

PUMPING TEST REPORT

Date compiled: 31/03/2014

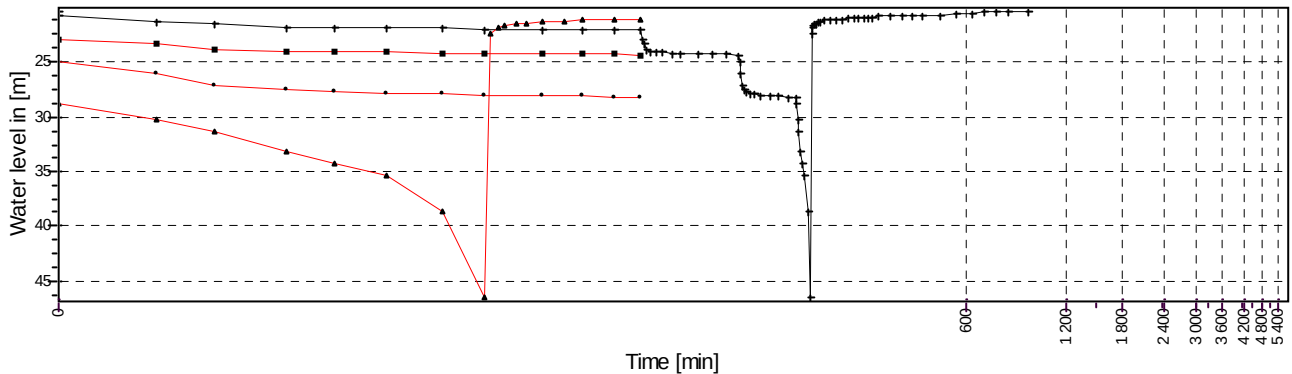
BASIC SITE INFORMATION: Site Identifier: 2823ACX0066 Number: SD2-13 Site type: Borehole

Distr./Farm No.: Site Name/Des.: POSTMASBURG

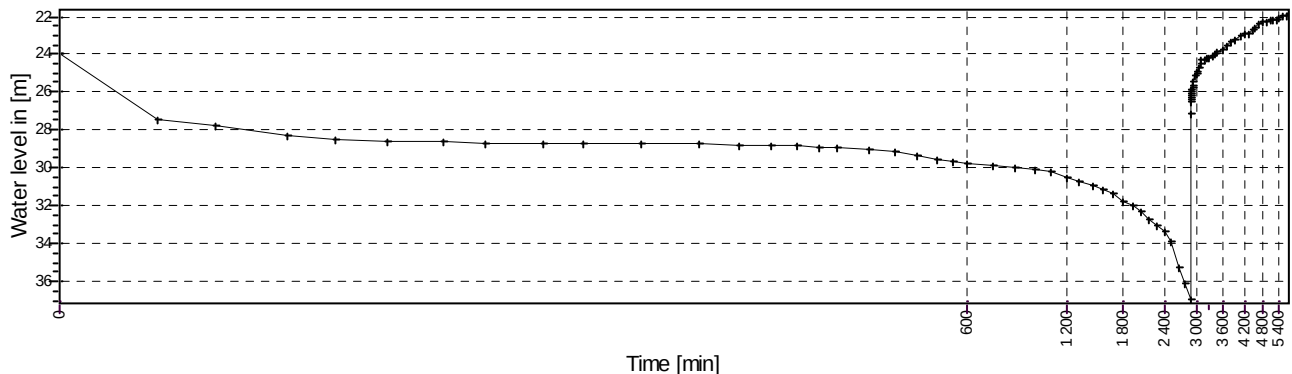
Latitude [°]	-28.298704	Alt. No. 1:		Diam. [mm]:	200	Water lev. [m]:	19.93
Longitude [°]	23.163611	Alt. No. 2:		Depth [m]:	52.60	Piezometer:	0
Altitude [m]:	1353.17	Rep. inst.: GOLD		Col. ht. [mm]:	0.35	Date WL meas.:	20140121

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



Constant Rate Test



PUMPING TEST:		Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
Rep. Inst.	Meth. tested								
GOLD	Step test	46.50	20131017	0700	20131017	2220			
GOLD	Constant rate test	46.50	20131019	1000	20131023	1000			

TESTING DETAILS:		Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
Description	Time start.											
STEP TEST STEP 1	0700	60	46.50	6.00	1.73							3.47
STEP TEST STEP 2	0800	60	46.50	10.09	3.97							2.54
STEP TEST STEP 3	0900	60	46.50	17.27	7.84							2.20
STEP TEST STEP 4	1000	20	46.50	30.04	26.08	0	100	720				1.15
PUMP INLET	1100	4	46.50	28.40	26.09							1.09
CONSTANT	1000	2880	46.50	20.02	16.58	1.43	91	2880				1.21



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Project No.: 11613568

BASIC SITE INFORMATION: Site Identifier: 2823ACX0067 Number: SD2-14 Site type: Borehole

Distr./Farm No.: Site Name/Des.: POSTMASBURG

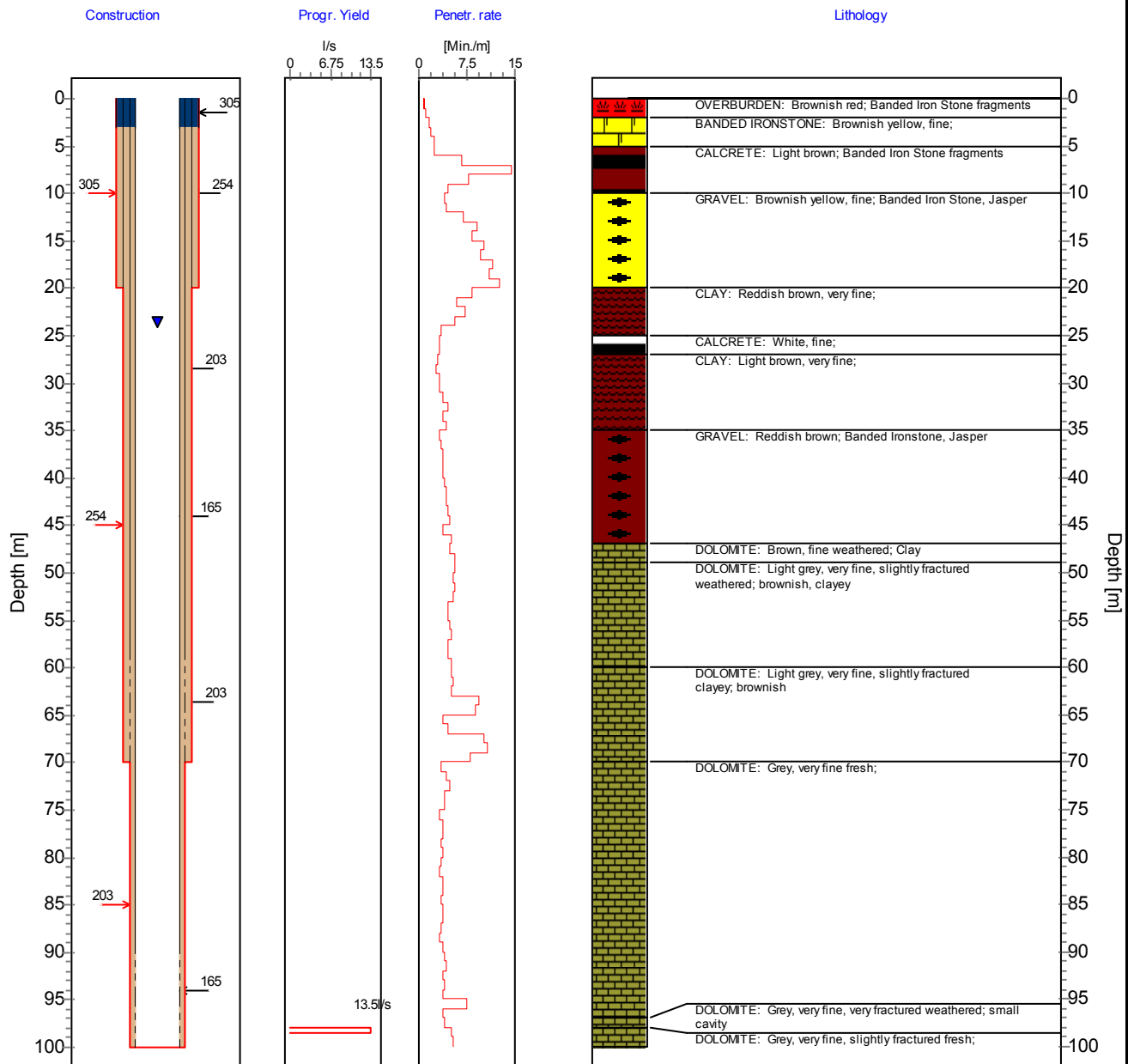
Region Type: Water supply authority Region Descr.: TSANTSABANE LM

Latitude [°]: 28.296017	Reg./BB.:	Topo-set.:	Depth [m]: 100.00
Longitude [°]: 23.172748	G-Nr.:	Site status: Unused	Col. ht. [m]: 0.30
Altitude [m]: 1357.17		Site purp.: Production (water supply)	Diam. [mm]: 165
Coord. acc.: Accurate to within 1 units		Use applic.: Domestic - all purposes	Drain. reg.: D73A
Coord. meth.: Altimeter		Equipment: No equipment	Rep. inst.: GOLD

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Construction and Geohydrological Legend

	Hole	165 →	Hole diameter [mm]		Sanitary seal
	Casing (plain / perforated, slotted)	← 152	Casing diameter [mm]		Gravel (> 2mm)
	Screen / Mesh Screen	▼	Waterlevel measured: 26/09/13		
	Piezometer	0:50 →	Piezometer (Nr. & Diameter [mm])		



COMMENT:



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 Project No.: 11613568

MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823ACX0067 Number: SD2-14 Site type: Borehole

Distr./Farm No.: Site Name/Descr.: POSTMASBURG WELLFIELD

Latitude [°]:	28.296017	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	23.96
Longitude [°]:	23.172748	Alt. No. 2:		Depth [m]:	100.00	WL status:	Static
Altitude [m]:	1357.17	Rep. inst.:	GOLD	Col. ht. [m]:	0.30	Date WL meas.:	20140121

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:		Pulley Diam. [mm]:	
Type of Inst.:		Depth to Intk. [m]:	
Manufacturer:			
Engine:		Power Rating [kW]	
Manufacturer:		Pulley Diam. [mm]:	
Type of Power:			

USE APPLICATION:

Site Status: Unused
Purpose: Production (water supply)
Consumer: Non-urban
Application: Domestic - all purposes

WATER CHEMISTRY:

Sample No.: SD2-14		Date sampled: 20131016		Depth sampl. [m]: 88.50		Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters:		
pH:	7.69	Na:	21.3	Cl:	29.8	Langel.:	0.31	E.Coli:
EC: [mS/m]	57.3	K:	2.85	NO3 as N:	2.57	Aggr-Ind:	12.36	Faec. co:
TDS:	362	Si:	14.5	SO4:	21.4	Ion-bal:	1.21	Total Co:
T. Alk.:	276	Al:	< 0.05	F:	0.189	CaCO3:	308.58	SPC:
Ca:	67.3	Fe:	< 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit ‡ Value exceeds minimum allowable limit				
Mg:	34.2	Mn:	< 0.05					

AQUIFER INFORMATION:

Depth to Top [m]	Depth to Bot. [m]	Yield[l/s]	Method meas.	Aquifer type	Comment
98.00	98.50	13.50	Notch (V- or U-notch)		

CASING DETAILS:

Depth to Top [m]	to Bot. [m]	Diam. [mm]	Material	Thickn. [mm]	Type of openings	Openings [mm]: Length Width	Hor. Dist.	Vert. Dist.
0.00	3.00	305	Steel		Plain casing			
0.00	20.00	254	Steel		Plain casing			
0.00	57.00	203	Steel		Plain casing			
0.00	88.00	165	Steel		Plain casing			
88.00	100.00	165	Steel		Perforated or slotted			
57.00	70.00	203	Steel		Perforated or slotted			

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery [m] %	[min]	T [m²/d]	Storage	Comment
STEP TEST STEP 1	20131013	60	88.50	4.03	0.89					
STEP TEST STEP 2	20131013	60	88.50	8.18	3.51					
STEP TEST STEP 3	20131013	60	88.50	14.25	10.39					
STEP TEST STEP 4	20131013	60	88.50	20.40	22.30	100	40			
CONSTANT (1)	20131014	600	88.50	15.02	11.05	100	60			
CONSTANT (2)	20131015	1440	88.50	15.20	12.16	100	90	472	0.05	

RECOMMENDATIONS:

Prior.	Rec. equipm.	Depth to intk. [m]	Type of power	Duty cyc. [hrs]	Disch. rate [l/s]	Water quality	Dyn. water level [m]	Crit. water level [m]
1	Mono-type pump	54.00	Electric motor	24	7.00	CLASS 0	29.00	42.00

Note: 1. Production borehole
2. Install water level monitoring facility in borehole



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Project No.: 11613568

PUMPING TEST REPORT

Date compiled: 31/03/2014

BASIC SITE INFORMATION:

Site Identifier: 2823ACX0067 Number: SD2-14

Site type: Borehole

Distr./Farm No.:

Site Name/Des.: POSTMASBURG

Latitude [°] 28.296017
Longitude [°] 23.172748
Altitude [m]: 1357.17

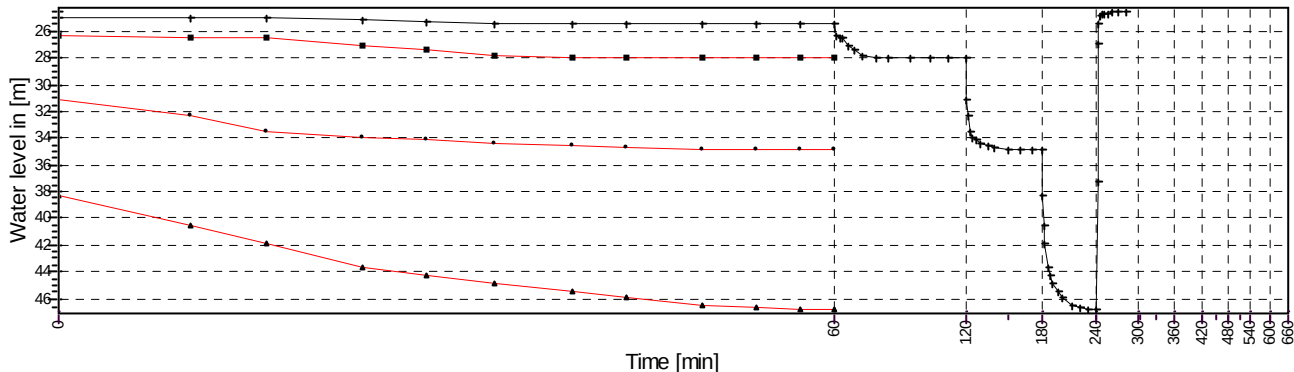
Alt. No. 1:
Alt. No. 2:
Rep. inst.: GOLD

Diam. [mm]: 165
Depth [m]: 100.00
Col. ht. [mm]: 0.30

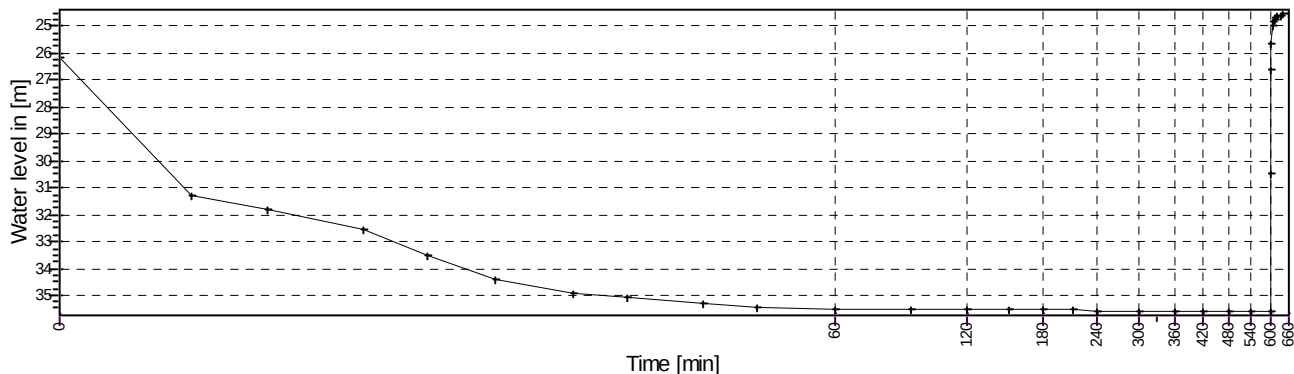
Water lev. [m]: 23.96
Piezometer: 0
Date WL meas.: 20140121

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



Constant Rate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	88.50	20131013	1530	20131013	2010			
GOLD	Constant rate test	88.50	20131014	0830	20131014	1930			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	1530	60	88.50	4.03	0.89							4.53
STEP TEST STEP 2	1630	60	88.50	8.18	3.51							2.33
STEP TEST STEP 3	1730	60	88.50	14.25	10.39							1.37
STEP TEST STEP 4	1830	60	88.50	20.40	22.30	100	40					0.91
CONSTANT (1)	0830	600	88.50	15.02	11.05	100	60					1.36



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PUMPING TEST REPORT

Date compiled: 31/03/2014

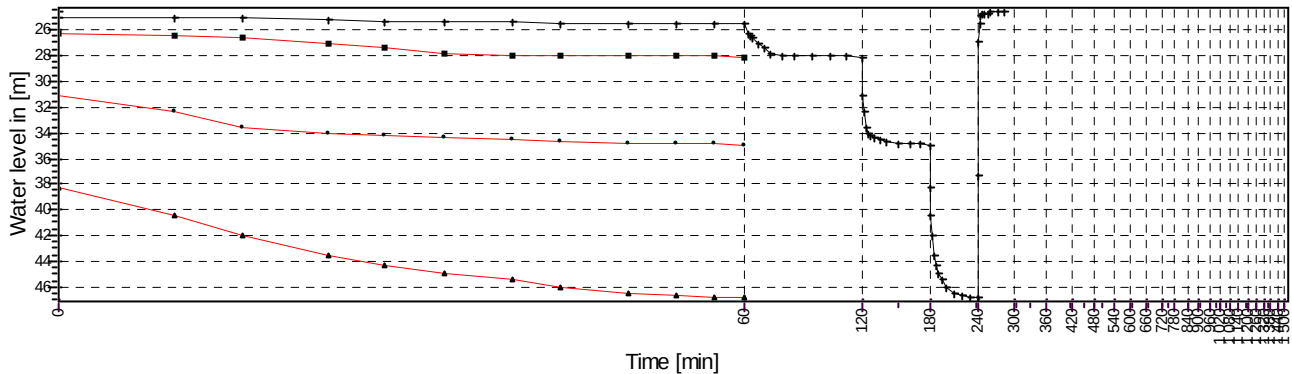
BASIC SITE INFORMATION: Site Identifier: 2823ACX0067 Number: SD2-14 Site type: Borehole

Distr./Farm No.: Site Name/Des.: POSTMASBURG

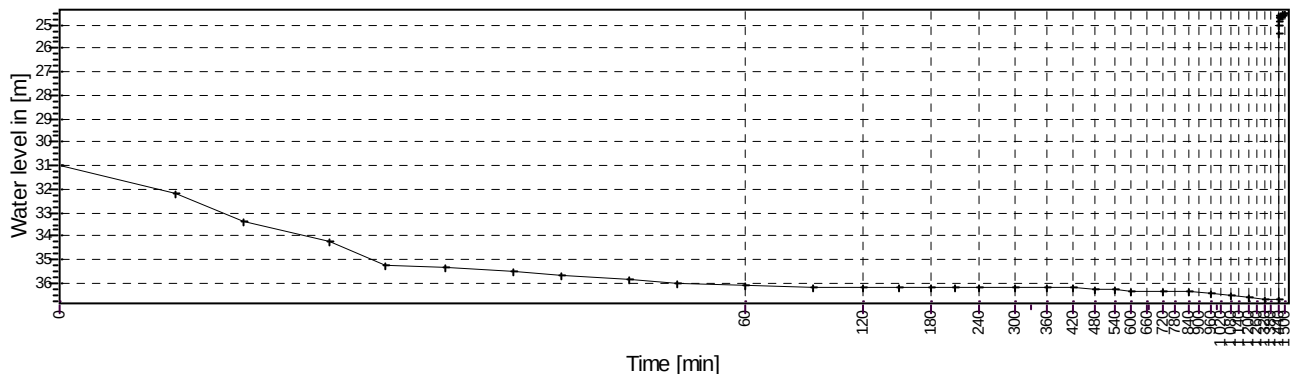
Latitude [°]	28.296017	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	23.96
Longitude [°]	23.172748	Alt. No. 2:		Depth [m]:	100.00	Piezometer:	0
Altitude [m]:	1357.17	Rep. inst.: GOLD		Col. ht. [mm]:	0.30	Date WL meas.:	20140121

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



Constant Rate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m²/d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	88.50	20131013	1530	20131013	2010			
GOLD	Constant rate test	88.50	20131014	0830	20131014	1930			
GOLD	Constant rate test	88.50	20131015	0930	20131016	1100			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m²/d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	1530	60	88.50	4.03	0.89							4.53
STEP TEST STEP 2	1630	60	88.50	8.18	3.51							2.33
STEP TEST STEP 3	1730	60	88.50	14.25	10.39							1.37
STEP TEST STEP 4	1830	60	88.50	20.40	22.30	100	40					0.91
CONSTANT (1)	0830	600	88.50	15.02	11.05	100	60					1.36
CONSTANT (2)	0930	1440	88.50	15.20	12.16	100	90					1.25



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Project No.: 11613568

BASIC SITE INFORMATION: Site Identifier: 2823ACX0068 Number: SD2-15 Site type: Borehole

Distr./Farm No.: Site Name/Des.: POSTMASBURG

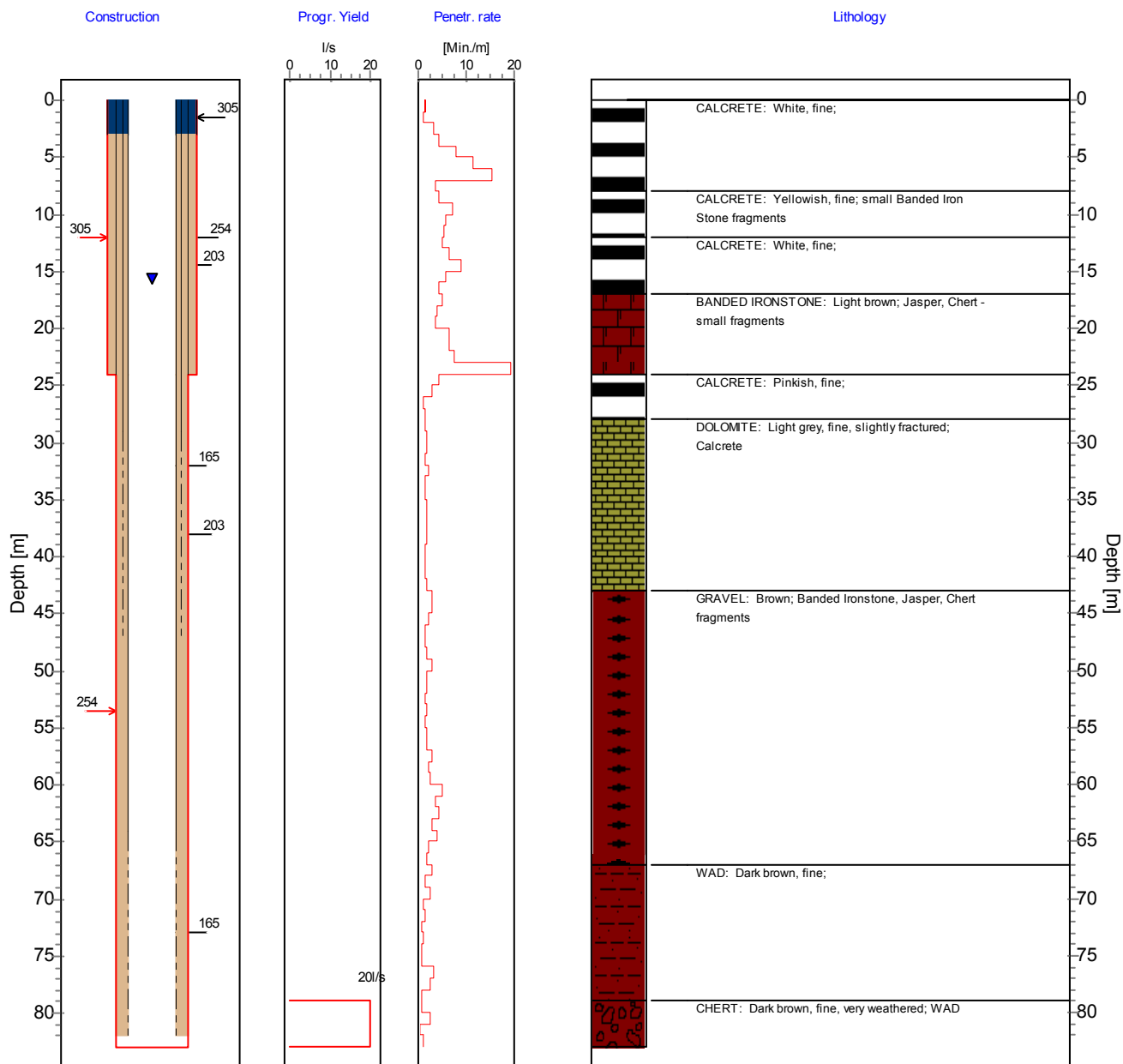
Region Type: Water supply authority Region Descr.: TSANTSABANE LM

Latitude [°]: 28.292804	Reg./BB.:	Topo-set.:	Depth [m]: 81.80
Longitude [°]: 23.148754	G-Nr.:	Site status: Unused	Col. ht. [m]: 0.47
Altitude [m]: 1349.10		Site purp.: Production (water supply)	Diam. [mm]: 165
Coord. acc.: Accurate to within 1 units		Use applic.: Domestic - all purposes	Drain. reg.: D73A
Coord. meth.: Altimeter		Equipment: No equipment	Rep. inst.: GOLD

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Construction and Geohydrological Legend

	Hole	165 →	Hole diameter [mm]		Sanitary seal
	Casing (plain / perforated, slotted)	← 152	Casing diameter [mm]		Gravel (> 2mm)
	Screen / Mesh Screen	▼	Waterlevel measured: 28/09/13		
	Piezometer	0:50 →	Piezometer (Nr. & Diameter [mm])		



COMMENT:



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 Project No.: 11613568

MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823ACX0068 Number: SD2-15 Site type: Borehole

Distr./Farm No.: Site Name/Descr.: POSTMASBURG WELLFIELD

Latitude [°]:	28.292804	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	15.90
Longitude [°]:	23.148754	Alt. No. 2:		Depth [m]:	80.44	WL status:	Static
Altitude [m]:	1349.10	Rep. inst.:	GOLD	Col. ht. [m]:	0.50	Date WL meas.:	20140305

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:		Pulley Diam. [mm]:	
Type of Inst.:		Depth to Intk. [m]:	
Manufacturer:			
Engine:		Power Rating [kW]	
Manufacturer:		Pulley Diam. [mm]:	
Type of Power:			

USE APPLICATION:

Site Status: Unused
Purpose: Production (water supply)
Consumer: Non-urban
Application: Domestic - all purposes

WATER CHEMISTRY:

Sample No.:	SD2-15	Date sampled:	20131021	Depth sampl. [m]:	76.80	Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters:		
pH:	8.02	Na:	19.4	Cl:	29.3	Langel.:	0.65	E.Coli:
EC: [mS/m]	57.5	K:	2.93	NO3 as N:	2.52	Aggr-Ind:	12.70	Faec. co:
TDS:	350	Si:	14.9	SO4:	22.2	Ion-bal:	0.61	Total Co:
T. Alk.:	282	Al:	< 0.05	F:	0.442	CaCO3:	315.01	SPC:
Ca:	67.9	Fe:	< 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit § Value exceeds minimum allowable limit				
Mg:	35.4	Mn:	< 0.05					

AQUIFER INFORMATION:

Depth to Top [m]	Depth to Bot. [m]	Yield[l/s]	Method meas.	Aquifer type	Comment
79.00	83.00	20.00	Notch (V- or U-notch)		

CASING DETAILS:

Depth to Top [m]	to Bot. [m]	Diam. [mm]	Material	Thickn. [mm]	Type of openings	Openings [mm]: Length Width	Hor. Dist.	Vert. Dist.
0.00	3.00	305	Steel		Plain casing			
0.00	24.00	254	Steel		Plain casing			
0.00	29.00	203	Steel		Plain casing			
29.00	47.00	203	Steel		Perforated or slotted			
0.00	64.00	165	Steel		Plain casing			
64.00	82.00	165	Steel		Perforated or slotted			

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery [m] %	[min]	T [m²/d]	Storage	Comment
STEP TEST STEP 1	20131019	60	76.80	5.14	0.42					
STEP TEST STEP 2	20131019	60	76.80	10.12	1.27					
STEP TEST STEP 3	20131019	60	76.80	15.13	2.19					
STEP TEST STEP 4	20131019	60	76.80	20.00	3.23	100	5			
CONSTANT (1)	20131020	1440	76.80	20.05	3.36	100	30			
CONSTANT (2)	20140305	4320	76.80	20.08	3.58	100	720	12360	0.05	

RECOMMENDATIONS:

Prior.	Rec. equipm.	Depth to intk. [m]	Type of power	Duty cyc. [hrs]	Disch. rate [l/s]	Water quality	Dyn. water level [m]	Crit. water level [m]
1	Mono-type pump	48.00	Electric motor	24	10.00	CLASS 0	18.00	30.00

Note: 1. Production borehole
2. Install water level monitoring facility in borehole



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PUMPING TEST REPORT

Date compiled: 17/04/2014

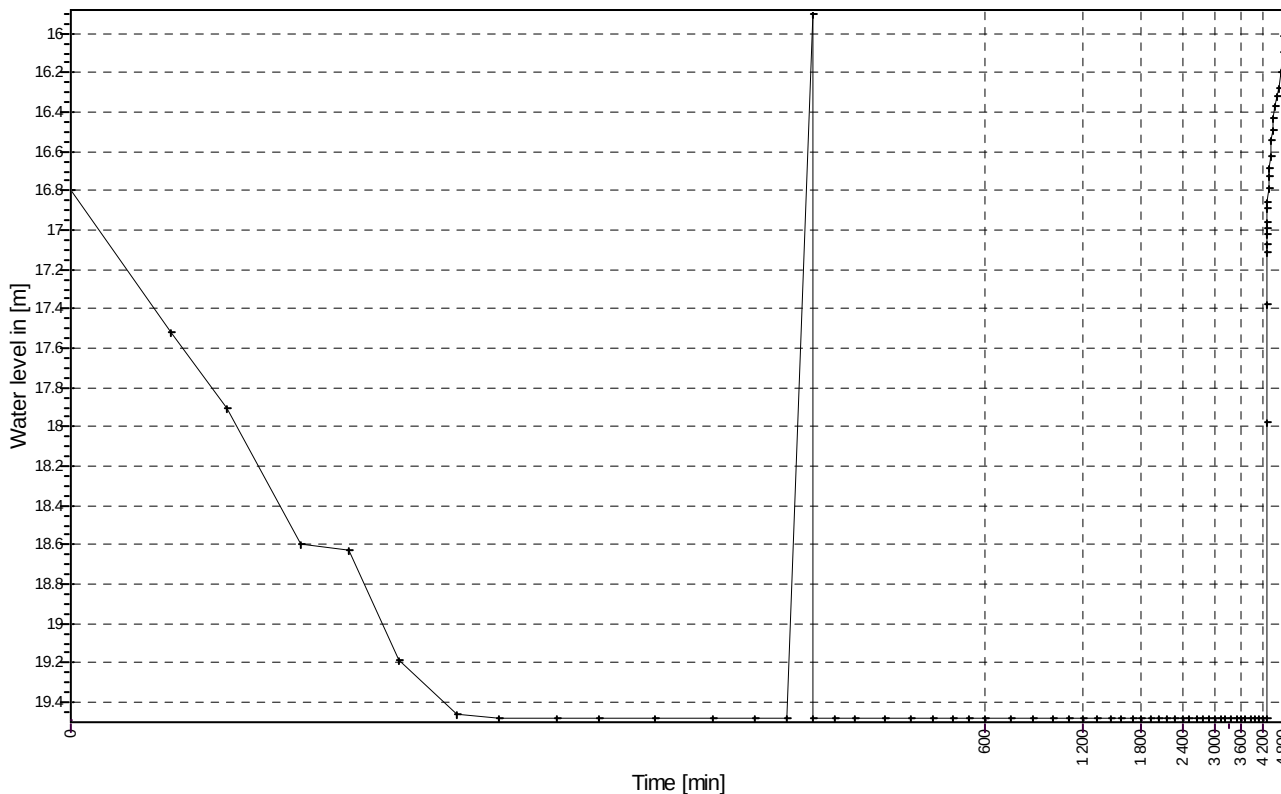
BASIC SITE INFORMATION: Site Identifier: 2823ACX0068 Number: SD2-15 Site type: Borehole

Distr./Farm No.: Site Name/Des.: POSTMASBURG

Latitude [°]	28.292804	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	15.90
Longitude [°]	23.148754	Alt. No. 2:		Depth [m]:	80.44	Piezometer:	0
Altitude [m]:	1349.10	Rep. inst.: GOLD		Col. ht. [mm]:	0.50	Date WL meas.:	20140305

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Constant Rate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
GOLD	Constant rate test	59.15	20140305	1110	20140308	2310			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
CONSTANT (2)	1410	4320	76.80	20.08	3.58		100	720				5.61



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Tel: 012 - 364 4000
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Project No.: 11613568

PUMPING TEST REPORT

Date compiled: 17/04/2014

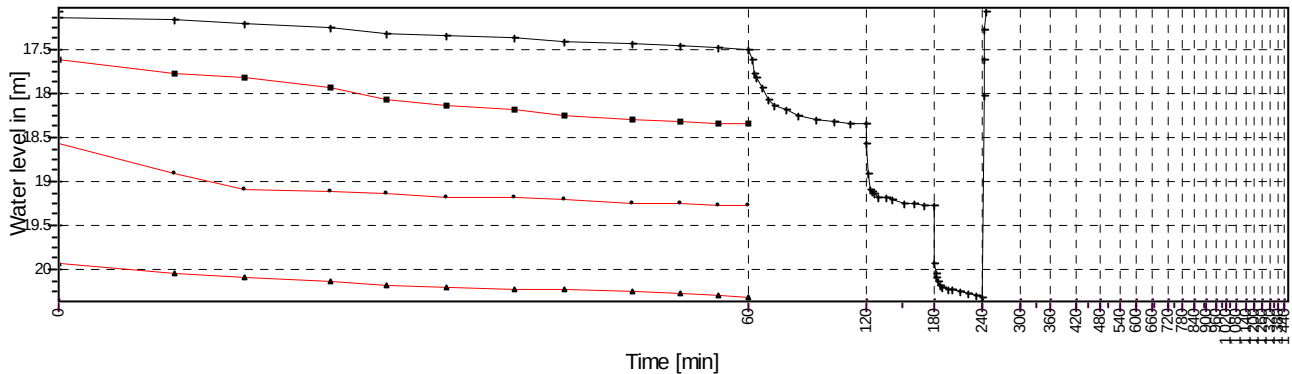
BASIC SITE INFORMATION: Site Identifier: 2823ACX0068 Number: SD2-15 Site type: Borehole

Distr./Farm No.: Site Name/Des.: POSTMASBURG

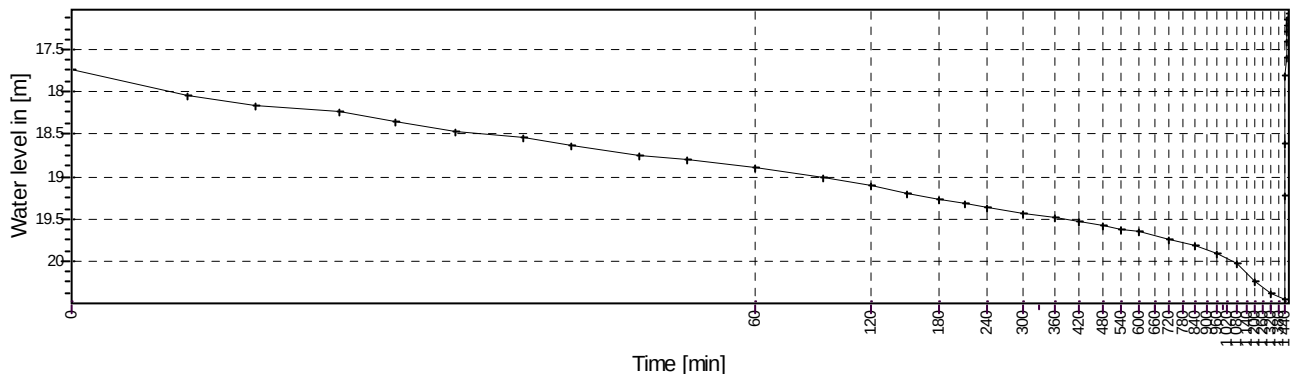
Latitude [°]	28.292804	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	15.90
Longitude [°]	23.148754	Alt. No. 2:		Depth [m]:	80.44	Piezometer:	0
Altitude [m]:	1349.10	Rep. inst.: GOLD		Col. ht. [mm]:	0.50	Date WL meas.:	20140305

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



Constant Rate Test



PUMPING TEST:		Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	76.80	20131019	1330	20131019	1735			
GOLD	Constant rate test	76.80	20131020	0700	20131021	0730			

TESTING DETAILS:		Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	1330	60	76.80	5.14	0.42							12.24
STEP TEST STEP 2	1430	60	76.80	10.12	1.27							7.97
STEP TEST STEP 3	1530	60	76.80	15.13	2.19							6.91
STEP TEST STEP 4	1630	60	76.80	20.00	3.23	100		5				6.19
CONSTANT (1)	0700	1440	76.80	20.05	3.36	100		30				5.97



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Project No.: 11613568

BASIC SITE INFORMATION: Site Identifier: 2823ACX0074 Number: SD2-16 Site type: Borehole

Distr./Farm No.: Site Name/Des.: POSTMASBURG

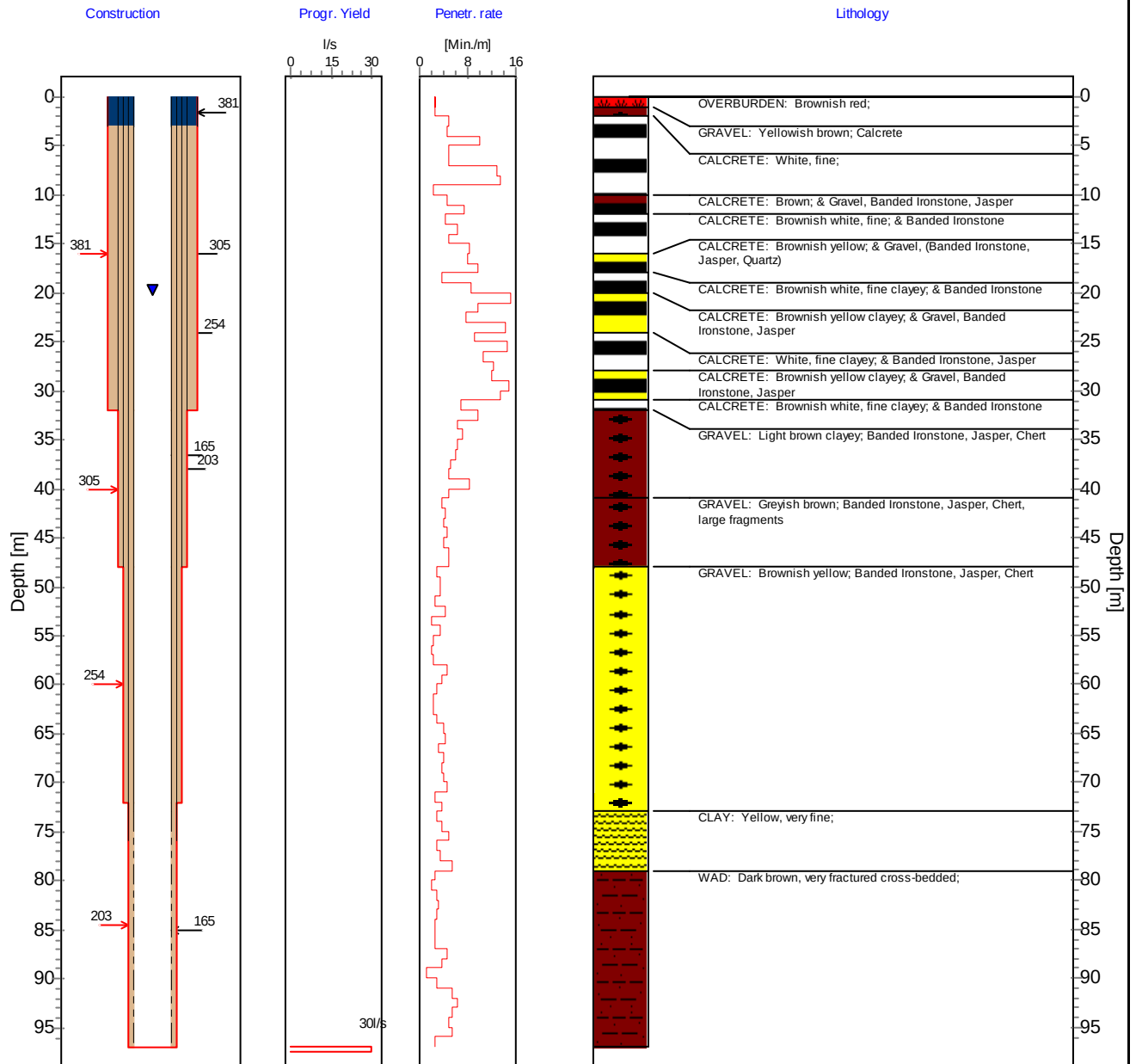
Region Type: Water supply authority Region Descr.: TSANTSABANE LM

Latitude [°]: 28.288158	Reg./BB.:	Topo-set.:	Depth [m]: 97.00
Longitude [°]: 23.163097	G-Nr.:	Site status: Unused	Col. ht. [m]: 0.35
Altitude [m]: 1352.45		Site purp.: Production (water supply)	Diam. [mm]: 165
Coord. acc.: Accurate to within 1 unit		Use applic.: Domestic - all purposes	Drain. reg.: D73A
Coord. meth.: Altimeter		Equipment: No equipment	Rep. inst.: GOLD

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Construction and Geohydrological Legend

	Hole	165 →	Hole diameter [mm]		Sanitary seal
	Casing (plain / perforated, slotted)	← 152	Casing diameter [mm]		Gravel (> 2mm)
	Screen / Mesh Screen	▼	Waterlevel measured: 20/10/13		
	Piezometer	0:50 →	Piezometer (Nr. & Diameter [mm])		



COMMENT:



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 Tel: 012 - 364 4000
 Fax: 012 - 364 4001
 Project No.: 11613568

MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823ACX0074 Number: SD2-16 Site type: Borehole

Distr./Farm No.: Site Name/Descr.: POSTMASBURG WELLFIELD

Latitude [°]:	28.288158	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	19.40
Longitude [°]:	23.163097	Alt. No. 2:		Depth [m]:	97.00	WL status:	Static
Altitude [m]:	1352.45	Rep. inst.:	GOLD	Col. ht. [m]:	0.35	Date WL meas.:	20140121

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:		Pulley Diam. [mm]:	
Type of Inst.:		Depth to Intk. [m]:	
Manufacturer:			
Engine:		Power Rating [kW]	
Manufacturer:		Pulley Diam. [mm]:	
Type of Power:			

USE APPLICATION:

Site Status: Unused
Purpose: Production (water supply)
Consumer: Non-urban
Application: Domestic - all purposes

WATER CHEMISTRY:

Sample No.: SD2-16		Date sampled: 20131130		Depth sampl. [m]: 88.50		Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters:		
pH:	7.71	Na:	20	Cl:	26.7	Langel.:	0.28	E.Coli:
EC: [mS/m]	58	K:	2.81	NO3 as N:	2.09	Aggr-Ind:	12.33	Faec. co:
TDS:	372	Si:	14.6	SO4:	16.7	Ion-bal:	-0.41	Total Co:
T. Alk.:	284	Al:	< 0.05	F:	0.158	CaCO3:	297.01	SPC:
Ca:	59.2	Fe:	< 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit ‡ Value exceeds minimum allowable limit				
Mg:	36.3	Mn:	< 0.05					

AQUIFER INFORMATION:

Depth to Top [m]	Depth to Bot. [m]	Yield[l/s]	Method meas.	Aquifer type	Comment
97.00	97.50	30.00	Notch (V- or U-notch)		

CASING DETAILS:

Depth to Top [m]	to Bot. [m]	Diam. [mm]	Material	Thickn. [mm]	Type of openings	Openings [mm]: Length Width	Hor. Dist.	Vert. Dist.
0.00	3.00	381	Steel		Plain casing			
0.00	32.00	305	Steel		Plain casing			
0.00	48.00	254	Steel		Plain casing			
0.00	76.00	203	Steel		Plain casing			
0.00	73.00	165	Steel		Plain casing			
73.00	97.00	165	Steel		Perforated or slotted			

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery [m] %	[min]	T [m²/d]	Storage	Comment
STEP TEST STEP 1	20131027	60	88.50	5.47	0.35					
STEP TEST STEP 2	20131027	60	88.50	11.40	1.05					
STEP TEST STEP 3	20131027	60	88.50	16.12	1.86					
STEP TEST STEP 4	20131027	60	88.50	20.18	3.25	100	2			
CONSTANT	20131028	4320	88.50	20.04	5.84	100	3	892	0.05	

RECOMMENDATIONS:

Prior.	Rec. equipm.	Depth to intk. [m]	Type of power	Duty cyc. [hrs]	Disch. rate [l/s]	Water quality	Dyn. water level [m]	Crit. water level [m]
1	Mono-type pump	54.00	Electric motor	24	10.00	CLASS 0	23.50	36.00

Note: 1. Production borehole
2. Install water level monitoring facility in borehole



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Project No.: 11613568

PUMPING TEST REPORT

Date compiled: 31/03/2014

BASIC SITE INFORMATION:

Site Identifier: 2823ACX0074 Number: SD2-16

Site type: Borehole

Distr./Farm No.:

Site Name/Des.: POSTMASBURG

Latitude [°] 28.288158
Longitude [°] 23.163097
Altitude [m]: 1352.45

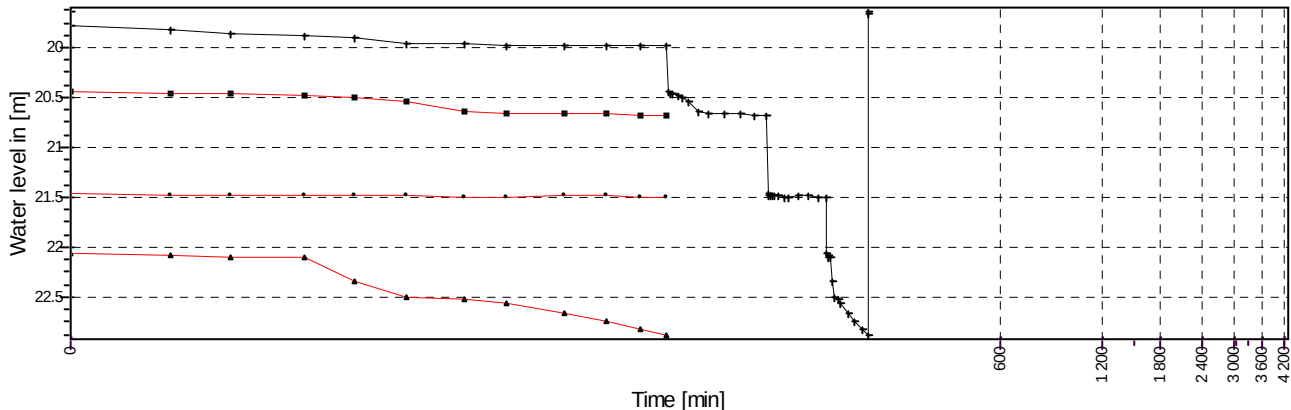
Alt. No. 1:
Alt. No. 2:
Rep. inst.: GOLD

Diam. [mm]: 165
Depth [m]: 97.00
Col. ht. [mm]: 0.35

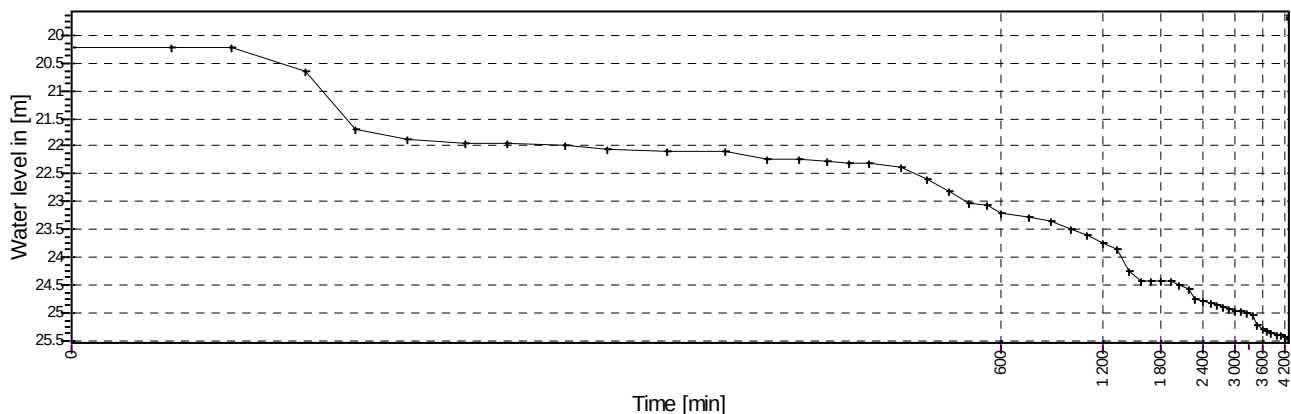
Water lev. [m]: 19.40
Piezometer: 0
Date WL meas.: 20140121

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



Constant Rate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	88.50	20131027	1505	20131027	1907			
GOLD	Constant rate test	88.50	20131028	0750	20131031	0753			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate [l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	1505	60	88.50	5.47	0.35							15.63
STEP TEST STEP 2	1605	60	88.50	11.40	1.05							10.86
STEP TEST STEP 3	1705	60	88.50	16.12	1.86							8.67
STEP TEST STEP 4	1805	60	88.50	20.18	3.25	100		2				6.21
CONSTANT	0750	4320	88.50	20.04	5.84	100		3				3.43



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Project No.: 11613568

BASIC SITE INFORMATION: Site Identifier: 2823ACX0069 Number: SD2-16M Site type: Borehole

Distr./Farm No.: Site Name/Des.: POSTMASBURG

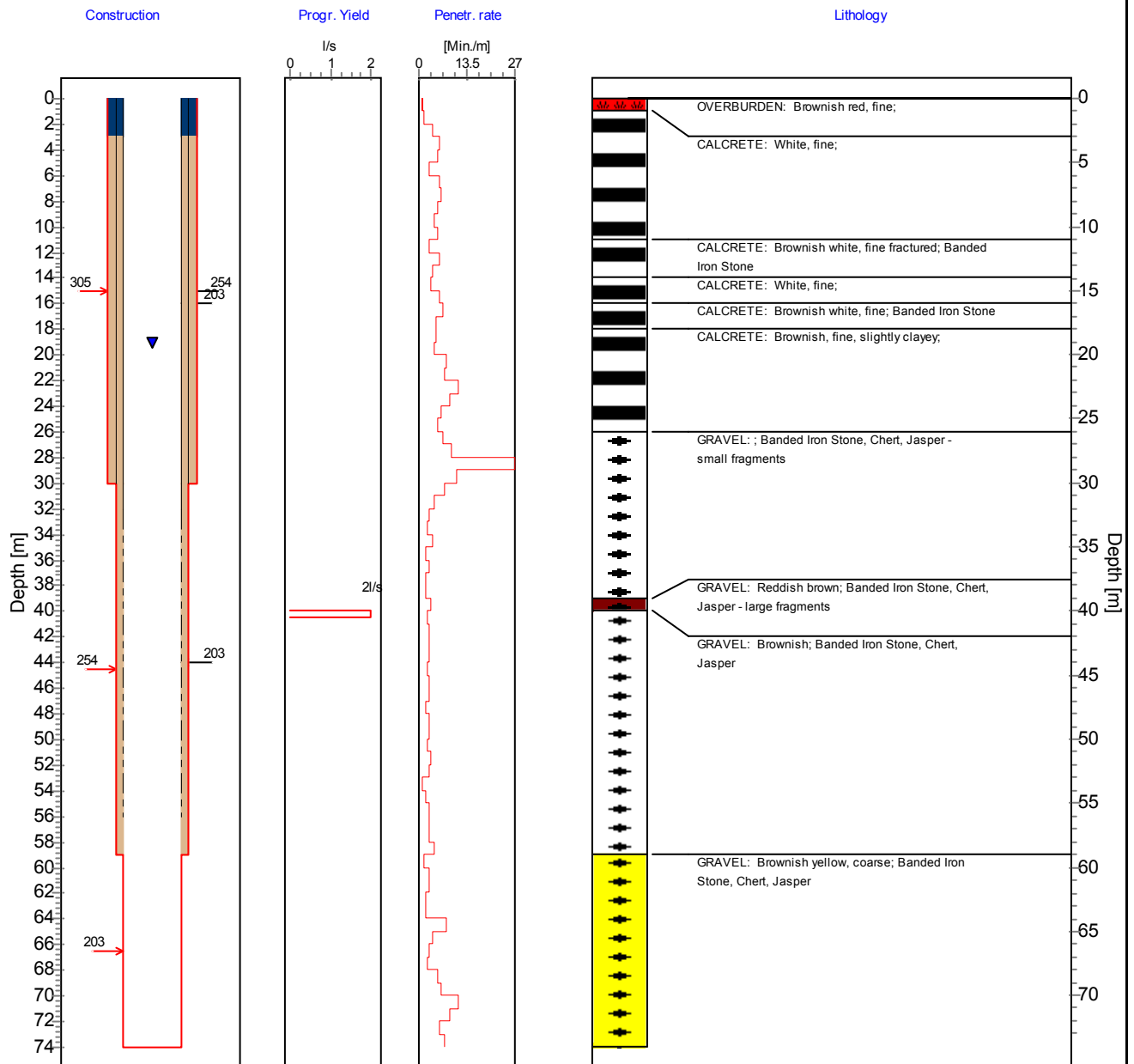
Region Type: Water supply authority Region Descr.: TSANTSABANE LM

Latitude [°]: 28.288303	Reg./BB.:	Topo-set.:	Depth [m]: 74.00
Longitude [°]: 23.163341	G-Nr.:	Site status: Unused	Col. ht. [m]: 0.61
Altitude [m]: 1352.48		Site purp.: Production (water supply)	Diam. [mm]: 203
Coord. acc.: Accurate to within 1 units		Use applic.: Domestic - all purposes	Drain. reg.: D73A
Coord. meth.: Altimeter		Equipment: No equipment	Rep. inst.: GOLD

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Construction and Geohydrological Legend

	Hole	165 →	Hole diameter [mm]		Sanitary seal
	Casing (plain / perforated, slotted)	← 152	Casing diameter [mm]		Gravel (> 2mm)
	Screen / Mesh Screen	▼	Waterlevel measured: 02/10/13		
	Piezometer	0:50 →	Piezometer (Nr. & Diameter [mm])		



COMMENT:



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 Project No.: 11613568

BASIC SITE INFORMATION: Site Identifier: 2823ACX0070 Number: SD2-17 Site type: Borehole

Distr./Farm No.: Site Name/Des.: POSTMASBURG

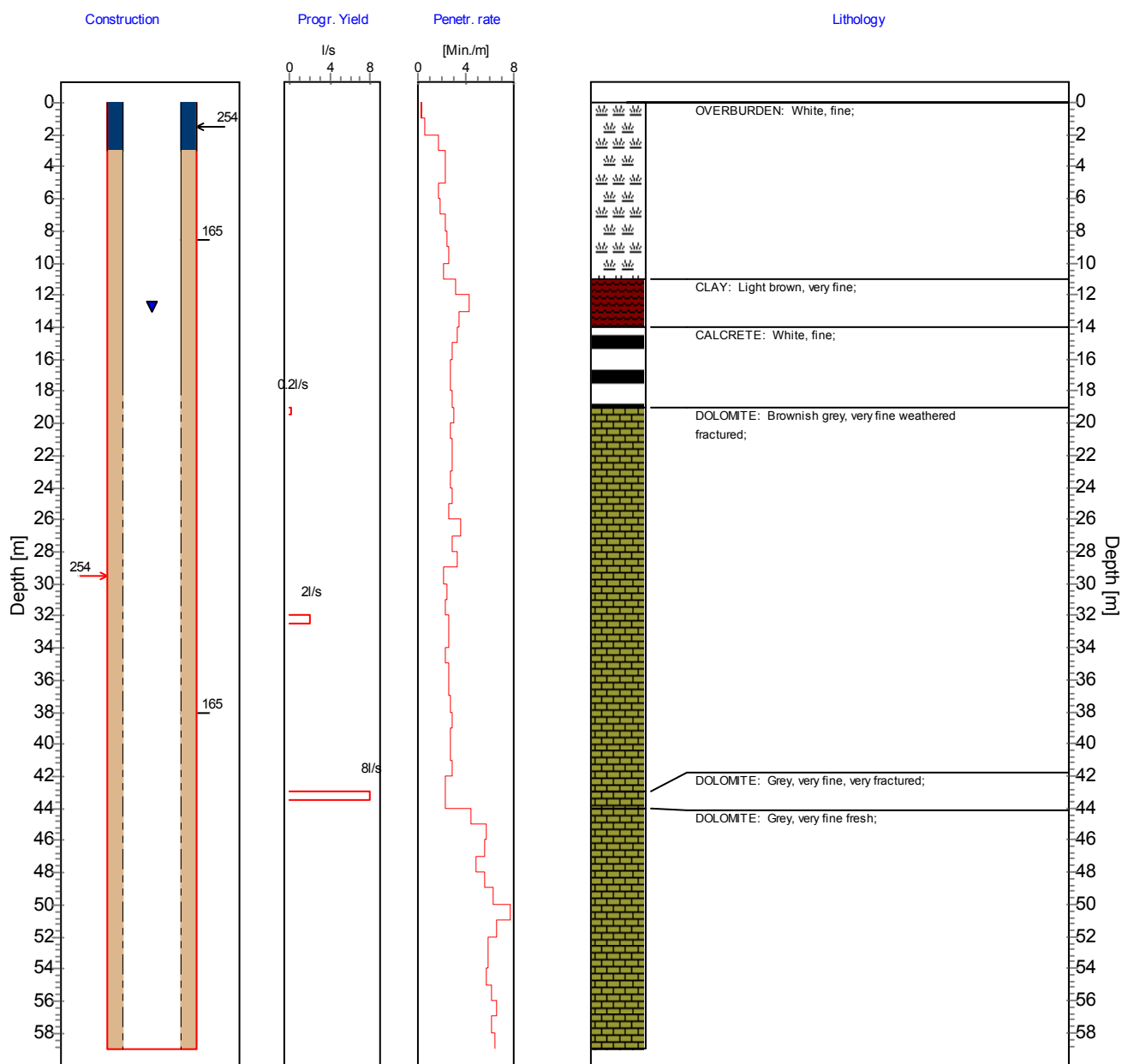
Region Type: Water supply authority Region Descr.: TSANTSABANE LM

Latitude [°]: 28.320661	Reg./BB.:	Topo-set.:	Depth [m]: 59.60
Longitude [°]: 23.123741	G-Nr.:	Site status: Unused	Col. ht. [m]: 0.50
Altitude [m]: 1339.81		Site purp.: Production (water supply)	Diam. [mm]: 165
Coord. acc.: Accurate to within 1 units		Use applic.: Domestic - all purposes	Drain. reg.: D73A
Coord. meth.: Altimeter		Equipment: No equipment	Rep. inst.: GOLD

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartbeesthoek94 (WGS 84)

Construction and Geohydrological Legend

	Hole	165 →	Hole diameter [mm]		Sanitary seal
	Casing (plain / perforated, slotted)	← 152	Casing diameter [mm]		Gravel (> 2mm)
	Screen / Mesh Screen	▼	Waterlevel measured: 30/09/13		
	Piezometer	0:50 →	Piezometer (Nr. & Diameter [mm])		



COMMENT:



Golder Associates Africa, Pretoria
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Project No.: 11613568

MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823ACX0070 Number: SD2-17 Site type: Borehole

Distr./Farm No.: Site Name/Descr.: POSTMASBURG WELLFIELD

Latitude [°]:	28.320661	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	12.96
Longitude [°]:	23.123741	Alt. No. 2:		Depth [m]:	59.60	WL status:	Static
Altitude [m]:	1339.81	Rep. inst.:	GOLD	Col. ht. [m]:	0.50	Date WL meas.:	20140121

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:	
Type of Inst.:	Pulley Diam. [mm]:
Manufacturer:	Depth to Intk. [m]:
Engine:	
Manufacturer:	Power Rating [kW]
Type of Power:	Pulley Diam. [mm]:

USE APPLICATION:

Site Status: Unused
Purpose: Production (water supply)
Consumer: Non-urban
Application: Domestic - all purposes

WATER CHEMISTRY:

Sample No.:	SD2-17	Date sampled:	20131018	Depth sampl. [m]:	52.80	Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters:		
pH:	7.63	Na:	21.1	Cl:	29.2	Langel.:	0.25	E.Coli:
EC: [mS/m]	57.3	K:	3.99	NO3 as N:	2.02	Aggr-Ind:	12.30	Faec. co:
TDS:	374	Si:	14.6	SO4:	19.9	Ion-bal:	3.94	Total Co:
T. Alk.:	272	Al:	0.05	F:	< 0.1	CaCO3:	318.40	SPC:
Ca:	68.6	Fe:	< 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit ‡ Value exceeds minimum allowable limit				
Mg:	35.8	Mn:	< 0.05					

AQUIFER INFORMATION:

Depth to Top [m]	Depth to Bot. [m]	Yield[l/s]	Method meas.	Aquifer type	Comment
19.00	19.50	0.20	Notch (V- or U-notch)		
32.00	32.50	2.00	Notch (V- or U-notch)		
43.00	43.50	8.00	Notch (V- or U-notch)		

CASING DETAILS:

Depth to Top [m]	to Bot. [m]	Diam. [mm]	Material	Thickn. [mm]	Type of openings	Openings [mm]: Length Width	Hor. Dist.	Vert. Dist.
0.00	3.00	254	Steel		Plain casing			
0.00	17.00	165	Steel		Plain casing			
17.00	59.00	165	Steel		Perforated or slotted			

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery %	[min]	T [m²/d]	Storage	Comment
STEP TEST STEP 1	20131016	60	52.80	3.04	1.53					
STEP TEST STEP 2	20131016	60	52.80	6.05	2.82					
STEP TEST STEP 3	20131016	60	52.80	10.05	8.96					
STEP TEST STEP 4	20131016	60	52.80	16.20	18.90	100	20			
CONSTANT	20131017	1440	52.80	15.04	9.43	100	960	191	0.05	

RECOMMENDATIONS:

Prior.	Rec. equipm.	Depth to intk. [m]	Type of power	Duty cyc. [hrs]	Disch. rate [l/s]	Water quality	Dyn. water level [m]	Crit. water level [m]
1	Mono-type pump	42.00	Electric motor	20	5.00	CLASS 0	17.30	30.00

Note: 1. Production borehole
2. Install water level monitoring facility in borehole



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Project No.: 11613568

PUMPING TEST REPORT

Date compiled: 31/03/2014

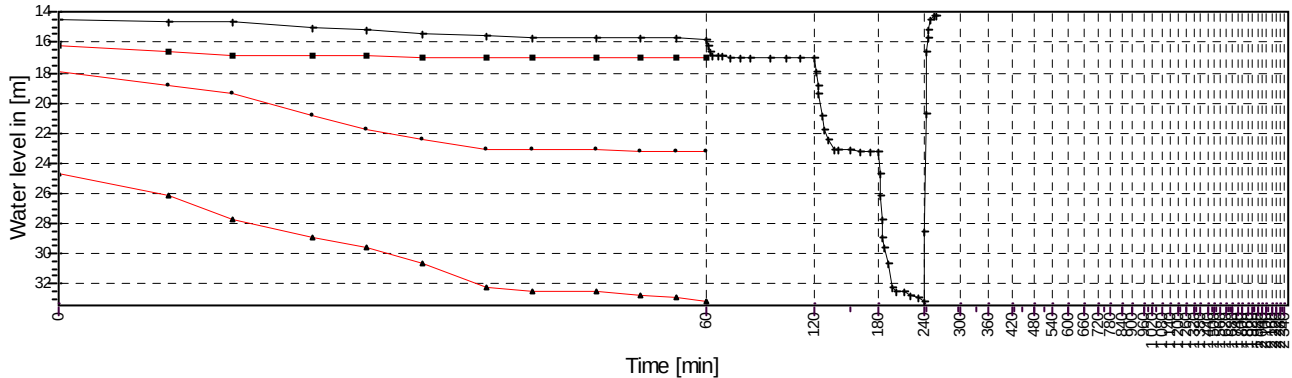
BASIC SITE INFORMATION: Site Identifier: 2823ACX0070 Number: SD2-17 Site type: Borehole

Distr./Farm No.: Site Name/Des.: POSTMASBURG

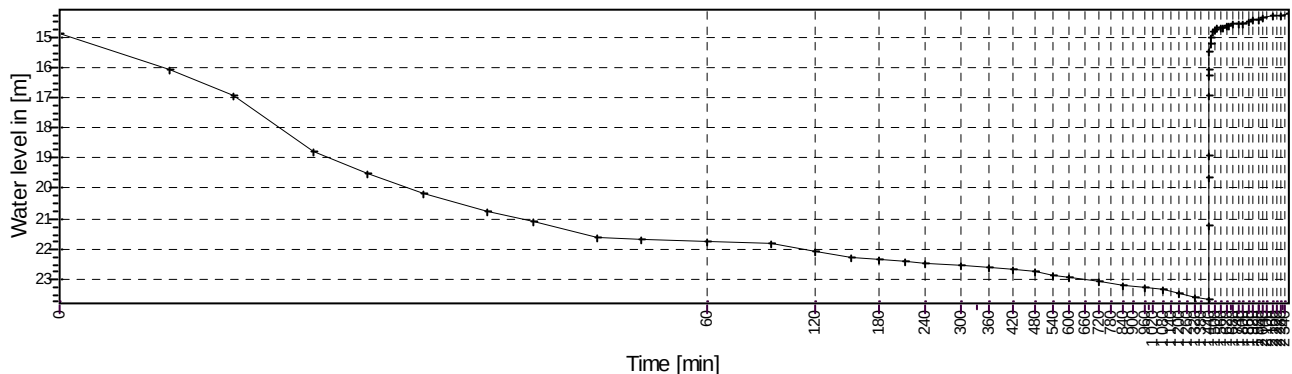
Latitude [°]	28.320661	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	12.96
Longitude [°]	23.123741	Alt. No. 2:		Depth [m]:	59.60	Piezometer:	0
Altitude [m]:	1339.81	Rep. inst.: GOLD		Col. ht. [mm]:	0.50	Date WL meas.:	20140121

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



Constant Rate Test



PUMPING TEST:		Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m²/d]	Storativ.	Rec. abs. [l/s]
Rep. Inst.	Meth. tested								
GOLD	Step test	52.80	20131016	1420	20131016	1840			
GOLD	Constant rate test	52.80	20131017	0900	20131019	0100			

TESTING DETAILS:		Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	Rec. Dur. [min]	Trans. [m²/d]	Perm. [m/d]	Storat.	Q/st
Description	Time start.					%					
STEP TEST STEP 1	1420	60	52.80	3.04	1.53						1.99
STEP TEST STEP 2	1520	60	52.80	6.05	2.82						2.15
STEP TEST STEP 3	1620	60	52.80	10.05	8.96						1.12
STEP TEST STEP 4	1720	60	52.80	16.20	18.90	100	20				0.86
CONSTANT	0900	1440	52.80	15.04	9.43	100	960				1.59



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Project No.: 11613568

Borehole Construction and Geological Log

Date compiled: 19/12/2013

BASIC SITE INFORMATION: Site Identifier: 2823ACX0071 Number: SD2-18 Site type: Borehole

Distr./Farm No.: Site Name/Des.: POSTMASBURG

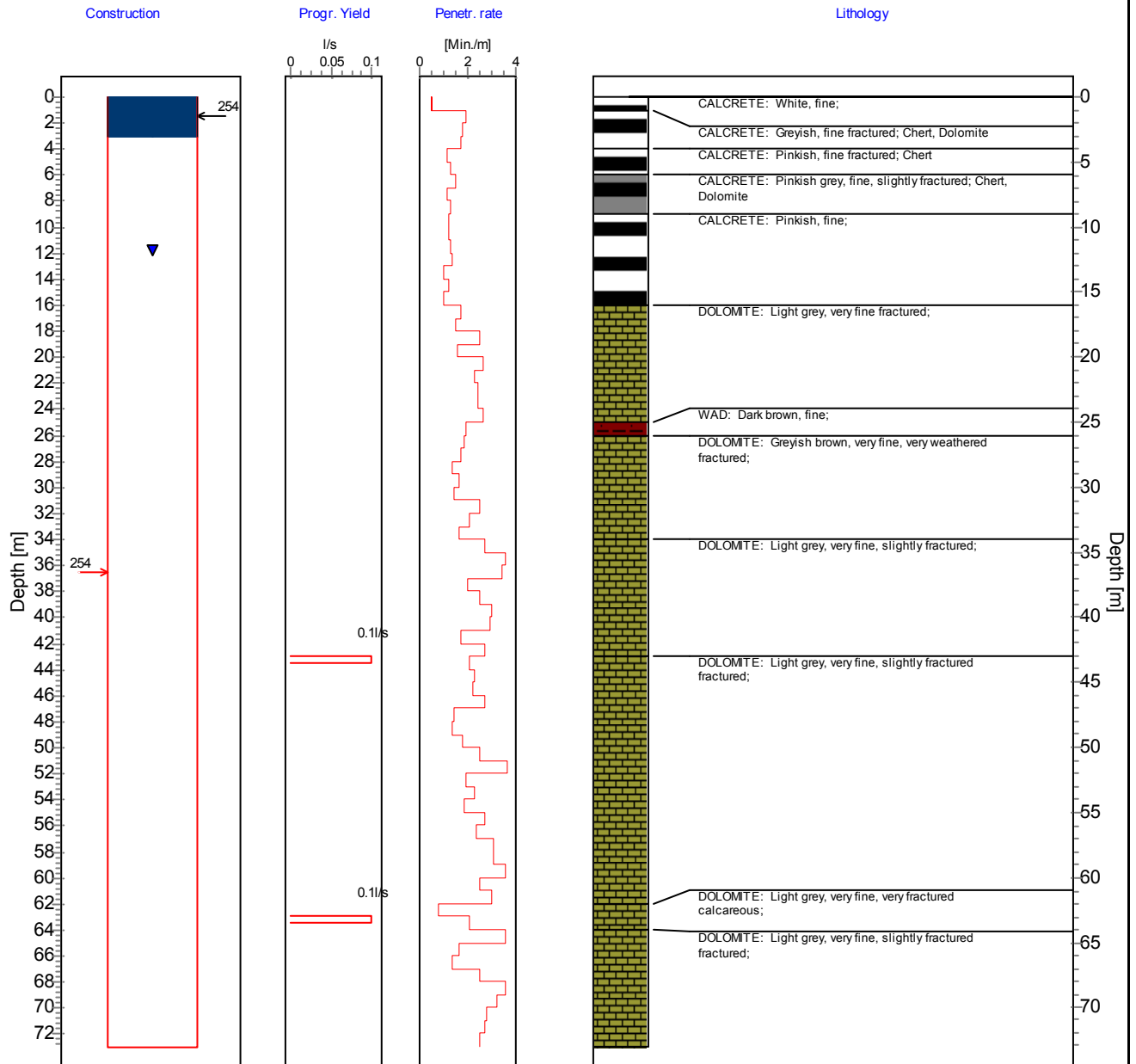
Region Type: Water supply authority Region Descr.: TSANTSABANE LM

Latitude [°]:	28.287230	Reg./BB.:	Topo-set.:	Depth [m]:	73.00
Longitude [°]:	23.147742	G-Nr.:	Site status: Unused	Col. ht. [m]:	0.44
Altitude [m]:	1345.35		Site purp.: Observation	Diam. [mm]:	254
Coord. acc.:	Accurate to within 1 units		Use applic.: Domestic - all purposes	Drain. reg.:	D73A
Coord. meth.:	Altimeter		Equipment: No equipment	Rep. inst.:	GOLD

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartbeesthoek94 (WGS 84)

Construction and Geohydrological Legend

	Hole	165 →	Hole diameter [mm]		Sanitary seal
	Casing (plain / perforated, slotted)	← 152	Casing diameter [mm]		
	Screen / Mesh Screen	▼	Waterlevel measured: 30/09/13		
	Piezometer	0:50 →	Piezometer (Nr. & Diameter [mm])		



COMMENT:



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Fax: 012 - 364 4001
Project No.: 11613568

MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823ACX0071 Number: SD2-18 Site type: Borehole

Distr./Farm No.: Site Name/Descr.: POSTMASBURG

Latitude [°]:	28.287230	Alt. No. 1:		Diam. [mm]:	254	Water lev. [m]:	11.97
Longitude [°]:	23.147742	Alt. No. 2:		Depth [m]:	73.00	WL status:	Static
Altitude [m]:	1345.35	Rep. inst.: GOLD		Col. ht. [m]:	0.44	Date WL meas.:	20140121

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:	
Type of Inst.:	Pulley Diam. [mm]:
Manufacturer:	Depth to Intk. [m]:
Engine:	
Manufacturer:	Power Rating [kW]
Type of Power:	Pulley Diam. [mm]:

USE APPLICATION:

Site Status: Unused
Purpose: Observation
Consumer: Non-urban
Application: Domestic - all purposes

WATER CHEMISTRY:

Sample No.:	SD2-18	Date sampled:	20130930	Depth sampl. [m]:	0	Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters:		
pH:	7.3	Na:	76.1	Cl:	322 †	Langel.:	0.11	E.Coli:
EC: [mS/m]	141 †	K:	5.87	NO3 as N:	2.23	Aggr-Ind:	12.23	Faec. co:
TDS:	1080 †	Si:	12.8	SO4:	70.9	Ion-bal:	-0.74	Total Co:
T. Alk.:	278	Al:	< 0.05	F:	0.165	CaCO3:	629.37	SPC:
Ca:	124	Fe:	< 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit ¡ Value exceeds minimum allowable limit				
Mg:	77.8 †	Mn:	1.02 ‡					

AQUIFER INFORMATION:

Depth to Top [m]	Depth to Bot. [m]	Yield[l/s]	Method meas.	Aquifer type	Comment
43.00	43.50	0.10	Notch (V- or U-notch)		
63.00	63.50	0.10	Notch (V- or U-notch)		

CASING DETAILS:

Depth to Top [m]	to Bot. [m]	Diam. [mm]	Material	Thickn. [mm]	Type of openings	Openings [mm]: Length Width	Hor. Dist.	Vert. Dist.
0.00	3.00	254	Steel		Plain casing			



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Project No.: 11613568

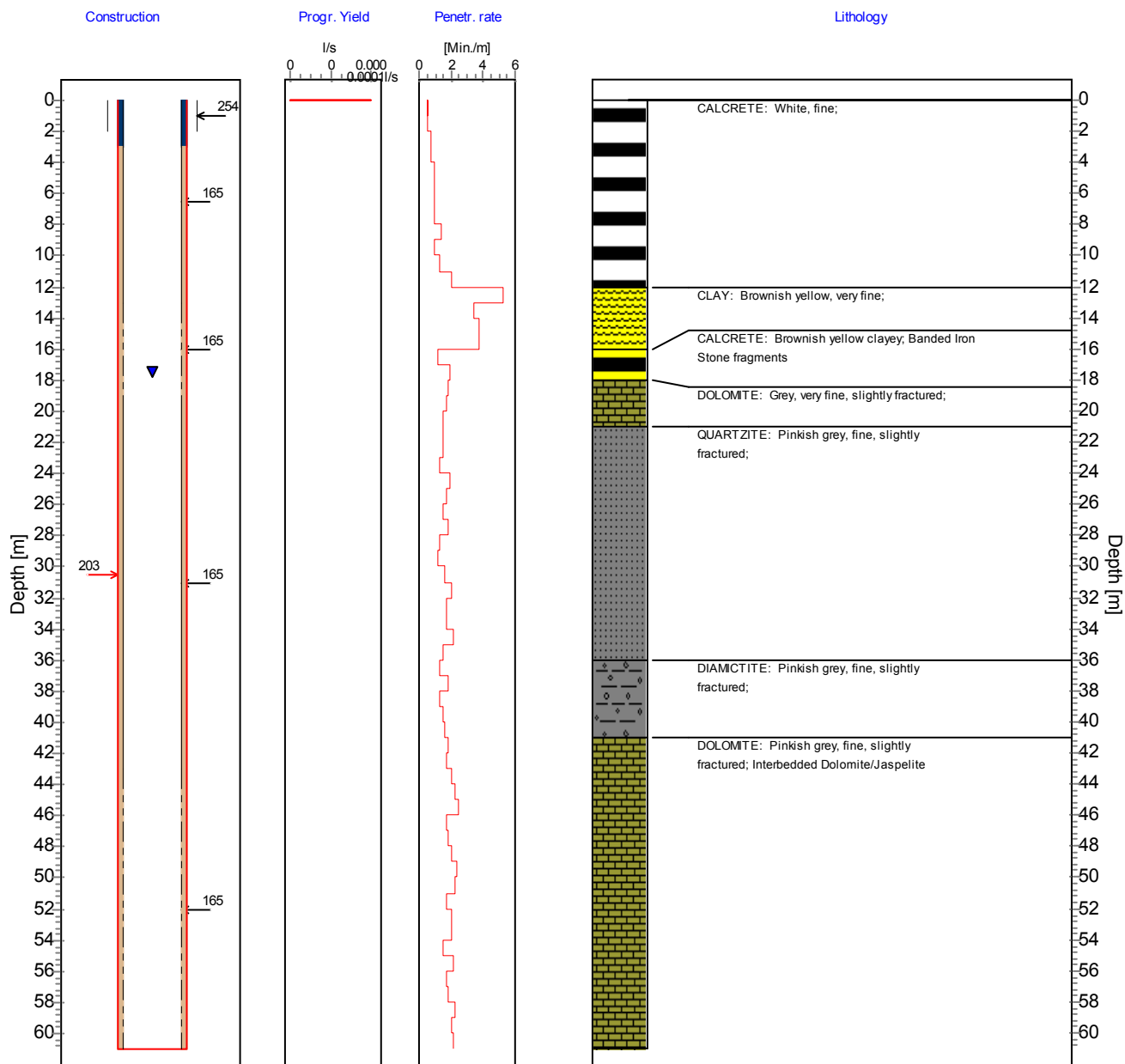
Date compiled: 19/12/2013

Region Type: Water supply authority **Region Descr.:** TSANTSABANE LM

Latitude [°]:	28.330032	Reg./BB.:	Topo-set.:		Depth [m]:	61.00
Longitude [°]:	23.097718		Site status:	Unused	Col. ht. [m]:	0.53
Altitude [m]:	1324.82		Site purp.:	Production (water supply)	Diam. [mm]:	165
Coord. acc.:	Accurate to within 1 units	G-Nr.:	Use applic.:	Domestic - all purposes	Drain. reg.:	D73A
Coord. meth.:	Altimeter		Equipment:	No equipment	Rep. inst.:	GOLD

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

	Hole		Hole diameter [mm]		Sanitary seal
	Casing (plain / perforated, slotted)		Casing diameter [mm]		Gravel (> 2mm)
	Screen / Mesh Screen		Waterlevel measured: 02/10/13		
	Piezometer		Piezometer (Nr. & Diameter [mm])		



COMMENT:



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MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823ACX0072 Number: SD2-19 Site type: Borehole

Distr./Farm No.: Site Name/Descr.: POSTMASBURG

Latitude [°]:	28.330032	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	17.70
Longitude [°]:	23.097718	Alt. No. 2:		Depth [m]:	61.70	WL status:	Static
Altitude [m]:	1324.82	Rep. inst.:	GOLD	Col. ht. [m]:	0.53	Date WL meas.:	20140121

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:		Pulley Diam. [mm]:	
Type of Inst.:		Depth to Intk. [m]:	
Manufacturer:			
Engine:		Power Rating [kW]	
Manufacturer:		Pulley Diam. [mm]:	
Type of Power:			

USE APPLICATION:

Site Status:	Unused
Purpose:	Production (water supply)
Consumer:	Non-urban
Application:	Domestic - all purposes

WATER CHEMISTRY:

Sample No.:	SD2-19	Date sampled:	20131002	Depth sampl. [m]:	0	Comment:	
Main Parameters:		Calculated Parameters:		Bacteriol. Parameters:			
pH:	7.49	Na:	31.5	Cl:	104	Langel.:	-0.07
EC: [mS/m]	75.6 †	K:	5.47	NO3 as N:	20.3 ‡	Aggr-Ind:	11.98
TDS:	482	Si:	4.59	SO4:	28.7	Ion-bal:	0.76
T. Alk.:	166	Al:	< 0.05	F:	0.303	CaCO3:	346.71
Ca:	75	Fe:	< 0.05			SPC:	
Mg:	38.8	Mn:	0.38 †				

Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption
† Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit
! Value exceeds recommended minimum limit ¡ Value exceeds minimum allowable limit

AQUIFER INFORMATION:

Depth to Top [m]	Depth to Bot. [m]	Yield[l/s]	Method meas.	Aquifer type	Comment
0.00	0.00	0.00010	Notch (V- or U-notch)		SEEPAGE

CASING DETAILS:

Depth to Top [m]	to Bot. [m]	Diam. [mm]	Material	Thickn. [mm]	Type of openings	Openings [mm]: Length Width	Hor. Dist.	Vert. Dist.
0.00	13.00	165	Steel		Plain casing			
13.00	19.00	165	Steel		Perforated or slotted			
19.00	43.00	165	Steel		Plain casing			
43.00	61.00	165	Steel		Perforated or slotted			
0.00	2.00	254	Steel		Plain casing			

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery [m]	%	[min]	T [m²/d]	Storage	Comment
STEP TEST STEP 1	20140121	60	56.00	0.62	23.22						
STEP TEST STEP 2	20140121	20	56.00	0.70	37.71	18.21	52	120			
PUMP INLET	20140121	2	56.00	0.16	38.30						



PUMPING TEST REPORT

Date compiled: 31/03/2014

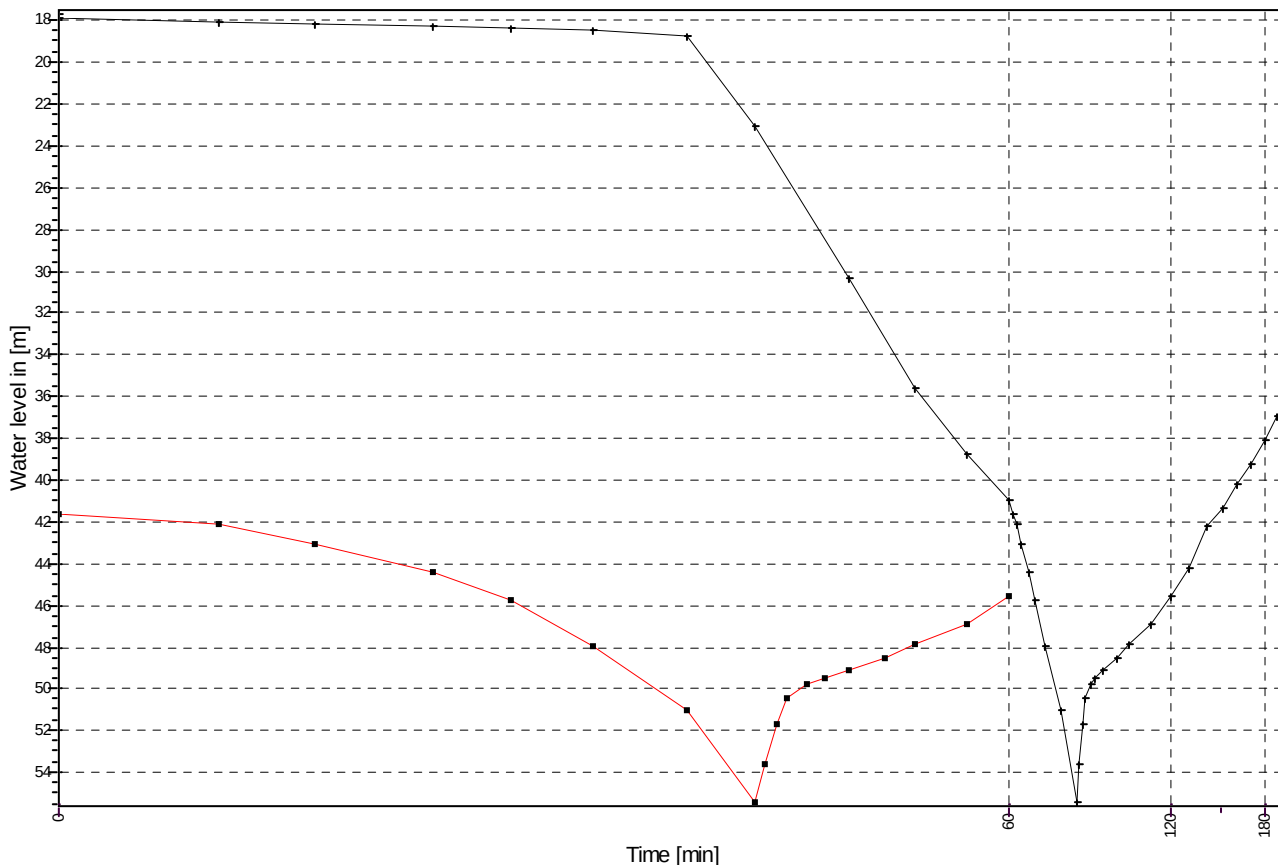
BASIC SITE INFORMATION: Site Identifier: 2823ACX0072 Number: SD2-19 Site type: Borehole

Distr./Farm No.: Site Name/Des.: POSTMASBURG

Latitude [°]	28.330032	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	17.70
Longitude [°]	23.097718	Alt. No. 2:		Depth [m]:	61.70	Piezometer:	0
Altitude [m]:	1324.82	Rep. inst.: GOLD		Col. ht. [mm]:	0.53	Date WL meas.:	20140121

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	56.00	20140121	1320	20140121	1640			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	1320	60	56.00	0.62	23.22							0.03
STEP TEST STEP 2	1420	20	56.00	0.70	37.71	18.21	52	120				0.02
PUMP INLET	1640	2	56.00	0.16	38.30							0.00



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Project No.: 11613568

Borehole Construction and Geological Log

Date compiled: 19/12/2013

BASIC SITE INFORMATION: Site Identifier: 2823ACX0054 Number: SD2-2 Site type: Borehole

Distr./Farm No.: Site Name/Des.: POSTMASBURG

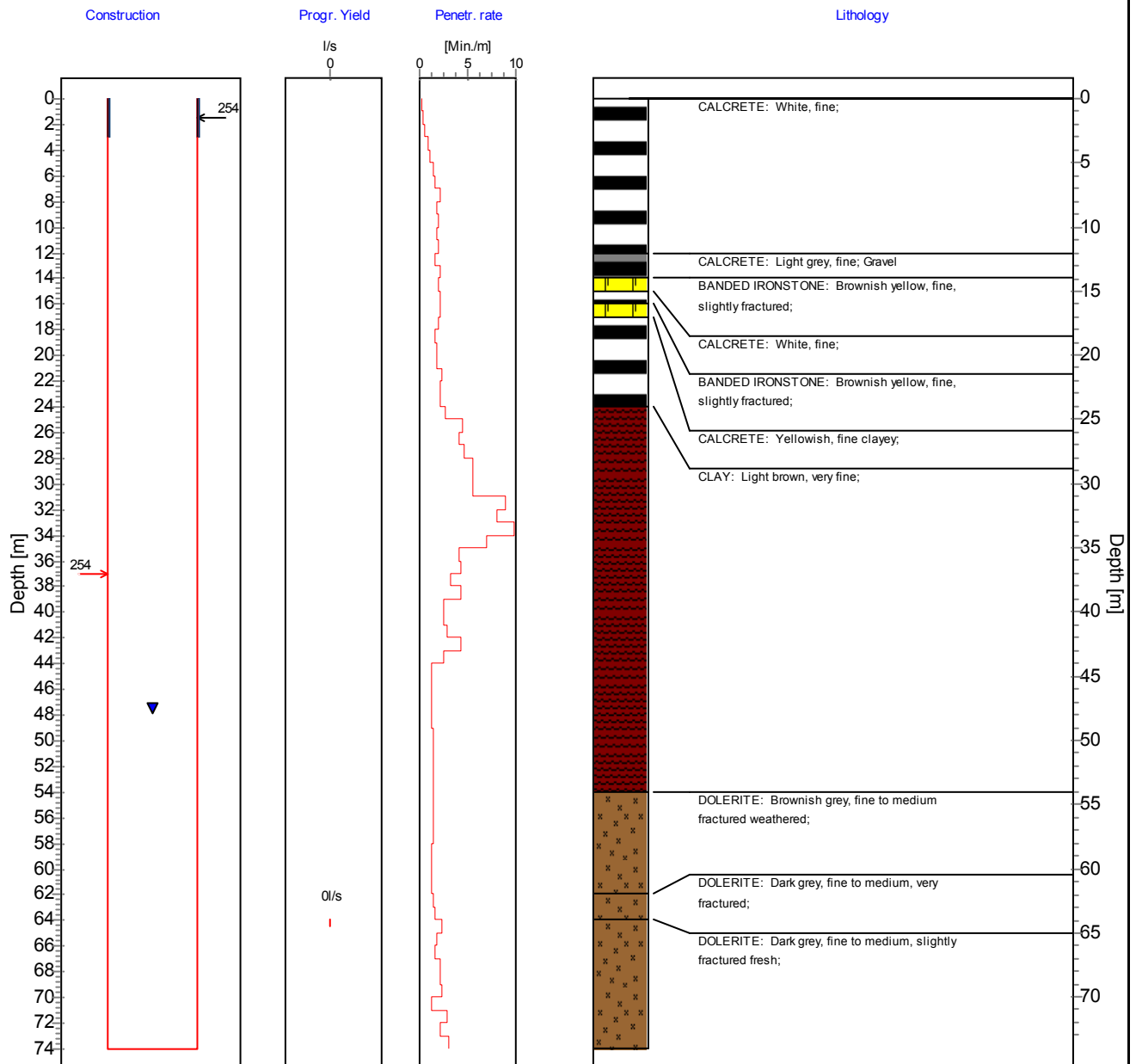
Region Type: Water supply authority Region Descr.: TSANTSABANE LM

Latitude [°]:	28.317828	Reg./BB.:	Topo-set.:	Depth [m]:	74.00
Longitude [°]:	23.117227	G-Nr.:	Site status: Unused	Col. ht. [m]:	0.55
Altitude [m]:	1339.53		Site purp.: Production (water supply)	Diam. [mm]:	254
Coord. acc.:	Accurate to within 1 units		Use applic.: Domestic - all purposes	Drain. reg.:	D73A
Coord. meth.:	Altimeter		Equipment: No equipment	Rep. inst.:	GOLD

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Construction and Geohydrological Legend

	Hole	165 →	Hole diameter [mm]		Sanitary seal
	Casing (plain / perforated, slotted)	← 152	Casing diameter [mm]		
	Screen / Mesh Screen	▼	Waterlevel measured: 22/08/13		
	Piezometer	0:50 →	Piezometer (Nr. & Diameter [mm])		



COMMENT:



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Project No.: 11613568

MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823ACX0054 Number: SD2-2 Site type: Borehole

Distr./Farm No.: Site Name/Descr.: POSTMASBURG

Latitude [°]:	28.317828	Alt. No. 1:		Diam. [mm]:	254	Water lev. [m]:	20.24
Longitude [°]:	23.117227	Alt. No. 2:		Depth [m]:	74.00	WL status:	Static
Altitude [m]:	1339.53	Rep. inst.:	GOLD	Col. ht. [m]:	0.55	Date WL meas.:	20140121

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:	
Type of Inst.:	Pulley Diam. [mm]:
Manufacturer:	Depth to Intk. [m]:
Engine:	
Manufacturer:	Power Rating [kW]
Type of Power:	Pulley Diam. [mm]:

USE APPLICATION:

Site Status: Unused
Purpose: Production (water supply)
Consumer: Non-urban
Application: Domestic - all purposes

WATER CHEMISTRY:

Sample No.:	SD2-2	Date sampled:	20130822	Depth sampl. [m]:	0	Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters:		
pH:	7.91	Na:	19	Cl:	28.7	Langel.:	0.04	E.Coli:
EC: [mS/m]	37	K:	2.61	NO3 as N:	2.52	Aggr-Ind:	12.04	Faec. co:
TDS:	278	Si:	20.9	SO4:	25.1	Ion-bal:	1.53	Total Co:
T. Alk.:	144	Al:	0.07	F:	0.351	CaCO3:	182.74	SPC:
Ca:	37.8	Fe:	0.06	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit ¡ Value exceeds minimum allowable limit				
Mg:	21.5	Mn:	< 0.05					

AQUIFER INFORMATION:

Depth to Top [m]	Depth to Bot. [m]	Yield[l/s]	Method meas.	Aquifer type	Comment
64.00	64.50	0.00	Notch (V- or U-notch)		SEEPAGE

CASING DETAILS:

Depth to Top [m]	to Bot. [m]	Diam. [mm]	Material	Thickn. [mm]	Type of openings	Openings [mm]: Length Width	Hor. Dist.	Vert. Dist.
0.00	3.00	254	Steel		Plain casing			

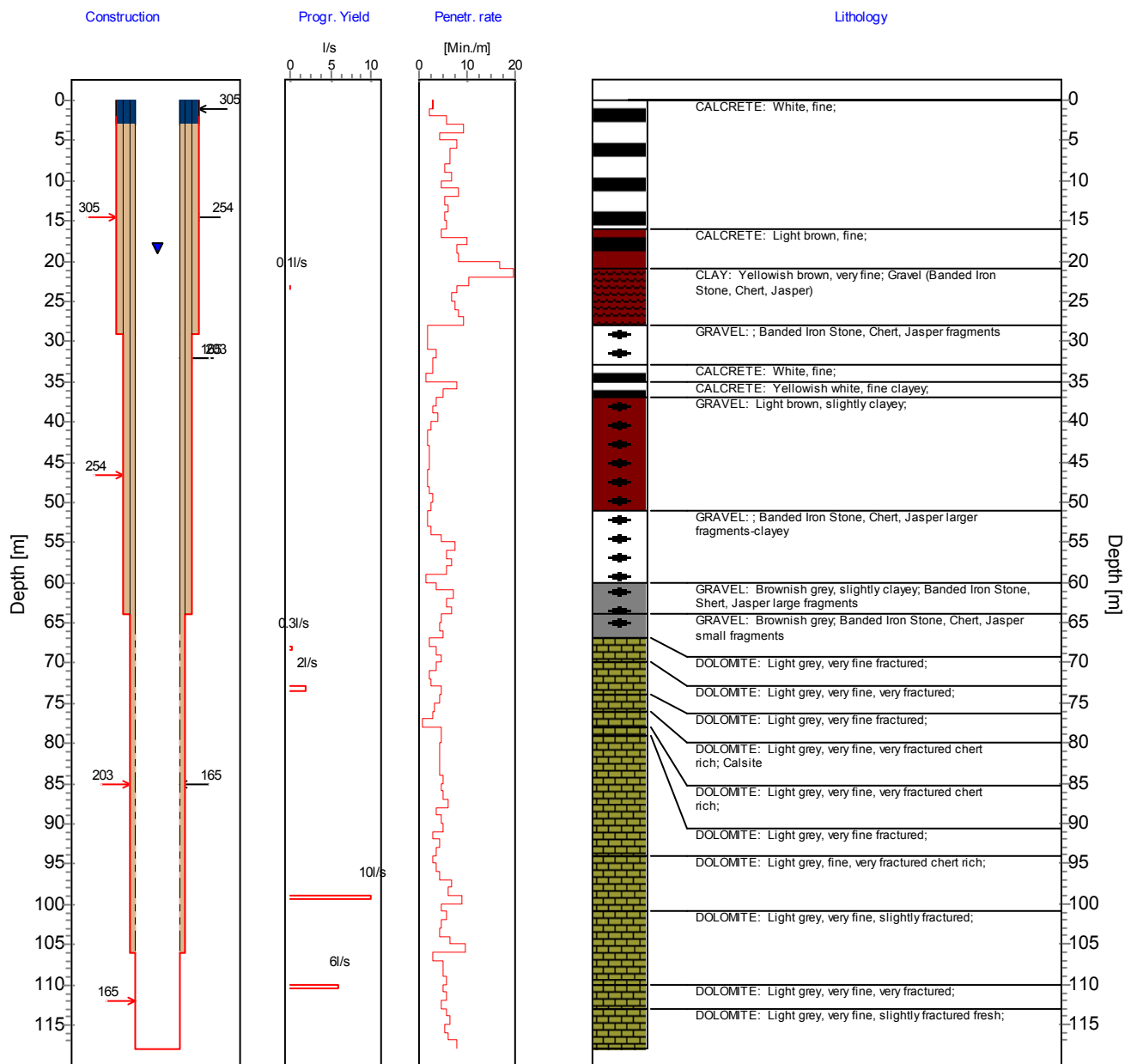
Date compiled: 19/12/2013

Region Type: Water supply authority **Region Descr.:** TSANTSABANE LM

Rep. inst.: GOLD

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

	Hole		Hole diameter [mm]		Sanitary seal
	Casing (plain / perforated, slotted)		Casing diameter [mm]		Gravel (> 2mm)
	Screen / Mesh Screen		Waterlevel measured: 23/08/13		
	Piezometer		Piezometer (Nr. & Diameter [mm])		



COMMENT:



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Project No.: 11613568

MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823ACX0055 Number: SD2-3 Site type: Borehole

Distr./Farm No.: Site Name/Descr.: POSTMASBURG WELLFIELD

Latitude [°]:	28.318590	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	18.54
Longitude [°]:	23.142107	Alt. No. 2:		Depth [m]:	118.00	WL status:	Static
Altitude [m]:	1351.84	Rep. inst.:	GOLD	Col. ht. [m]:	0.48	Date WL meas.:	20140121

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:		Pulley Diam. [mm]:	
Type of Inst.:		Depth to Intk. [m]:	
Manufacturer:			
Engine:		Power Rating [kW]	
Manufacturer:		Pulley Diam. [mm]:	
Type of Power:			

USE APPLICATION:

Site Status:	Unused
Purpose:	Production (water supply)
Consumer:	Non-urban
Application:	Domestic - all purposes

WATER CHEMISTRY:

Sample No.:	SD2-3	Date sampled:	20130823	Depth sampl. [m]:	0	Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters:		
pH:	7.51	Na:	22	Cl:	25.6	Langel.:	0.10	E.Coli:
EC: [mS/m]	56.2	K:	3.08	NO3 as N:	1.75	Aggr-Ind:	12.14	Faec. co:
TDS:	342	Si:	16.6	SO4:	20.1	Ion-bal:	2.44	Total Co:
T. Alk.:	274	Al:	< 0.05	F:	0.158	CaCO3:	302.79	SPC:
Ca:	63	Fe:	< 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit ‡ Value exceeds minimum allowable limit				
Mg:	35.4	Mn:	< 0.05					

AQUIFER INFORMATION:

Depth to Top [m]	Depth to Bot. [m]	Yield[l/s]	Method meas.	Aquifer type	Comment
23.00	23.50	0.10	Notch (V- or U-notch)		
99.00	99.50	10.00	Notch (V- or U-notch)		
110.00	110.50	6.00	Notch (V- or U-notch)		
68.00	68.50	0.30	Notch (V- or U-notch)		
73.00	73.50	2.00	Notch (V- or U-notch)		

CASING DETAILS:

Depth to Top [m]	to Bot. [m]	Diam. [mm]	Material	Thickn. [mm]	Type of openings	Openings [mm]: Length Width	Hor. Dist.	Vert. Dist.
0.00	2.00	305	Steel		Plain casing			
0.00	29.00	254	Steel		Plain casing			
0.00	64.00	203	Steel		Plain casing			
0.00	64.00	165	Steel		Plain casing			
64.00	106.00	165	Steel		Perforated or slotted			

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery [m] %	[min]	T [m²/d]	Storage	Comment
STEP TEST STEP 1	20130905	60	100.80	5.08	2.50					
STEP TEST STEP 2	20130905	60	100.80	10.10	9.33					
STEP TEST STEP 3	20130905	60	100.80	15.08	16.38					
STEP TEST STEP 4	20130905	60	100.80	20.11	24.38	100	30			
CONSTANT	20130906	2880	100.80	20.10	18.68	100	480	898	0.05	

RECOMMENDATIONS:

Prior.	Rec. equipm.	Depth to intk. [m]	Type of power	Duty cyc. [hrs]	Disch. rate [l/s]	Water quality	Dyn. water level [m]	Crit. water level [m]
1	Mono-type pump	60.00	Electric motor	20	10.00	CLASS 0	28.73	40.00

Note: 1. Production borehole
2. Install water level monitoring facility in borehole



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Project No.: 11613568

PUMPING TEST REPORT

Date compiled: 31/03/2014

BASIC SITE INFORMATION:

Site Identifier: 2823ACX0055 Number: SD2-3

Site type: Borehole

Distr./Farm No.:

Site Name/Des.: POSTMASBURG

Latitude [°] 28.318590
Longitude [°] 23.142107
Altitude [m]: 1351.84

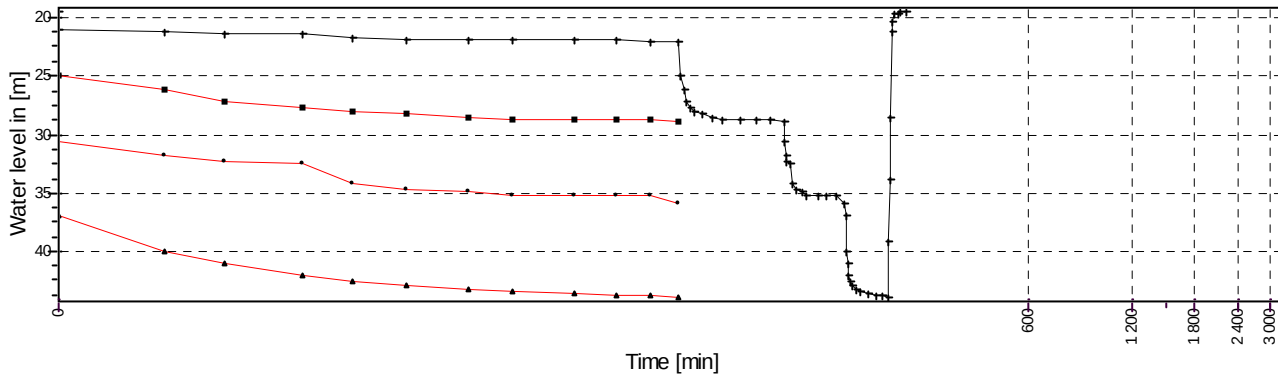
Alt. No. 1:
Alt. No. 2:
Rep. inst.: GOLD

Diam. [mm]: 165
Depth [m]: 118.00
Col. ht. [mm]: 0.48

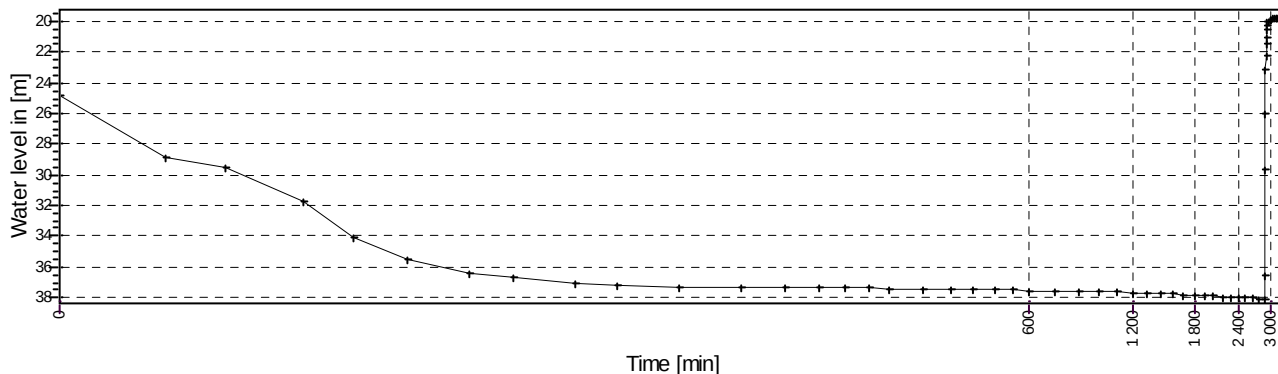
Water lev. [m]: 18.54
Piezometer: 0
Date WL meas.: 20140121

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



Constant Rate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	100.80	20130905	1100	20130905	1530			
GOLD	Constant rate test	100.80	20130906	0730	20130908	1530			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	1100	60	100.80	5.08	2.50							2.03
STEP TEST STEP 2	1200	60	100.80	10.10	9.33							1.08
STEP TEST STEP 3	1300	60	100.80	15.08	16.38							0.92
STEP TEST STEP 4	1400	60	100.80	20.11	24.38	100		30				0.82
CONSTANT	0730	2880	100.80	20.10	18.68	100		480				1.08



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Project No.: 11613568

Borehole Construction and Geological Log

Date compiled: 19/12/2013

BASIC SITE INFORMATION: Site Identifier: 2823ACX0056 Number: SD2-4 Site type: Borehole

Distr./Farm No.: Site Name/Des.: POSTMASBURG

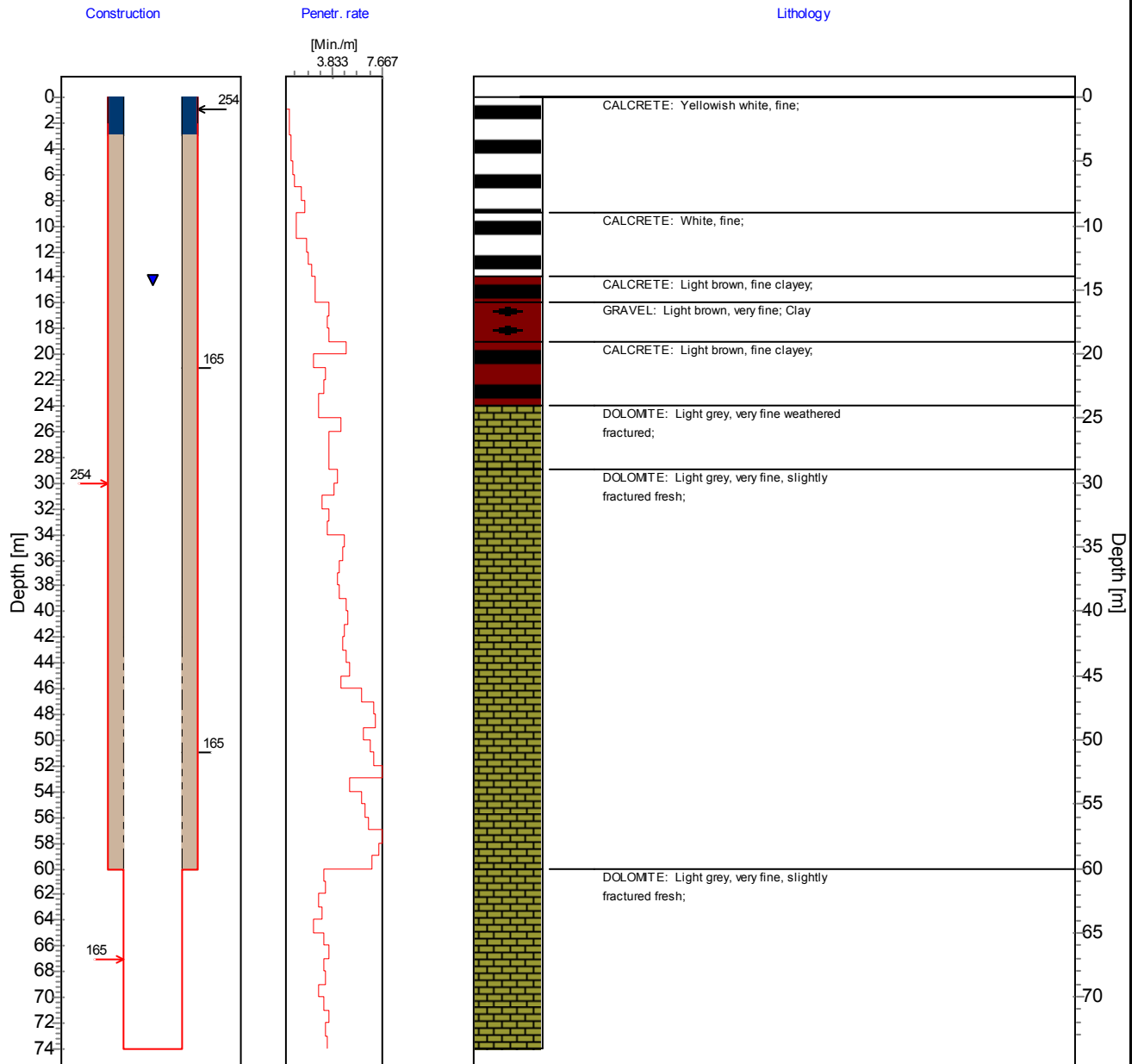
Region Type: Water supply authority Region Descr.: TSANTSABANE LM

Latitude [°]: 28.329855	Reg./BB.:	Topo-set.:	Depth [m]: 74.00
Longitude [°]: 23.092867	G-Nr.:	Site status: Unused	Col. ht. [m]: 0.41
Altitude [m]: 1320.11		Site purp.: Observation	Diam. [mm]: 165
Coord. acc.: Accurate to within 1 units		Use applic.:	Drain. reg.: D73A
Coord. meth.: Altimeter		Equipment: No equipment	Rep. inst.: GOLD

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Construction and Geohydrological Legend

—	Hole	165 →	Hole diameter [mm]	■	Sanitary seal
- - -	Casing (plain / perforated, slotted)	← 152	Casing diameter [mm]	■	Drill cuttings
—	Screen / Mesh Screen	▼	Waterlevel measured: 22/08/13		
—	Piezometer	0:50 →	Piezometer (Nr. & Diameter [mm])		



COMMENT:



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Project No.: 11613568

MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823ACX0056 Number: SD2-4 Site type: Borehole

Distr./Farm No.: Site Name/Descr.: POSTMASBURG

Latitude [°]:	28.329855	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	13.38
Longitude [°]:	23.092867	Alt. No. 2:		Depth [m]:	74.00	WL status:	Static
Altitude [m]:	1320.11	Rep. inst.:	GOLD	Col. ht. [m]:	0.41	Date WL meas.:	20140122

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:		
Type of Inst.:	Pulley Diam. [mm]:	
Manufacturer:	Depth to Intk. [m]:	
Engine:		
Manufacturer:	Power Rating [kW]	
Type of Power:	Pulley Diam. [mm]:	

USE APPLICATION:

Site Status: Unused
Purpose: Observation
Consumer:
Application:

WATER CHEMISTRY:

Sample No.:	SD2-4	Date sampled:	20130822	Depth sampl. [m]:	62.00	Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters:		
pH:	8.13	Na:	25.8	Cl:	43.9	Langel.:	0.61	E.Coli:
EC: [mS/m]	63.7	K:	5.57	NO3 as N:	2.56	Aggr-Ind:	12.68	Faec. co:
TDS:	404	Si:	9.62	SO4:	27.1	Ion-bal:	-6.38	Total Co:
T. Alk.:	347	Al:	< 0.05	F:	0.389	CaCO3:	330.40	SPC:
Ca:	41.1	Fe:	< 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit ¡ Value exceeds minimum allowable limit				
Mg:	55.4	Mn:	0.29 †					

CASING DETAILS:

Depth to Top [m] to Bot. [m]		Diam. [mm]	Material	Thickn. [mm]	Type of openings	Openings [mm]: Length Width	Hor. Dist.	Vert. Dist.
0.00	2.00	254	Steel		Plain casing			
0.00	42.00	165	Steel		Plain casing			
42.00	60.00	165	Steel		Perforated or slotted			

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery [m] %	T [m²/d]	Storage	Comment
STEP TEST STEP 1	20140122	60	62.00	0.54	32.97				
STEP TEST STEP 2	20140122	15	62.00	0.64	47.88	36.50 24	120		
PUMP INLET	20140122	3	62.00	0.13	48.62				



PUMPING TEST REPORT

Date compiled: 31/03/2014

BASIC SITE INFORMATION:

Site Identifier: 2823ACX0056 Number: SD2-4

Site type: Borehole

Distr./Farm No.:

Site Name/Des.: POSTMASBURG

Latitude [°] 28.329855

Alt. No. 1:

Diam. [mm]:

165

Water lev. [m]:

13.38

Longitude [°] 23.092867

Alt. No. 2:

Depth [m]:

74.00

Piezometer:

0

Altitude [m]: 1320.11

Rep. inst.: GOLD

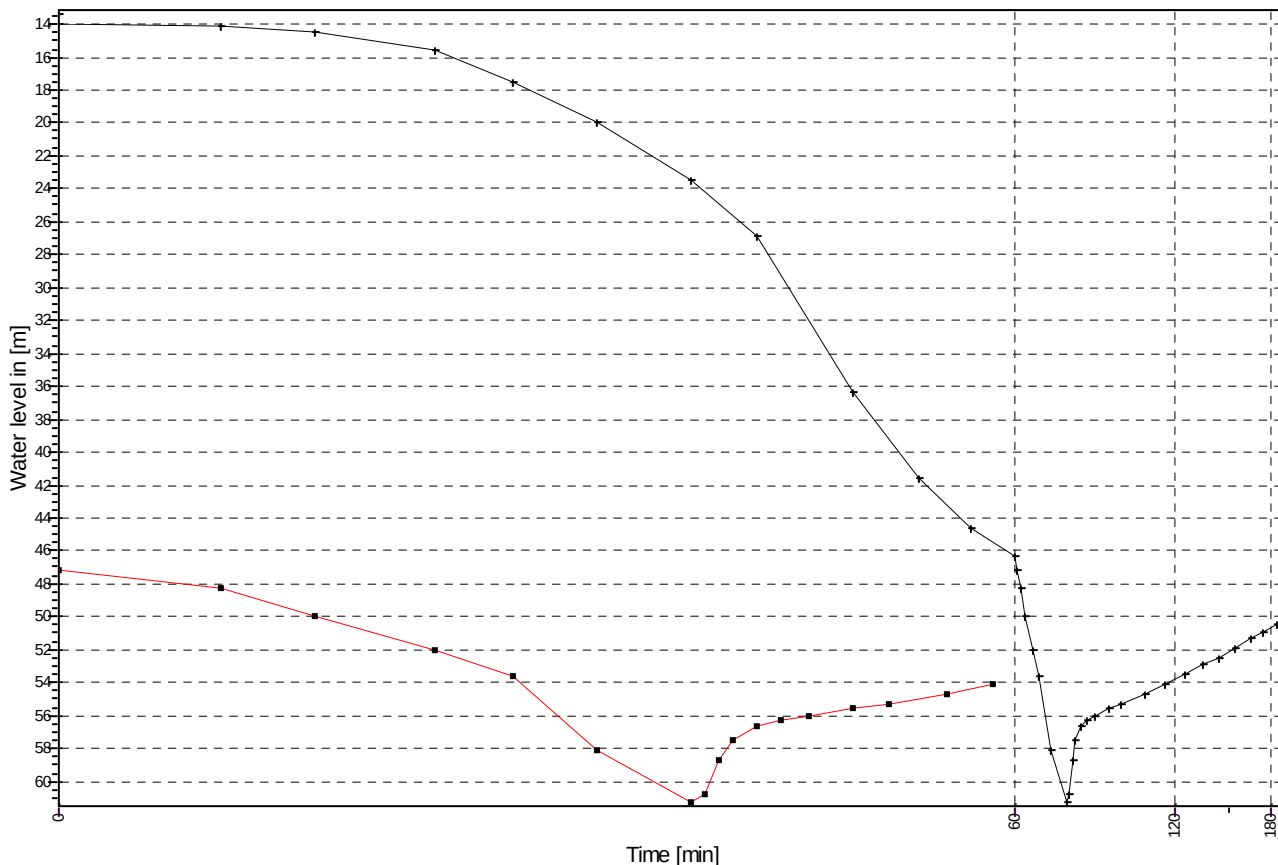
Col. ht. [mm]:

0.41

Date WL meas.: 20140122

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	62.00	20140122	1000	20140122	1315			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	1000	60	62.00	0.54	32.97							0.02
STEP TEST STEP 2	1100	15	62.00	0.64	47.88	36.50	24	120				0.01
PUMP INLET	1315	3	62.00	0.13	48.62							0.00



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Project No.: 11613568

Borehole Construction and Geological Log

Date compiled: 19/12/2013

BASIC SITE INFORMATION: Site Identifier: 2823ACX0057 Number: SD2-5 Site type: Borehole

Distr./Farm No.: Site Name/Des.: POSTMASBURG

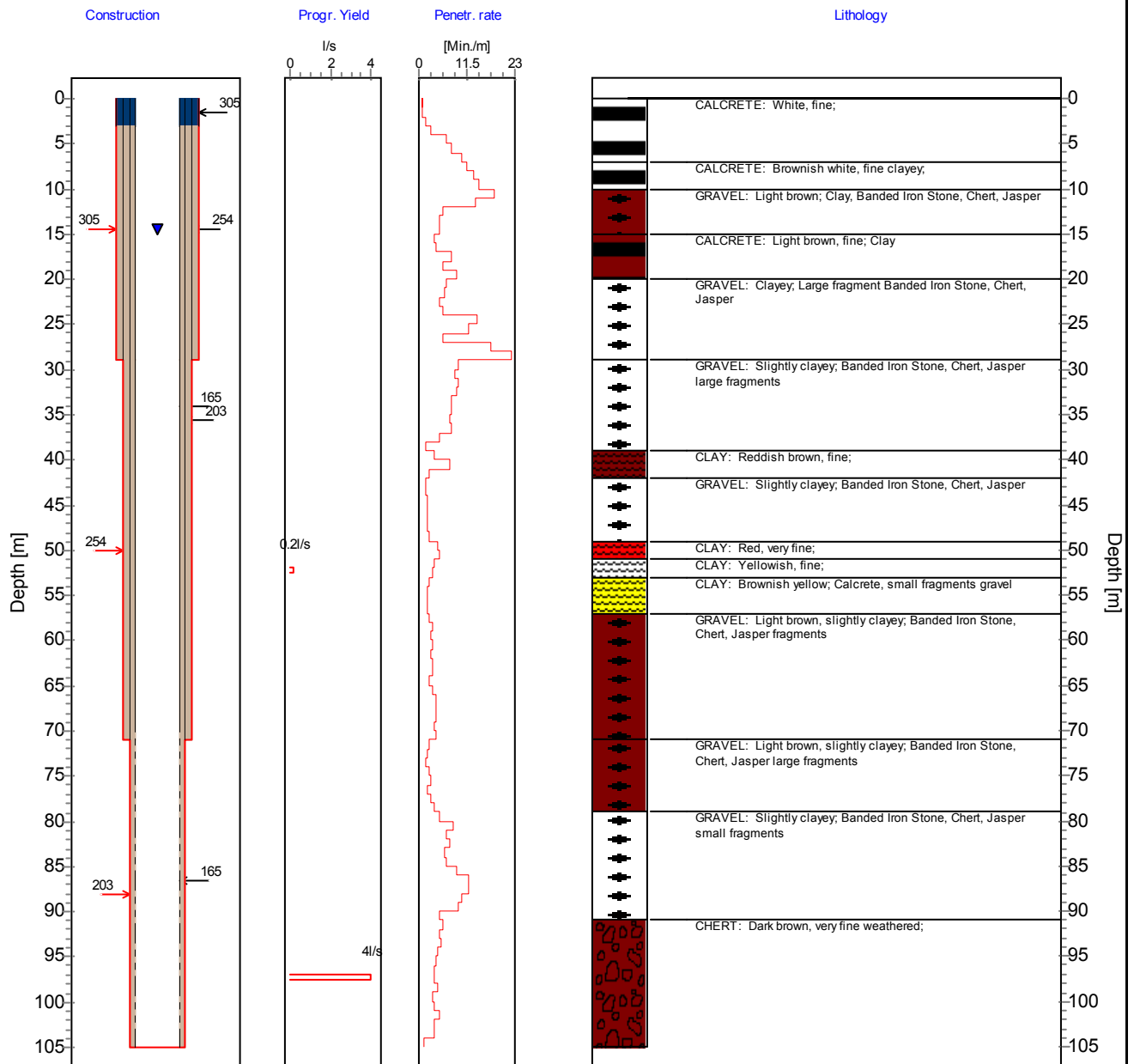
Region Type: Water supply authority Region Descr.: TSANTSABANE LM

Latitude [°]: 28.327050	Reg./BB.:	Topo-set.:	Depth [m]: 104.00
Longitude [°]: 23.139120	G-Nr.:	Site status: Unused	Col. ht. [m]: 0.67
Altitude [m]: 1348.07		Site purp.: Production (water supply)	Diam. [mm]: 165
Coord. acc.: Accurate to within 1 units		Use applic.: Domestic - all purposes	Drain. reg.: D73A
Coord. meth.: Altimeter		Equipment: No equipment	Rep. inst.: GOLD

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartbeesthoek94 (WGS 84)

Construction and Geohydrological Legend

	Hole	165 →	Hole diameter [mm]		Sanitary seal
	Casing (plain / perforated, slotted)	← 152	Casing diameter [mm]		Drill cuttings
	Screen / Mesh Screen	▼	Waterlevel measured: 03/09/13		
	Piezometer	0:50 →	Piezometer (Nr. & Diameter [mm])		



COMMENT:



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Project No.: 11613568

MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823ACX0057 Number: SD2-5 Site type: Borehole

Distr./Farm No.: Site Name/Descr.: POSTMASBURG

Latitude [°]:	28.327050	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	14.57
Longitude [°]:	23.139120	Alt. No. 2:		Depth [m]:	104.00	WL status:	Static
Altitude [m]:	1348.07	Rep. inst.: GOLD		Col. ht. [m]:	0.67	Date WL meas.:	20140121

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:		Pulley Diam. [mm]:	
Type of Inst.:		Depth to Intk. [m]:	
Manufacturer:			
Engine:		Power Rating [kW]	
Manufacturer:		Pulley Diam. [mm]:	
Type of Power:			

USE APPLICATION:

Site Status: Unused
Purpose: Production (water supply)
Consumer: Non-urban
Application: Domestic - all purposes

WATER CHEMISTRY:

Sample No.:	SD2-5	Date sampled:	20130909	Depth sampl. [m]:	100.80	Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters:		
pH:	7.78	Na:	17.6	Cl:	29.4	Langel.:	0.06	E.Coli:
EC: [mS/m]	44.2	K:	2.57	NO3 as N:	2.53	Aggr-Ind:	12.07	Faec. co:
TDS:	308	Si:	7.63	SO4:	23	Ion-bal:	0.85	Total Co:
T. Alk.:	181	Al:	< 0.05	F:	0.194	CaCO3:	218.76	SPC:
Ca:	43.5	Fe:	< 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit ¡ Value exceeds minimum allowable limit				
Mg:	26.8	Mn:	0.33 †					

AQUIFER INFORMATION:

Depth to Top [m]	Depth to Bot. [m]	Yield[l/s]	Method meas.	Aquifer type	Comment
97.00	97.50	4.00	Notch (V- or U-notch)		
52.00	52.50	0.20	Notch (V- or U-notch)		

CASING DETAILS:

Depth to Top [m]	to Bot. [m]	Diam. [mm]	Material	Thickn. [mm]	Type of openings	Openings [mm]: Length Width	Hor. Dist.	Vert. Dist.
0.00	3.00	305	Steel		Plain casing			
0.00	29.00	254	Steel		Plain casing			
0.00	71.00	203	Steel		Plain casing			
0.00	68.00	165	Steel		Plain casing			
68.00	105.00	165	Steel		Perforated or slotted			

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery [m]	%	[min]	T [m²/d]	Storage	Comment
STEP TEST STEP 1	20130909	60	100.80	0.84	8.40						
STEP TEST STEP 2	20130909	60	100.80	1.82	45.84						
STEP TEST STEP 3	20130909	10	100.80	2.54	83.90	100	110				
PUMP INLET	20130909	20	100.80	1.24	85.24						



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Project No.: 11613568

PUMPING TEST REPORT

Date compiled: 31/03/2014

BASIC SITE INFORMATION:

Site Identifier: 2823ACX0057 Number: SD2-5

Site type: Borehole

Distr./Farm No.:

Site Name/Des.: POSTMASBURG

Latitude [°] 28.327050
Longitude [°] 23.139120
Altitude [m]: 1348.07

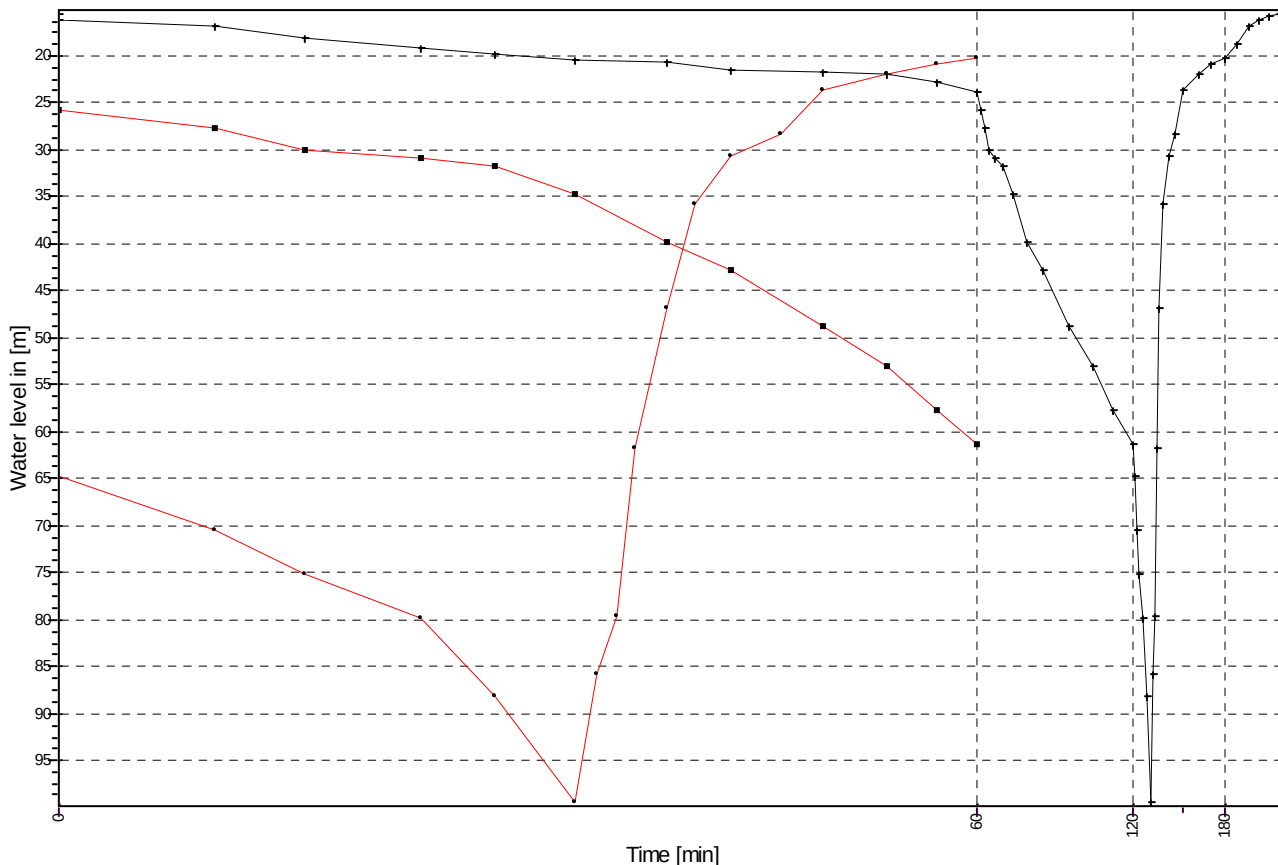
Alt. No. 1:
Alt. No. 2:
Rep. inst.: GOLD

Diam. [mm]: 165
Depth [m]: 104.00
Col. ht. [mm]: 0.67

Water lev. [m]: 14.57
Piezometer: 0
Date WL meas.: 20140121

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	100.80	20130909	1400	20130909	1800			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	1400	60	100.80	0.84	8.40							0.10
STEP TEST STEP 2	1500	60	100.80	1.82	45.84							0.04
STEP TEST STEP 3	1600	10	100.80	2.54	83.90		100	110				0.03
PUMP INLET	1800	20	100.80	1.24	85.24							0.01



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Project No.: 11613568

BASIC SITE INFORMATION: Site Identifier: 2823ACX0058 Number: SD2-6 Site type: Borehole

Distr./Farm No.: Site Name/Des.: POSTMASBURG

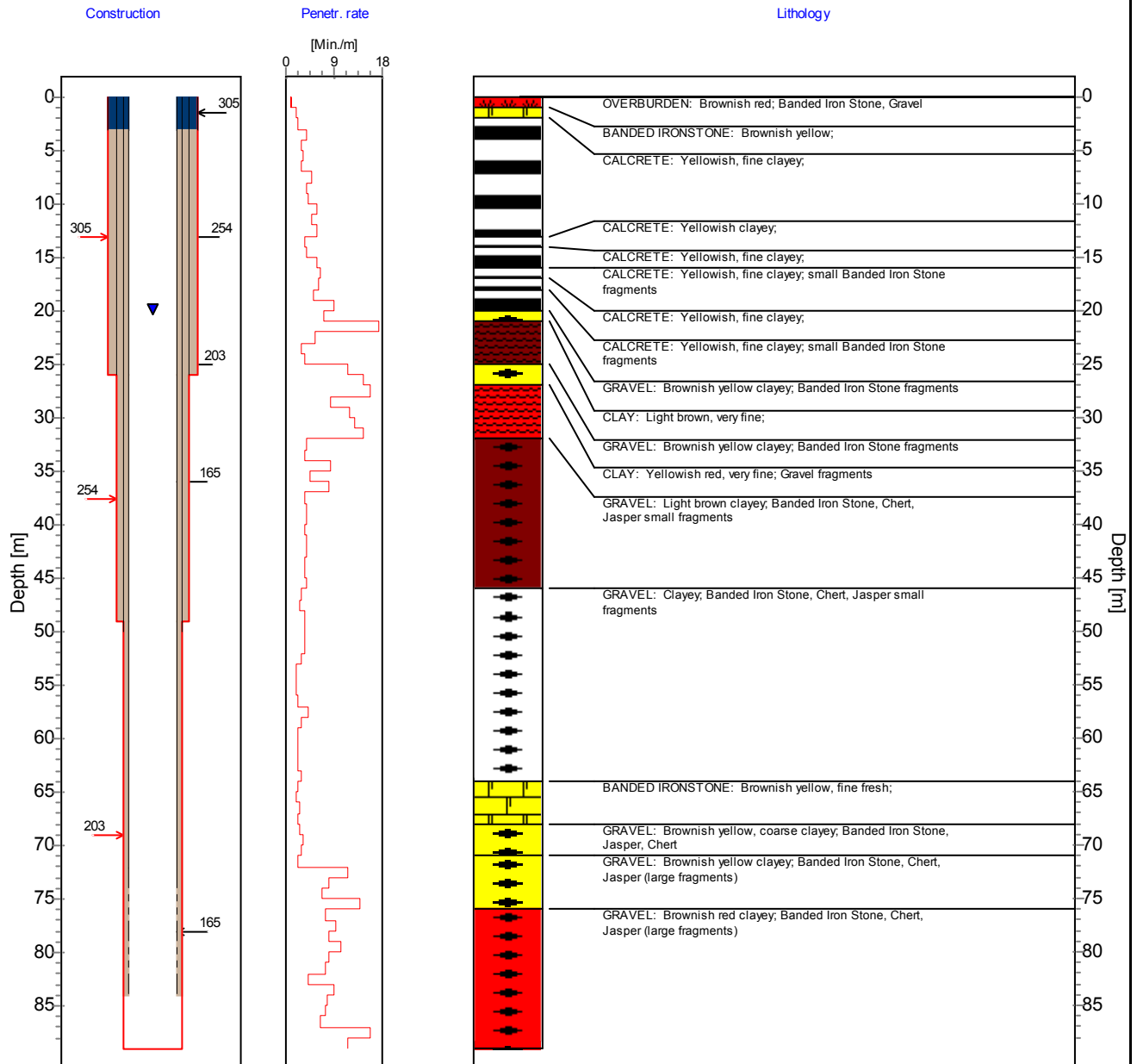
Region Type: Water supply authority Region Descr.: TSANTABANE LM

Latitude [°]: 28.324972	Reg./BB.:	Topo-set.:	Depth [m]: 89.00
Longitude [°]: 23.150426	G-Nr.:	Site status: Unused	Col. ht. [m]: 0.43
Altitude [m]: 1353.38		Site purp.: Production (water supply)	Diam. [mm]: 165
Coord. acc.: Accurate to within 1 units		Use applic.: Domestic - all purposes	Drain. reg.: D73A
Coord. meth.: Altimeter		Equipment: No equipment	Rep. inst.: GOLD

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Construction and Geohydrological Legend

	Hole	165 →	Hole diameter [mm]		Sanitary seal
	Casing (plain / perforated, slotted)	← 152	Casing diameter [mm]		Drill cuttings
	Screen / Mesh Screen	▼	Waterlevel measured: 28/09/13		
	Piezometer	0:50 →	Piezometer (Nr. & Diameter [mm])		



COMMENT:



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 Project No.: 11613568

MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823ACX0058 Number: SD2-6 Site type: Borehole

Distr./Farm No.: Site Name/Descr.: POSTMASBURG

Latitude [°]:	28.324972	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	20.33
Longitude [°]:	23.150426	Alt. No. 2:		Depth [m]:	77.44	WL status:	Static
Altitude [m]:	1353.38	Rep. inst.:	GOLD	Col. ht. [m]:	0.47	Date WL meas.:	20140124

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:		Pulley Diam. [mm]:	
Type of Inst.:		Depth to Intk. [m]:	
Manufacturer:			
Engine:		Power Rating [kW]	
Manufacturer:		Pulley Diam. [mm]:	
Type of Power:			

USE APPLICATION:

Site Status:	Unused
Purpose:	Production (water supply)
Consumer:	Non-urban
Application:	Domestic - all purposes

WATER CHEMISTRY:

Sample No.:	SD2-6	Date sampled:	20140218	Depth sampl. [m]:	62.00	Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters:		
pH:	7.36	Na:	17.2	Cl:	23.7	Langel.:	-0.77	E.Coli:
EC: [mS/m]	28.2	K:	2.05	NO3 as N:	< 0.3	Aggr-Ind:	11.17	Faec. co:
TDS:	184	Si:		SO4:	2.51	Ion-bal:	7.13 †	Total Co:
T. Alk.:	111	Al:	< 0.05	F:	0.9	CaCO3:	133.56	SPC:
Ca:	23.2	Fe:	< 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit ‡ Value exceeds minimum allowable limit				
Mg:	18.4	Mn:	< 0.05					

CASING DETAILS:

Depth to Top [m]	to Bot. [m]	Diam. [mm]	Material	Thickn. [mm]	Type of openings	Openings [mm]: Length Width	Hor. Dist.	Vert. Dist.
0.00	3.00	305	Steel		Plain casing			
0.00	26.00	254	Steel		Plain casing			
0.00	50.00	203	Steel		Plain casing			
0.00	72.00	165	Steel		Plain casing			
72.00	84.00	165	Steel		Perforated or slotted			

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery %	T [m²/d]	Storage	Comment
STEP TEST STEP 1	20140124	60	62.00	0.51	32.34	60			



PUMPING TEST REPORT

Date compiled: 17/04/2014

BASIC SITE INFORMATION:

Site Identifier: 2823ACX0058 Number: SD2-6

Site type: Borehole

Distr./Farm No.:

Site Name/Des.: POSTMASBURG

Latitude [°] 28.324972
Longitude [°] 23.150426
Altitude [m]: 1353.38

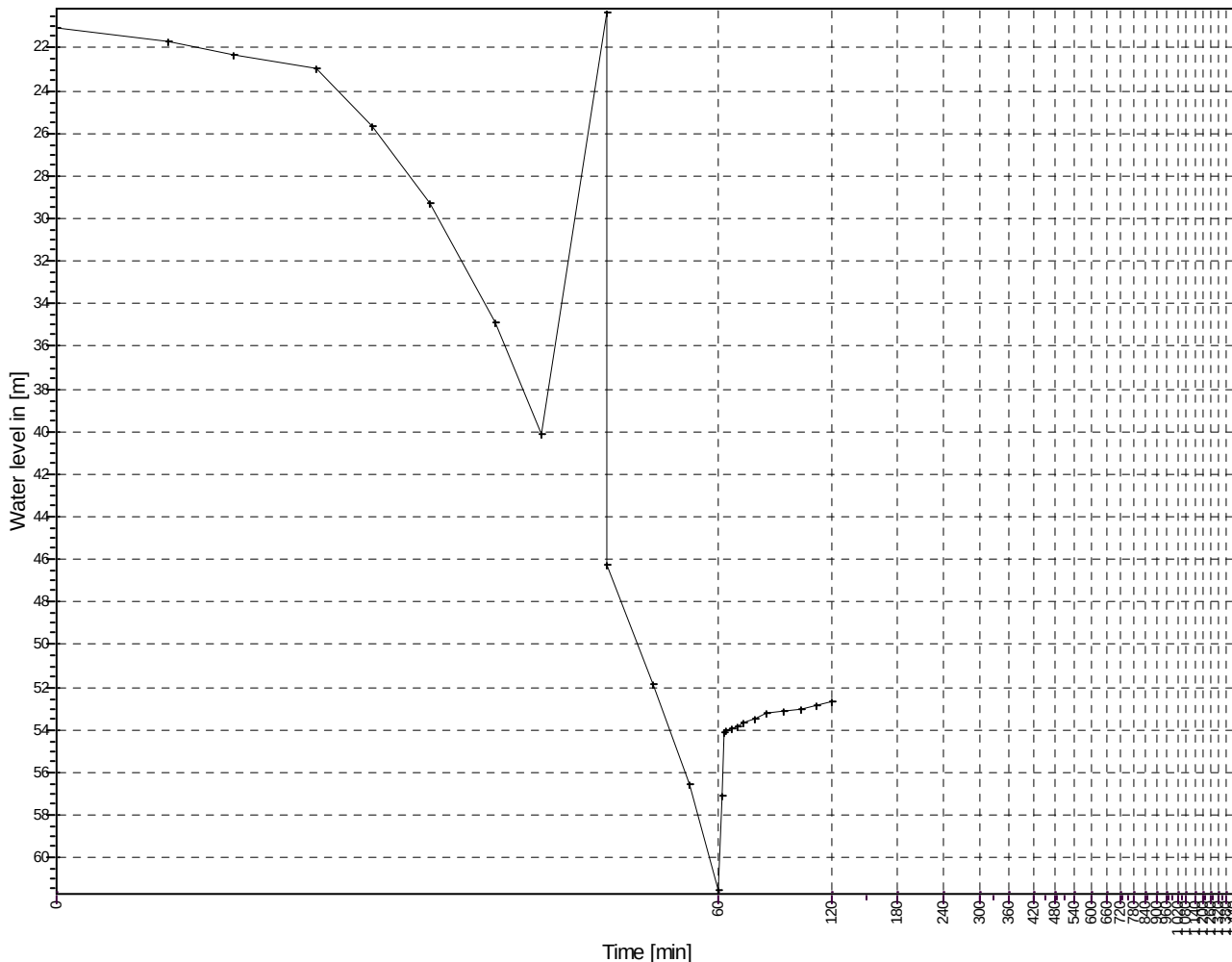
Alt. No. 1:
Alt. No. 2:
Rep. inst.: GOLD

Diam. [mm]: 165
Depth [m]: 77.44
Col. ht. [mm]: 0.47

Water lev. [m]: 20.33
Piezometer: 0
Date WL meas.: 20140124

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	62.00	20140124	0920	20140124	1150			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	0950	60	62.00	0.51	32.34		60					0.02



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Project No.: 11613568

Borehole Construction and Geological Log

Date compiled: 19/12/2013

BASIC SITE INFORMATION: Site Identifier: 2823ACX0060 Number: SD2-7 Site type: Borehole

Distr./Farm No.: Site Name/Des.: POSTMASBURG

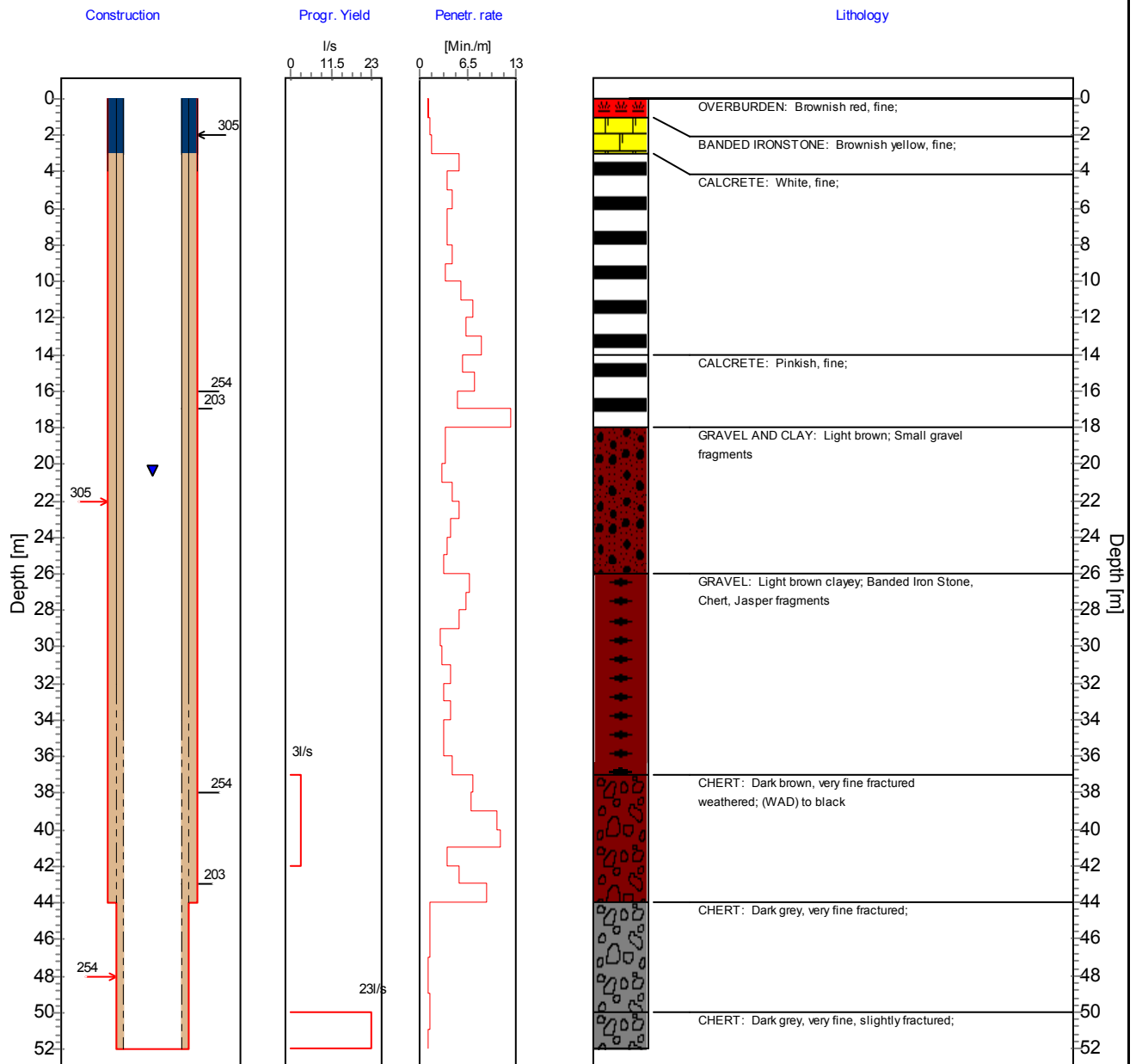
Region Type: Water supply authority Region Descr.: TSANTSABANE LM

Latitude [°]: 28.316072	Reg./BB.:	Topo-set.:	Depth [m]: 52.40
Longitude [°]: 23.157200	G-Nr.:	Site status: Unused	Col. ht. [m]: 0.50
Altitude [m]: 1353.88		Site purp.: Production (water supply)	Diam. [mm]: 203
Coord. acc.: Accurate to within 1 units		Use applic.: Domestic - all purposes	Drain. reg.: D73A
Coord. meth.: Altimeter		Equipment: No equipment	Rep. inst.: GOLD

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Construction and Geohydrological Legend

	Hole	165 →	Hole diameter [mm]		Sanitary seal
	Casing (plain / perforated, slotted)	← 152	Casing diameter [mm]		Gravel (> 2mm)
	Screen / Mesh Screen	▼ 0:50	Waterlevel measured: 05/09/13		
	Piezometer	→ 0:50	Piezometer (Nr. & Diameter [mm])		



COMMENT:



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Project No.: 11613568

MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823ACX0060 Number: SD2-7 Site type: Borehole

Distr./Farm No.: Site Name/Descr.: POSTMASBURG WELLFIELD

Latitude [°]:	28.316072	Alt. No. 1:		Diam. [mm]:	203	Water lev. [m]:	20.63
Longitude [°]:	23.157200	Alt. No. 2:		Depth [m]:	52.40	WL status:	Static
Altitude [m]:	1353.88	Rep. inst.:	GOLD	Col. ht. [m]:	0.50	Date WL meas.:	20140121

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:		Pulley Diam. [mm]:	
Type of Inst.:		Depth to Intk. [m]:	
Manufacturer:			
Engine:		Power Rating [kW]	
Manufacturer:		Pulley Diam. [mm]:	
Type of Power:			

USE APPLICATION:

Site Status:	Unused
Purpose:	Production (water supply)
Consumer:	Non-urban
Application:	Domestic - all purposes

WATER CHEMISTRY:

Sample No.:	SD2-7	Date sampled:	20130913	Depth sampl. [m]:	46.80	Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters.		
pH:	7.53	Na:	20.7	Cl:	26.9	Langel.:	0.13	E.Coli:
EC: [mS/m]	57.4	K:	2.76	NO3 as N:	2.23	Aggr-Ind:	12.18	Faec. co:
TDS:	416	Si:	14.3	SO4:	19.6	Ion-bal:	3.70	Total Co:
T. Alk.:	264	Al:	< 0.05	F:	0.199	CaCO3:	307.67	SPC:
Ca:	67.1	Fe:	< 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit ¡ Value exceeds minimum allowable limit				
Mg:	34.1	Mn:	< 0.05					

AQUIFER INFORMATION:

Depth to Top [m]	Depth to Bot. [m]	Yield[l/s]	Method meas.	Aquifer type	Comment
37.00	42.00	3.00	Notch (V- or U-notch)		
50.00	52.00	23.00	Notch (V- or U-notch)		

CASING DETAILS:

Depth to Top [m]	to Bot. [m]	Diam. [mm]	Material	Thickn. [mm]	Type of openings	Openings [mm]: Length Width	Hor. Dist.	Vert. Dist.
0.00	4.00	305	Steel		Plain casing			
0.00	32.00	254	Steel		Plain casing			
32.00	44.00	254	Steel		Perforated or slotted			
0.00	34.00	203	Steel		Plain casing			
34.00	52.00	203	Steel		Perforated or slotted			

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery [m] %	[min]	T [m²/d]	Storage	Comment
STEP TEST STEP 1	20130911	60	46.80	6.22	0.89					
STEP TEST STEP 2	20130911	60	46.80	16.10	2.80					
STEP TEST STEP 3	20130911	60	46.80	25.26	6.12					
STEP TEST STEP 4	20130911	60	46.80	30.22	15.79	100	10			
CONSTANT	20130911	2880	46.80	30.04	8.42	100	10	500	0.05	

RECOMMENDATIONS:

Prior.	Rec. equipm.	Depth to intk. [m]	Type of power	Duty cyc. [hrs]	Disch. rate [l/s]	Water quality	Dyn. water level [m]	Crit. water level [m]
1	Mono-type pump	48.00	Electric motor	24	10.00	CLASS 0	24.00	36.00

Note: 1. Production borehole
2. Install water level monitoring facility in borehole



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Project No.: 11613568

PUMPING TEST REPORT

Date compiled: 31/03/2014

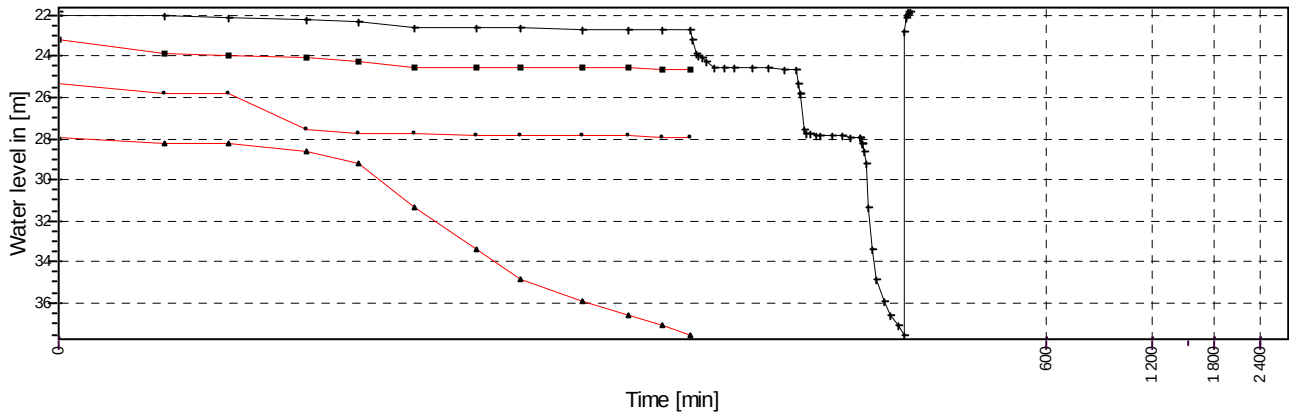
BASIC SITE INFORMATION: Site Identifier: 2823ACX0060 Number: SD2-7 Site type: Borehole

Distr./Farm No.: Site Name/Des.: POSTMASBURG

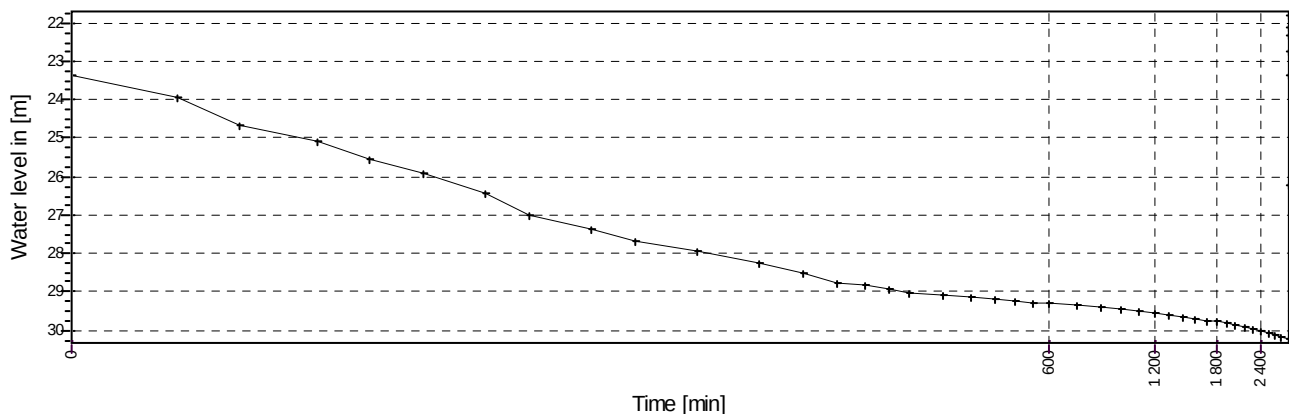
Latitude [°]	28.316072	Alt. No. 1:		Diam. [mm]:	203	Water lev. [m]:	20.63
Longitude [°]	23.157200	Alt. No. 2:		Depth [m]:	52.40	Piezometer:	0
Altitude [m]:	1353.88	Rep. inst.: GOLD		Col. ht. [mm]:	0.50	Date WL meas.:	20140121

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



Constant Rate Test



PUMPING TEST:		Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
Rep. Inst.	Meth. tested								
GOLD	Step test	46.80	20130911	0700	20130911	1110			
GOLD	Constant rate test	46.80	20130911	1500	20130913	1510			

TESTING DETAILS:		Durat. [min]	Depth to intk. [m]	Disch. rate [l/s]	Drawd. [m]	Recov. [m]	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
Description	Time start.					%					
STEP TEST STEP 1	0700	60	46.80	6.22	0.89						6.99
STEP TEST STEP 2	0800	60	46.80	16.10	2.80						5.75
STEP TEST STEP 3	0900	60	46.80	25.26	6.12						4.13
STEP TEST STEP 4	1000	60	46.80	30.22	15.79	100	10				1.91
CONSTANT	1500	2880	46.80	30.04	8.42	100	10				3.57



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Project No.: 11613568

BASIC SITE INFORMATION: Site Identifier: 2823ACX0061 Number: SD2-8 Site type: Borehole

Distr./Farm No.: Site Name/Des.: POSTMASBURG

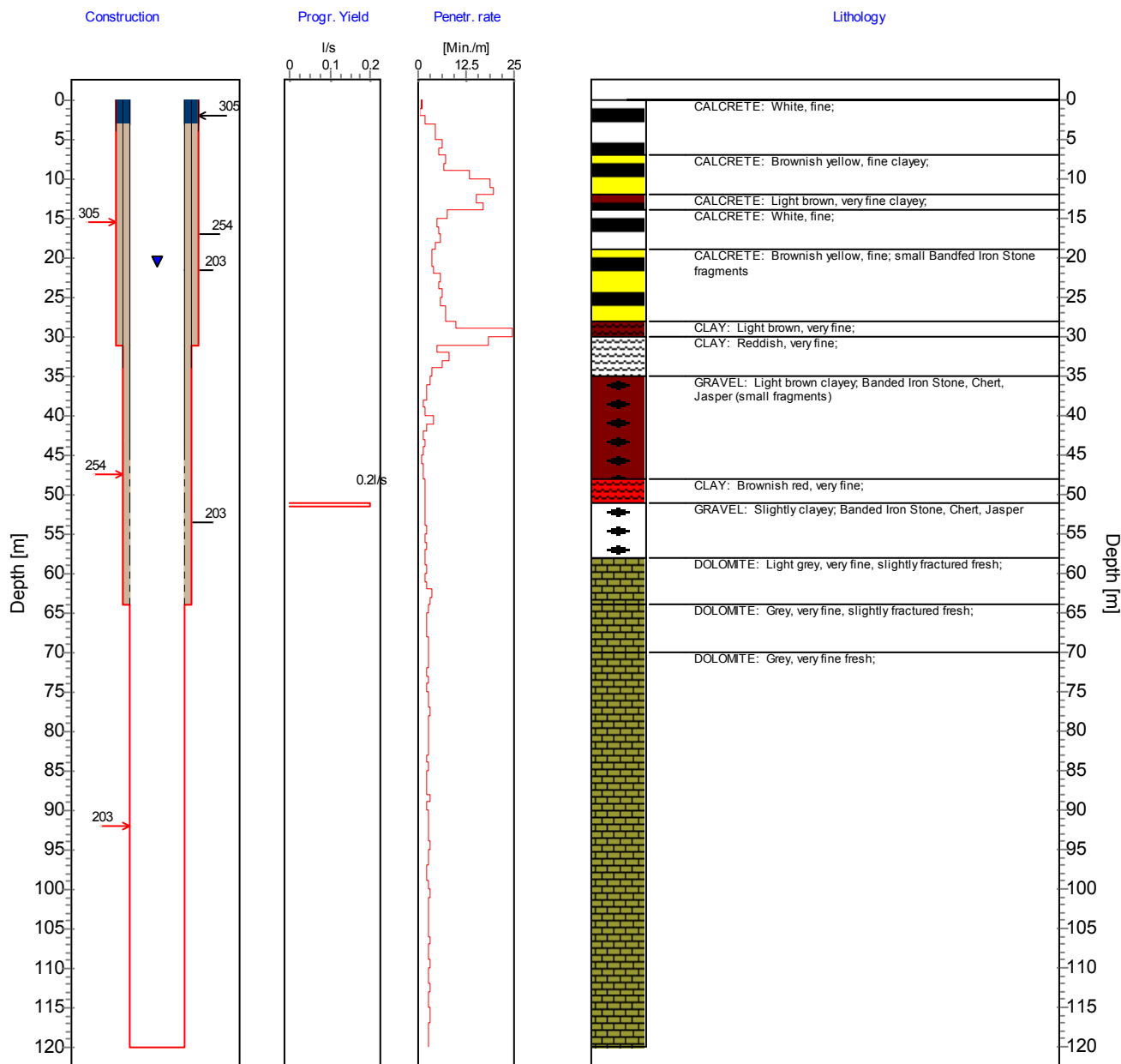
Region Type: Water supply authority Region Descr.: TSANTSABANE LM

Latitude [°]: 28.313490	Reg./BB.:	Topo-set.:	Depth [m]: 120.00
Longitude [°]: 23.150118	G-Nr.:	Site status: Unused	Col. ht. [m]: 0.28
Altitude [m]: 1353.62		Site purp.: Observation	Diam. [mm]: 203
Coord. acc.: Accurate to within 1 units		Use applic.:	Drain. reg.: D73A
Coord. meth.: Altimeter		Equipment: No equipment	Rep. inst.: GOLD

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Construction and Geohydrological Legend

	Hole	165 →	Hole diameter [mm]		Sanitary seal
	Casing (plain / perforated, slotted)	← 152	Casing diameter [mm]		Drill cuttings
	Screen / Mesh Screen	▼	Waterlevel measured: 09/09/13		
	Piezometer	0:50 →	Piezometer (Nr. & Diameter [mm])		



COMMENT:



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 Project No.: 11613568

MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823ACX0061 Number: SD2-8 Site type: Borehole

Distr./Farm No.: Site Name/Descr.: POSTMASBURG

Latitude [°]:	28.313490	Alt. No. 1:		Diam. [mm]:	203	Water lev. [m]:	20.59
Longitude [°]:	23.150118	Alt. No. 2:		Depth [m]:	120.80	WL status:	Static
Altitude [m]:	1353.62	Rep. inst.:	GOLD	Col. ht. [m]:	0.40	Date WL meas.:	20140123

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:		
Type of Inst.:	Pulley Diam. [mm]:	
Manufacturer:	Depth to Intk. [m]:	
Engine:		
Manufacturer:	Power Rating [kW]	
Type of Power:	Pulley Diam. [mm]:	

USE APPLICATION:

Site Status: Unused
Purpose: Observation
Consumer: Non-urban
Application:

WATER CHEMISTRY:

Sample No.:	SD2-8	Date sampled:	20130912	Depth sampl. [m]:	86.00	Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters:		
pH:	7.46	Na:	21.4	Cl:	54.5	Langel.:	-0.18	E.Coli:
EC: [mS/m]	60.5	K:	3.27	NO3 as N:	10.9 †	Aggr-Ind:	11.86	Faec. co:
TDS:	452	Si:	8.35	SO4:	19.9	Ion-bal:	1.81	Total Co:
T. Alk.:	199	Al:	< 0.05	F:	0.195	CaCO3:	297.69	SPC:
Ca:	50.9	Fe:	< 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit ¡ Value exceeds minimum allowable limit				
Mg:	41.5	Mn:	0.11 †					

AQUIFER INFORMATION:

Depth to Top [m]	Depth to Bot. [m]	Yield[l/s]	Method meas.	Aquifer type	Comment
51.00	51.50	0.20	Notch (V- or U-notch)		

CASING DETAILS:

Depth to Top [m]	to Bot. [m]	Diam. [mm]	Material	Thickn. [mm]	Type of openings	Openings [mm]: Length Width	Hor. Dist.	Vert. Dist.
0.00	4.00	305	Steel		Plain casing			
0.00	34.00	254	Steel		Plain casing			
0.00	43.00	203	Steel		Plain casing			
43.00	64.00	203	Steel		Perforated or slotted			

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery [m]	%	[min]	T [m²/d]	Storage	Comment
STEP TEST STEP 1	20140123	60	86.00	0.51	16.18						
STEP TEST STEP 2	20140123	60	86.00	1.04	40.20						
STEP TEST STEP 3	20140123	15	86.00	1.53	54.76	3.48	94	180			
PUMP INLET	20140123	1	86.00	0.43	65.01						



PUMPING TEST REPORT

Date compiled: 17/04/2014

BASIC SITE INFORMATION:

Site Identifier: 2823ACX0061 Number: SD2-8

Site type: Borehole

Distr./Farm No.:

Site Name/Des.: POSTMASBURG

Latitude [°] 28.313490

Alt. No. 1:

Diam. [mm]: 203

Water lev. [m]: 20.59

Longitude [°] 23.150118

Alt. No. 2:

Depth [m]: 120.80

Piezometer: 0

Altitude [m]: 1353.62

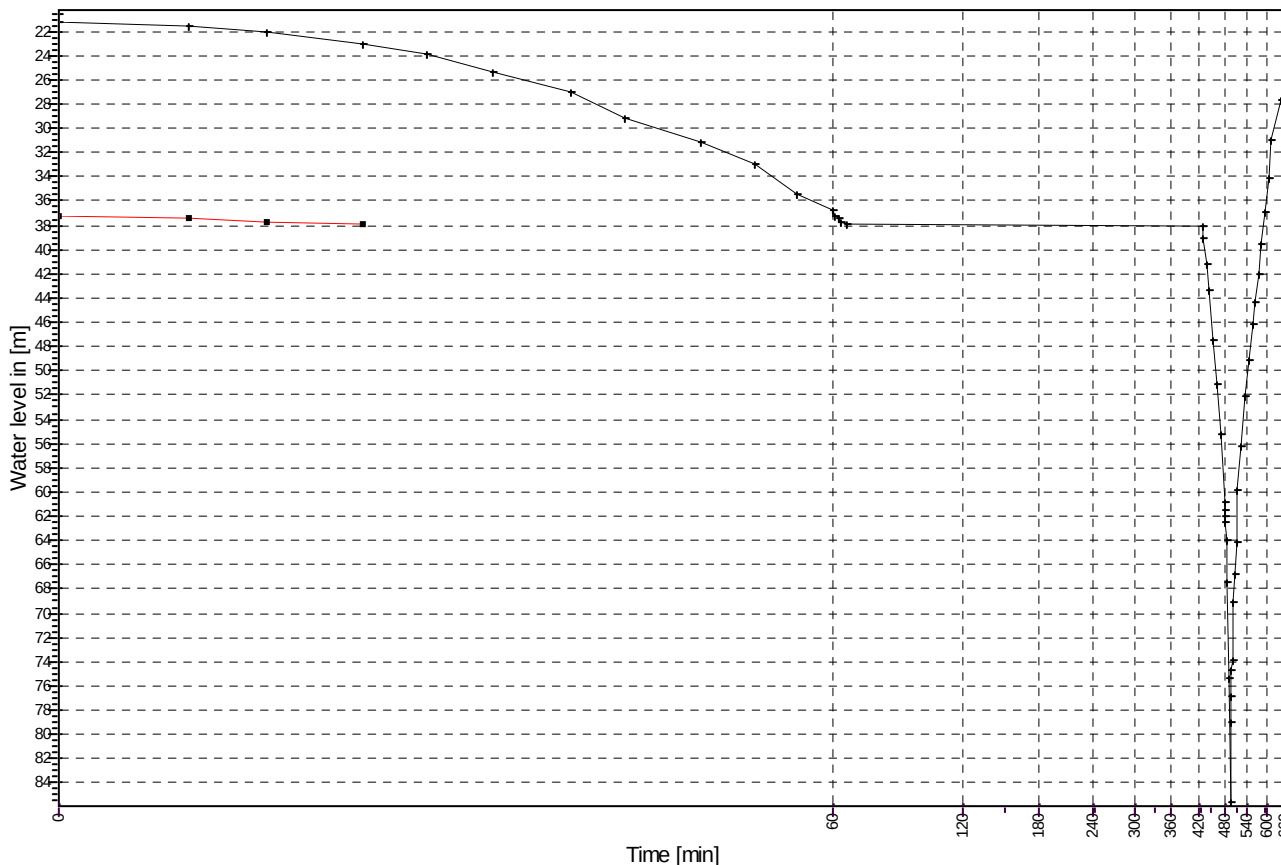
Rep. inst.: GOLD

Col. ht. [mm]: 0.40

Date WL meas.: 20140123

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	86.00	20140123	1040	20140123	2155			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	1040	60	86.00	0.51	16.18							0.03
STEP TEST STEP 2	1140	60	86.00	1.04	40.20							0.03
STEP TEST STEP 3	1240	15	86.00	1.53	54.76	3.48	94	180				0.03
PUMP INLET	1911	1	86.00	0.43	65.01							0.01



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Project No.: 11613568

BASIC SITE INFORMATION: Site Identifier: 2823ACX0062 Number: SD2-9 Site type: Borehole

Distr./Farm No.: Site Name/Des.: POSTMASBURG

Region Type: Water supply authority

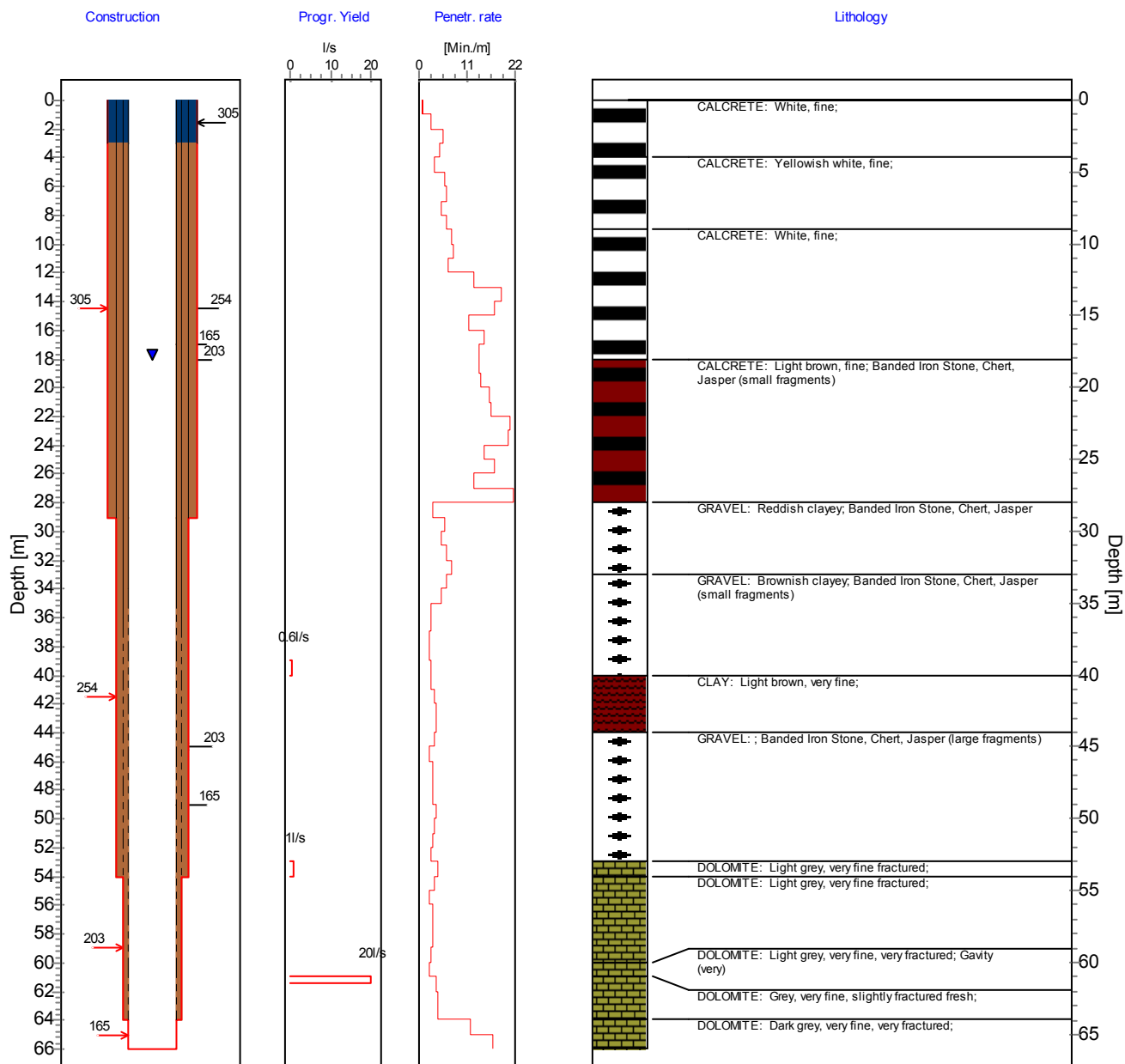
Region Descr.: TSANTABANE LM

Latitude [°]:	28.306271	Reg./BB.:	Topo-set.:	Depth [m]:	66.30
Longitude [°]:	23.156516	G-Nr.:	Site status: Unused	Col. ht. [m]:	0.48
Altitude [m]:	1351.26		Site purp.: Production (water supply)	Diam. [mm]:	165
Coord. acc.:	Accurate to within 1 units		Use applic.: Domestic - all purposes	Drain. reg.:	D73A
Coord. meth.:	Altimeter		Equipment: No equipment	Rep. inst.:	GOLD

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartbeesthoek94 (WGS 84)

Construction and Geohydrological Legend

	Hole	165 →	Hole diameter [mm]		Sanitary seal
	Casing (plain / perforated, slotted)	← 152	Casing diameter [mm]		Silica
	Screen / Mesh Screen	▼	Waterlevel measured: 12/09/13		
	Piezometer	0:50 →	Piezometer (Nr. & Diameter [mm])		



COMMENT:



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Project No.: 11613568

MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823ACX0062 Number: SD2-9 Site type: Borehole

Distr./Farm No.: Site Name/Descr.: POSTMASBURG WELLFIELD

Latitude [°]:	28.306271	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	18.19
Longitude [°]:	23.156516	Alt. No. 2:		Depth [m]:	66.44	WL status:	Static
Altitude [m]:	1351.26	Rep. inst.:	GOLD	Col. ht. [m]:	0.49	Date WL meas.:	20140228

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:		Pulley Diam. [mm]:	
Type of Inst.:		Depth to Intk. [m]:	
Manufacturer:			
Engine:		Power Rating [kW]	
Manufacturer:		Pulley Diam. [mm]:	
Type of Power:			

USE APPLICATION:

Site Status:	Unused
Purpose:	Production (water supply)
Consumer:	Non-urban
Application:	Domestic - all purposes

WATER CHEMISTRY:

Sample No.:	SD2-9	Date sampled:	20130916	Depth sampl. [m]:	58.80	Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters:		
pH:	7.64	Na:	22.2	Cl:	29	Langel.:	0.23	E.Coli:
EC: [mS/m]	57	K:	2.9	NO3 as N:	2.3	Aggr-Ind:	12.28	Faec. co:
TDS:	386	Si:	14.1	SO4:	19.3	Ion-bal:	0.86	Total Co:
T. Alk.:	279	Al:	< 0.05	F:	0.202	CaCO3:	302.79	SPC:
Ca:	63	Fe:	< 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit ¡ Value exceeds minimum allowable limit				
Mg:	35.4	Mn:	< 0.05					

AQUIFER INFORMATION:

Depth to Top [m]	Depth to Bot. [m]	Yield[l/s]	Method meas.	Aquifer type	Comment
39.00	40.00	0.60	Notch (V- or U-notch)		
53.00	54.00	1.00	Notch (V- or U-notch)		
61.00	61.50	20.00	Notch (V- or U-notch)		

CASING DETAILS:

Depth to Top [m]	to Bot. [m]	Diam. [mm]	Material	Thickn. [mm]	Type of openings	Openings [mm]: Length Width	Hor. Dist.	Vert. Dist.
0.00	3.00	305	Steel		Plain casing			
0.00	29.00	254	Steel		Plain casing			
0.00	36.00	203	Steel		Plain casing			
36.00	54.00	203	Steel		Perforated or slotted			
0.00	34.00	165	Steel		Plain casing			
34.00	64.00	165	Steel		Perforated or slotted			

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery [m]	%	[min]	T [m²/d]	Storage	Comment
STEP TEST STEP 1	20130915	60	58.80	5.23	0.30						
STEP TEST STEP 2	20130915	60	58.80	10.33	0.49						
STEP TEST STEP 3	20130915	60	58.80	15.23	0.07						
STEP TEST STEP 4	20130915	60	58.80	20.64	0.98	100	10				
CONSTANT (1)	20130915	1440	58.80	20.10	0.52	100	90				
CONSTANT (2)	20140228	4320	53.15	20.08	0.28	100	3	965	0.05		

RECOMMENDATIONS:

Prior.	Rec. equipm.	Depth to intk. [m]	Type of power	Duty cyc. [hrs]	Disch. rate [l/s]	Water quality	Dyn. water level [m]	Crit. water level [m]
1	Mono-type pump	48.00	Electric motor	24	10.00	CLASS 0	19.5	30.00
Note: 1. Production borehole 2. Install water level monitoring facility in borehole								



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Project No.: 11613568

PUMPING TEST REPORT

Date compiled: 04/06/2014

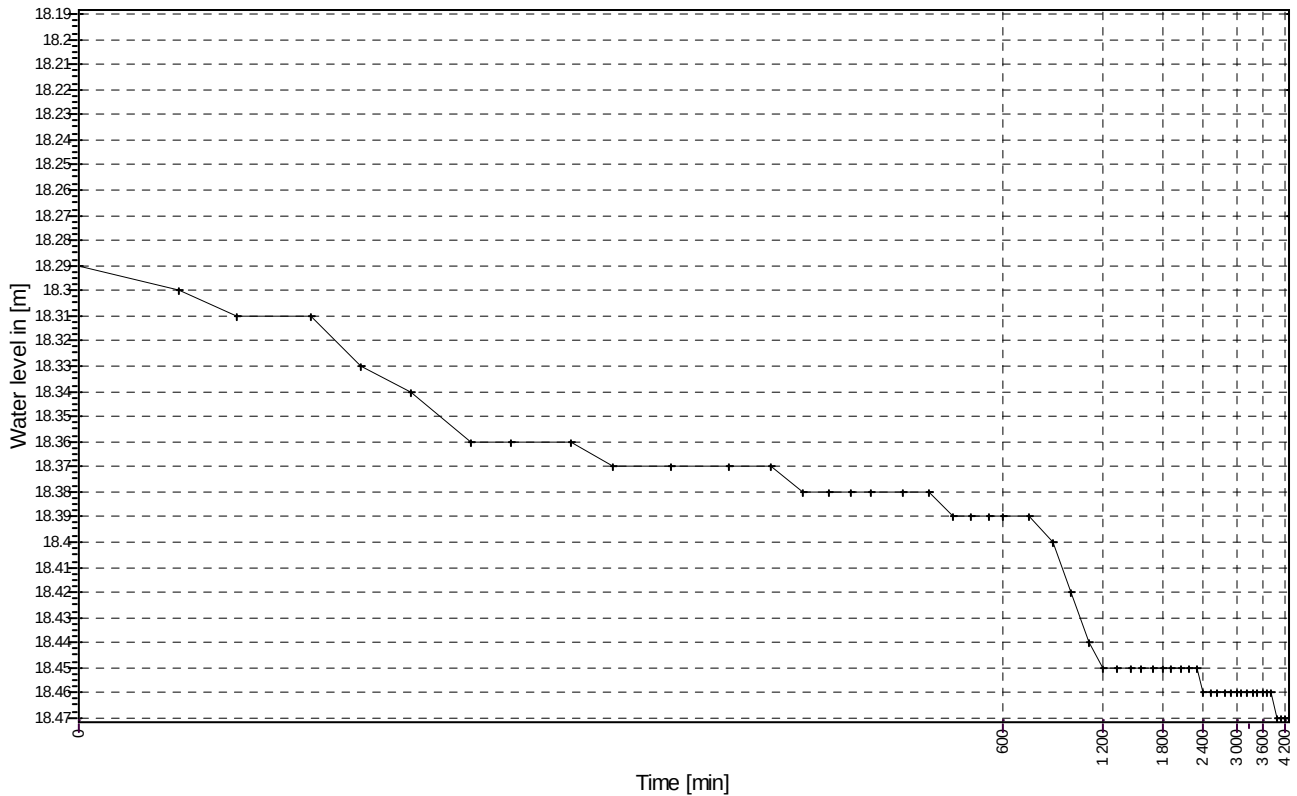
BASIC SITE INFORMATION: Site Identifier: 2823ACX0062 Number: SD2-9 Site type: Borehole

Distr./Farm No.: Site Name/Des.: POSTMASBURG

Latitude [°]	28.306271	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	18.19
Longitude [°]	23.156516	Alt. No. 2:		Depth [m]:	66.44	Piezometer:	0
Altitude [m]:	1351.26	Rep. inst.: GOLD		Col. ht. [mm]:	0.49	Date WL meas.:	20140228

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Constant Rate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	58.80	20130915	0700	20130915	1110			
GOLD	Constant rate test	58.80	20130915	1400	20130916	1530			
GOLD	Constant rate test	53.15	20140228	1740	20140303	1743			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	0700	60	58.80	5.23	0.30							17.43
STEP TEST STEP 2	0800	60	58.80	10.33	0.49							21.08
STEP TEST STEP 3	0900	60	58.80	15.23	0.07							217.5
STEP TEST STEP 4	1000	60	58.80	20.64	0.98	100	10					21.06
CONSTANT (1)	1400	1440	58.80	20.10	0.52	100	90					38.65
CONSTANT (2)	1740	4320	53.15	20.08	0.28	100	3					71.71



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Project No.: 11613568

PUMPING TEST REPORT

Date compiled: 31/03/2014

BASIC SITE INFORMATION:

Site Identifier: 2823ACX0062 Number: SD2-9

Site type: Borehole

Distr./Farm No.:

Site Name/Des.: POSTMASBURG

Latitude [°] 28.306271
Longitude [°] 23.156516
Altitude [m]: 1351.26

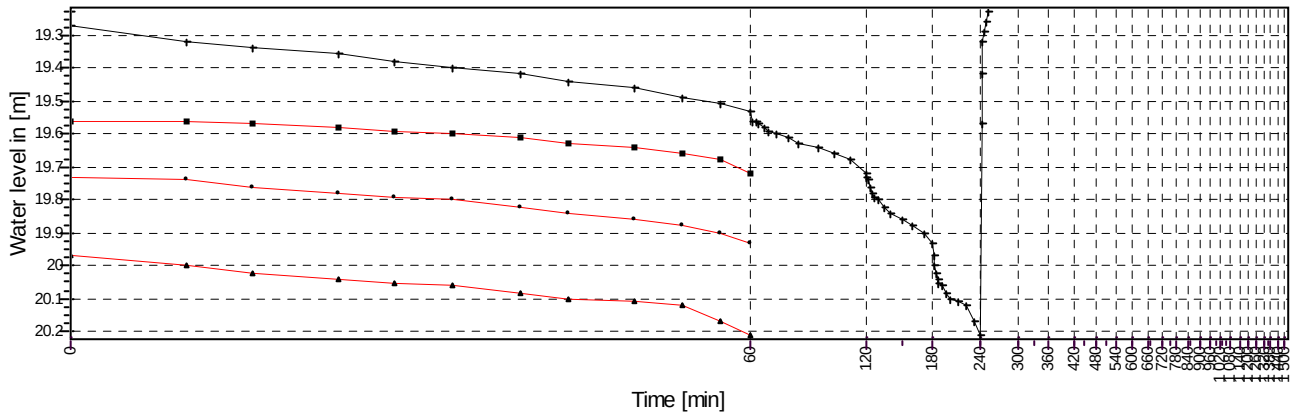
Alt. No. 1:
Alt. No. 2:
Rep. inst.: GOLD

Diam. [mm]: 165
Depth [m]: 66.30
Col. ht. [mm]: 0.48

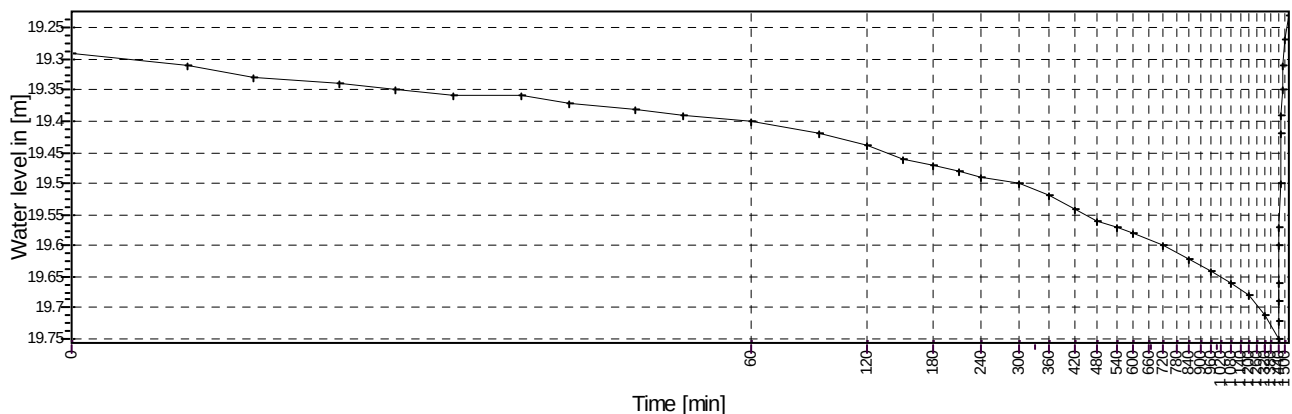
Water lev. [m]: 18.04
Piezometer: 0
Date WL meas.: 20140121

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



Constant Rate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	58.80	20130915	0700	20130915	1110			
GOLD	Constant rate test	58.80	20130915	1400	20130916	1530			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate [l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	0700	60	58.80	5.23	0.30							17.43
STEP TEST STEP 2	0800	60	58.80	10.33	0.49							21.08
STEP TEST STEP 3	0900	60	58.80	15.23	0.07							217.5
STEP TEST STEP 4	1000	60	58.80	20.64	0.98	100	10					21.06
CONSTANT	1400	1440	58.80	20.10	0.52	100	90					38.65



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Project No.: 11613568

POSTMASBURG MUNICIPALITY - BASIC SITE INFORMATION

SITE LOCATION										GEOHYDROLOGY				MANAGEMENT RECOMMEND.			
Site Identifier:	Number:	District	Site name/Description	Site type:	Latitude [°]	Longitude [°]	Altitude [m]	Col. ht. [m]	Diam. [mm]	Depth [m]	Water l. [m]	Yield[l/s]	Rec. abs.[l/s]	Depth to Intk. [m]	Dis. rate[l/s]	Duty c. [hrs/d]	Daily abs. [m³/d]
2823ACX0013	SD2-GAA036	579	VAALPOORT (GATKOPPIES1)	B	28.27967967	23.152860001	1343.15	1.53	165	50.00	9.00	0.26			10.00	24	864.00
2823ACX0019	SD2-GAA050		POSTMASBURG	B	28.28047967	23.153530001	1347.00		215	30.00	14.60				0	0	
2823ACX0023	SD2-GAA054		POSTMASBURG	B	28.30609967	23.125860001	1339.54	0.11	165	30.00	16.17	5.56			0	0	
2823ACX0024	SD2-GAA055		POSTMASBURG	B	28.30745967	23.137130001	1344.96		165								
2823ACX0025	SD2-GAA056		POSTMASBURG	B	28.30082967	23.168840001	1354.81	0.32	165		21.33						
2823ACX0036	SD2-GAA061		POSTMASBURG	B	28.34023967	23.129970001	1352.76		165								
2823ACX0037	SD2-GAA062		POSTMASBURG	B	28.32472967	23.127000001	1340.84										
SUMMARY:										Maximum:	50.00	21.33	5.56		10.00		864.00
										Minimum:	30.00	9.00	0.26		10.00		864.00
										Sum:			5.82		10.00		864.00
										Average:	36.67	15.27	2.91		10.00		864.00

Site Type:
B = Borehole

Nr. of sites: 7

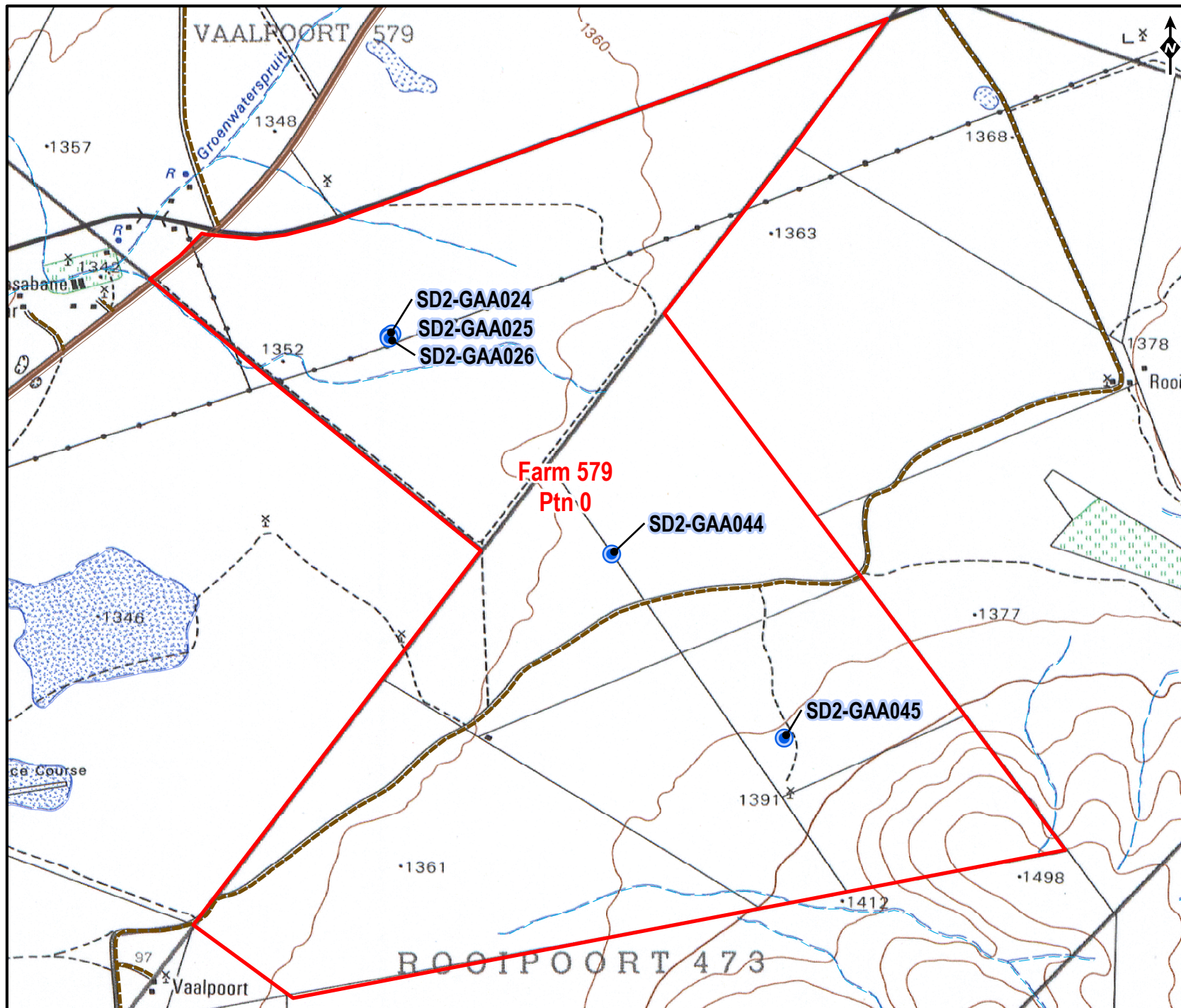
NOTE:
"Yield" represents cumulative blow yield
The recommended abstraction ("Rec. abs.")
is based on a 24 hour duty cycle
(based on test pumping result)



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Project No.: 11613568



2.26 Roux van der Merwe



North West

Northern Cape

Free State

LEGEND

- Existing borehole survey
- Farm 579 Ptn 0
- Secondary road
- Other
- Pan
- Rivers - Non perennial

500 250 0 500

Meters

RESOURCES/NOTES

Coordinate System: GCS WGS 1984
Datum: WGS 1984

PROJECT

GW ASSESSMENT VGG SCHEME

TITLE

FARM 579 PTN 0
ROUX VAN DER MERWE

PROJECT No. 11613568		REV 0
SCALE 1:32 500		A4
GIS	MB	07/07/2014
CHECK	DB	07/07/2014
REVIEW	FW	07/07/2014

Golder Associates
Pretoria, South Africa

ROUX VAN DER MERSE - TIME DEPENDENT CHEMISTRY REPORT

Site Identifier: 2823ACX0015 **Number:** SD2-GAA044 **Site Name:** ROOIPOORT PTN. VAALPOORT

Samp. Nr./Type	Date/Time samp.	pH	EC	TDS	Ca	Mg	Na	K	Si	T. Alk.	Cl	SO4	NO3 as N	F
SD2-	20120402 1445	7.75	59.2	386	65	36.1	20	2.51	15.2	288	27.6	18.2	3.31	0.164

Chemistry Standard: SABS for human consumption
† Value exceeds recommended maximum limit
‡ Value exceeds maximum allowable limit
! Value exceeds recommended minimum limit
j Value exceeds minimum allowable limit

Concentrations in [mg/l] where applicable
EC [mS/m]
Nitrate as N

Sample Type Code Explanation:
D: Drinking water
E: Effluent
K: Sewage
O: Organic
P: Pressed or pellet
R: Rock
S: Soil
X: Other source



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Project No.: 11613568

ROUX VAN DER MERWE - BASIC SITE INFORMATION

SITE LOCATION										GEOHYDROLOGY				MANAGEMENT RECOMMEND.			
Site Identifier:	Number:	District	Site name/Description	Site type:	Latitude [°]	Longitude [°]	Altitude [m]	Col. ht. [m]	Diam. [mm]	Depth [m]	Water l. [m]	Yield[l/s]	Rec. abs.[l/s]	Depth to Intk. [m]	Dis. rate[l/s]	Duty c. [hrs/d]	Daily abs. [m³/d]
2823ACX0001	SD2-GAA024	579	VAALPOORT	B	28.28435967	23.167850001	1353.30	0.35	165		19.89						
2823ACX0002	SD2-GAA025	579	VAALPOORT	B	28.28425967	23.168010001	1353.36	0.35	165		20.04				0	0	
2823ACX0003	SD2-GAA026	579	VAALPOORT	B	28.28449967	23.167860001	1353.35		165								
2823ACX0015	SD2-GAA044	473	ROOIPOORT PTN. VAALPOORT	B	28.29629967	23.180000001	1363.99		165								
2823ACX0016	SD2-GAA045	473	ROOIPOORT PTN. VAALPOORT	B	28.30634967	23.189430001	1382.85		165								
SUMMARY:										Maximum:				20.04			
Nr. of sites: 5										Minimum:				19.89			
										Sum:							
										Average:				19.96			

SUMMARY:

Site Type:
B = Borehole

Nr. of sites: 5

Maximum: 20.04
Minimum: 19.89
Sum:
Average: 19.96

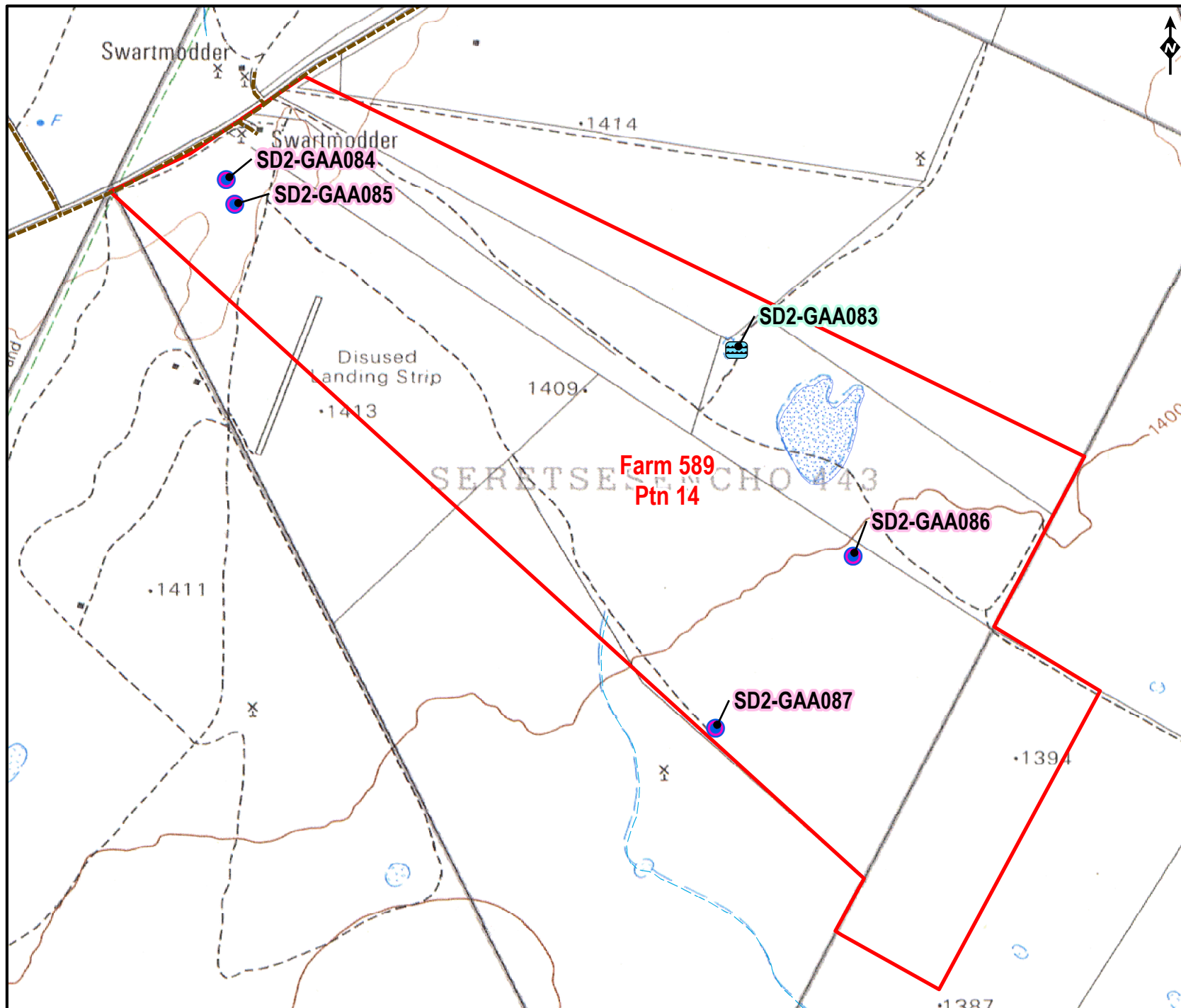
NOTE:
"Yield" represents cumulative blow yield
The recommended abstraction ("Rec. abs.")
is based on a 24 hour duty cycle
(based on test pumping result)



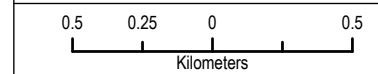
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Fax: 012 - 364 4001
Project No.: 11613568



2.27 Samuel Willemse



- LEGEND**
- Existing borehole tested
 - Fountain
 - Farm 589 Ptn 14
 - Other
 - Pan
 - Rivers - Non perennial



RESOURCES/NOTES
 Coordinate System: GCS WGS 1984
 Datum: WGS 1984

PROJECT
 GW ASSESSMENT VGG SCHEME

TITLE
FARM 589 PTN 14
SAMUEL WILLEMSE

PROJECT No. 11613568		REV 0
SCALE 1:27 000		A4
GIS	MB	09/07/2014
CHECK	DB	09/07/2014
REVIEW	FW	09/07/2014



MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: *Site Identifier:* 2823AAX0018 *Number:* SD2-GAA083 *Site type:* Fountain / Spring

Distr./Farm No.: 443 *Site Name/Descr.:* SERETSESENCHO PTN. SION

<i>Latitude [°]:</i>	28.170450	<i>Alt. No. 1:</i>		<i>Diam. [mm]:</i>		<i>Water lev. [m]:</i>	
<i>Longitude [°]:</i>	23.175170	<i>Alt. No. 2:</i>		<i>Depth [m]:</i>		<i>WL status:</i>	
<i>Altitude [m]:</i>	1406.00	<i>Rep. inst.:</i>	GOLD	<i>Col. ht. [m]:</i>		<i>Date WL meas.:</i>	

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

<i>Pump:</i>		
<i>Type of Inst.:</i>		<i>Pulley Diam. [mm]:</i>
<i>Manufacturer:</i>		<i>Depth to Intk. [m]:</i>
<i>Engine:</i>		
<i>Manufacturer:</i>		<i>Power Rating [kW]</i>
<i>Type of Power:</i>		<i>Pulley Diam. [mm]:</i>

USE APPLICATION:

Site Status:

Purpose:

Consumer:

Application:

WATER CHEMISTRY:

Sample No.: SD2-		Date sampled: 20130528		Depth sampl. [m]: 0		Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters:		
pH:	7.8	Na:	14.6	Cl:	33.3	Langel.:	0.76	E.Coli:
EC: [mS/m]	88.8 †	K:	1.22	NO3 as N:	< 0.3	Aggr-Ind:	12.87	Faec. co:
TDS:	654 †	Si:	19.6	SO4:	36.3	Ion-bal:	-0.71	Total Co:
T. Alk.:	498	Al:	< 0.05	F:	0.127	CaCO3:	542.63	SPC:
Ca:	95.5	Fe:	< 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit ; Value exceeds minimum allowable limit				
Mg:	74 †	Mn:	< 0.05					

MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823AAX0019 Number: SD2-GAA084 Site type: Borehole

Distr./Farm No.: 443 Site Name/Descr.: SERETSESENCHO PTN. SWARTMODDER

Latitude [°]:	28.162790	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	10.57
Longitude [°]:	23.152130	Alt. No. 2:		Depth [m]:	0	WL status:	Static
Altitude [m]:	1425.00	Rep. inst.:	GOLD	Col. ht. [m]:	0.22	Date WL meas.:	20140205

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:			
Type of Inst.:	Windpump	Pulley Diam. [mm]:	
Manufacturer:	RECIPROCAL	Depth to Intk. [m]:	24.50
Engine:			
Manufacturer:		Power Rating [kW]	
Type of Power:	Wind	Pulley Diam. [mm]:	

USE APPLICATION:

Site Status: In use
Purpose: Production (water supply)
Consumer: Non-urban
Application: Domestic - all purposes

WATER CHEMISTRY:

Sample No.:	SD2-	Date sampled:	20140218	Depth sampl. [m]:	27.34	Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters:		
pH:	7.86	Na:	11.1	Cl:	19.8	Langel.:	0.63	E.Coli:
EC: [mS/m]	73.8 †	K:	1.43	NO3 as N:	8.74	Aggr-Ind:	12.71	Faec. co:
TDS:	514 †	Si:		SO4:	14.3	Ion-bal:	2.77	Total Co:
T. Alk.:	386	Al:	< 0.05	F:	0.14	CaCO3:	460.61	SPC:
Ca:	74	Fe:	< 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit ¡ Value exceeds minimum allowable limit				
Mg:	67.1	Mn:	0.06 †					

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery [m]	%	[min]	T [m²/d]	Storage	Comment
STEP TEST STEP 1	20140205	60	27.34	0.64	0.53						
STEP TEST STEP 2	20140205	60	27.34	1.75	1.45						
STEP TEST STEP 3	20140205	60	27.34	3.54	3.21						
STEP TEST STEP 4	20140205	60	27.34	4.44	5.10	0.11	98	240			

PUMPING TEST REPORT

Date compiled: 07/03/2014

BASIC SITE INFORMATION: Site Identifier: 2823AAX0019 Number: SD2-GAA084 Site type: Borehole

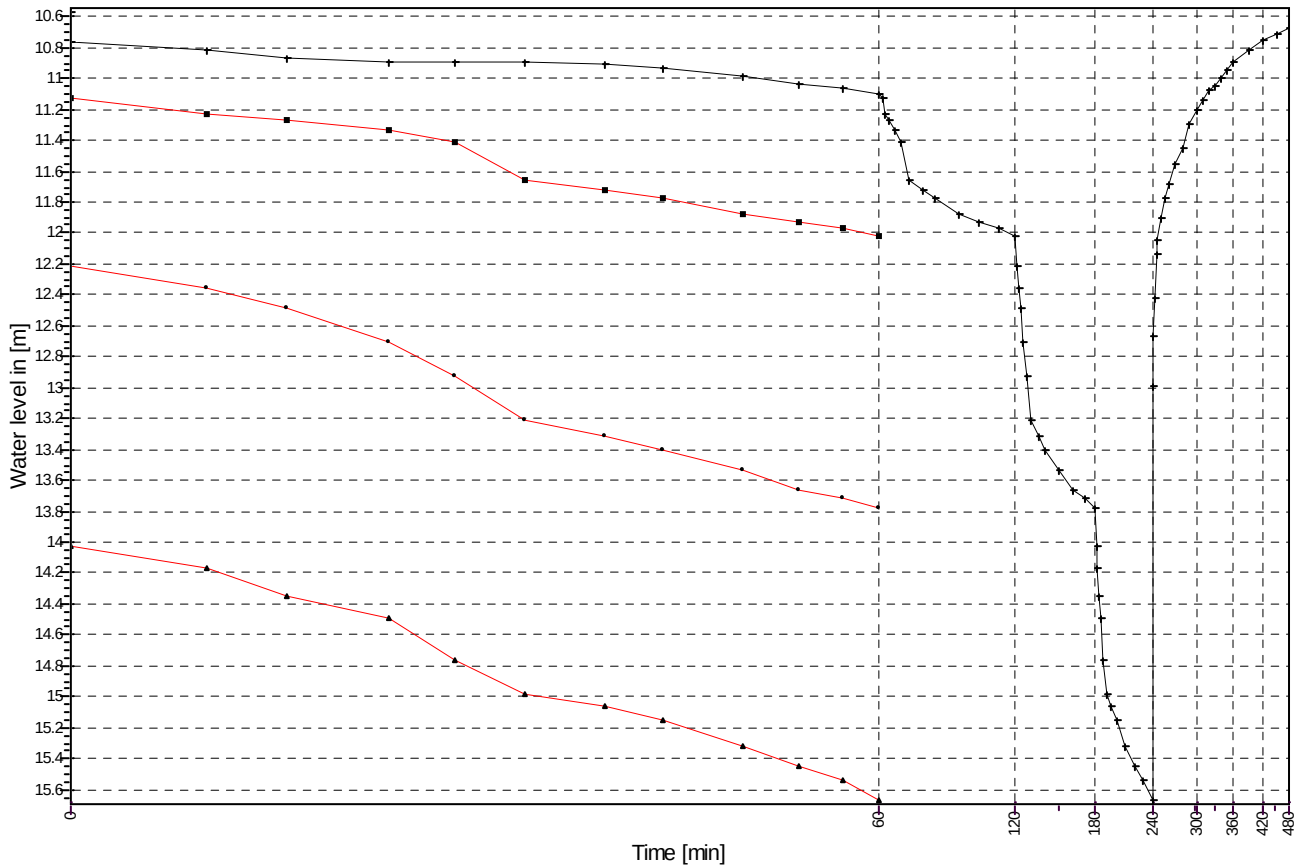
Distr./Farm No.: 443

Site Name/Des.: SERETSESENCHO PTN. SWARTMODDER

Latitude [°]	28.162790	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	10.57
Longitude [°]	23.152130	Alt. No. 2:		Depth [m]:	0	Piezometer:	0
Altitude [m]:	1425.00	Rep. inst.: GOLD		Col. ht. [mm]:	0.22	Date WL meas.:	20140205

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	27.34	20140205	1200	20140205	2000			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	1200	60	27.34	0.64	0.53							1.21
STEP TEST STEP 2	1300	60	27.34	1.75	1.45							1.21
STEP TEST STEP 3	1200	60	27.34	3.54	3.21							1.10
STEP TEST STEP 4	1300	60	27.34	4.44	5.10	0.11	98	240				0.87



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Project No.: 11613568

MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823AAX0020 Number: SD2-GAA085 Site type: Borehole

Distr./Farm No.: 443 Site Name/Descr.: SERETSESENCHO PTN. SWARTMODDER

Latitude [°]:	28.163890	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	14.06
Longitude [°]:	23.152530	Alt. No. 2:		Depth [m]:		WL status:	Static
Altitude [m]:	1430.00	Rep. inst.: GOLD		Col. ht. [m]:	0.16	Date WL meas.:	20140206

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:		
Type of Inst.:	Pulley Diam. [mm]:	
Manufacturer:	Depth to Intk. [m]:	
Engine:		
Manufacturer:	Power Rating [kW]	
Type of Power:	Pulley Diam. [mm]:	

USE APPLICATION:

Site Status: Unused
Purpose: Production (water supply)
Consumer: Non-urban
Application:

WATER CHEMISTRY:

Sample No.:	SD2-	Date sampled:	20140218	Depth sampl. [m]:	51.34	Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters:		
pH:	7.81	Na:	13.5	Cl:	38.6	Langel.:	0.58	E.Coli:
EC: [mS/m]	81.6 †	K:	1.62	NO3 as N:	11.3 †	Aggr-Ind:	12.66	Faec. co:
TDS:	488	Si:		SO4:	22.4	Ion-bal:	5.79 †	Total Co:
T. Alk.:	349	Al:	< 0.05	F:	0.1	CaCO3:	493.40	SPC:
Ca:	81.7	Fe:	< 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit ¡ Value exceeds minimum allowable limit				
Mg:	70.4 †	Mn:	< 0.05					

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery [m] %	[min]	T [m²/d]	Storage	Comment
STEP TEST STEP 1	20140206	60	51.34	0.61	33.02					
STEP TEST STEP 2	20140206	5	51.34	0.92	37.04	0.93	97	120		
PUMP INLET	20140206	4	51.34	0.62	37.04					



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Project No.: 11613568

PUMPING TEST REPORT

Date compiled: 07/03/2014

BASIC SITE INFORMATION: Site Identifier: 2823AAX0020 Number: SD2-GAA085 Site type: Borehole

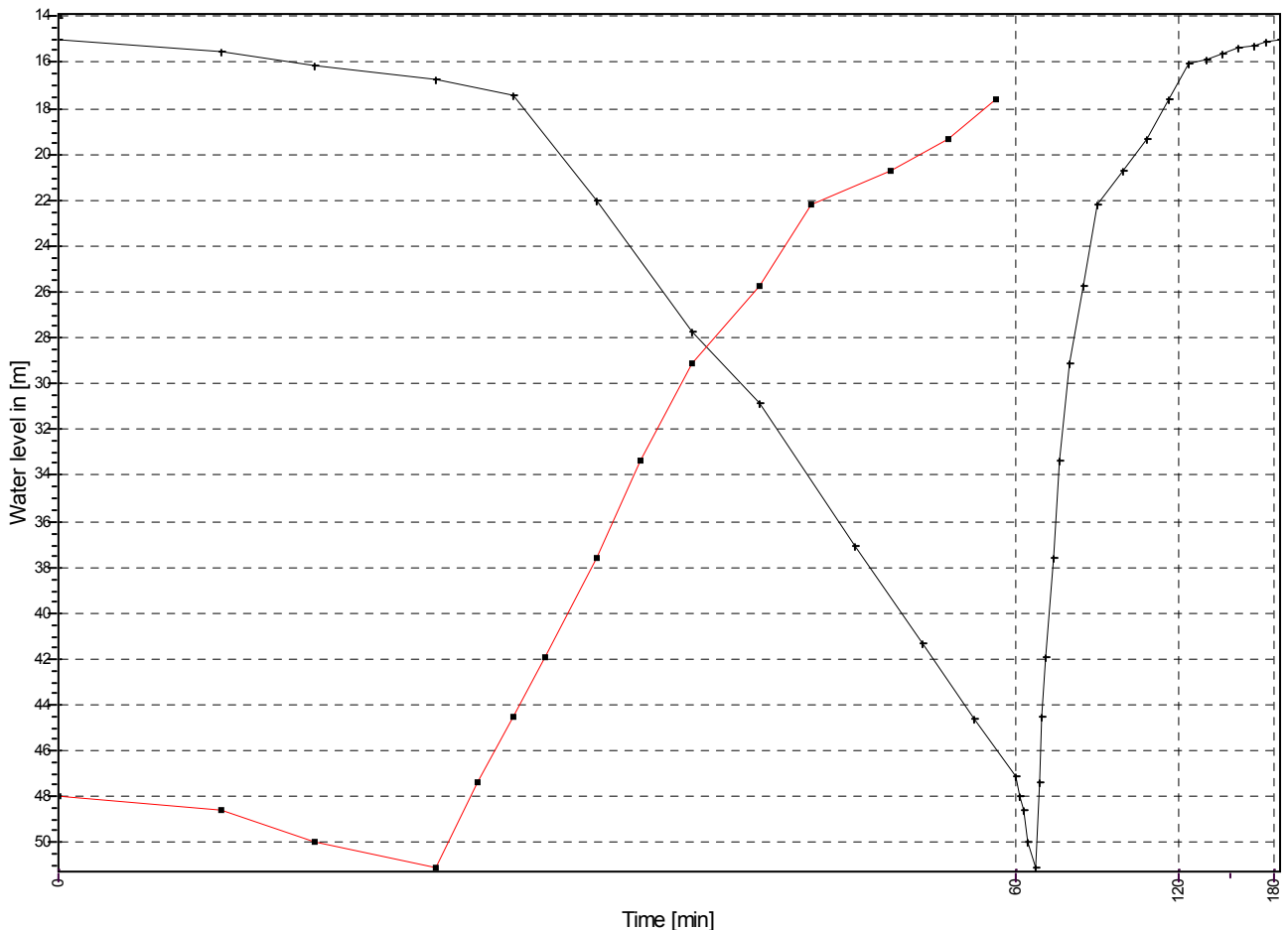
Distr./Farm No.: 443

Site Name/Des.: SERETSESENCHO PTN. SWARTMODDER

Latitude [°]	28.163890	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	14.06
Longitude [°]	23.152530	Alt. No. 2:		Depth [m]:		Piezometer:	0
Altitude [m]:	1430.00	Rep. inst.: GOLD		Col. ht. [mm]:	0.16	Date WL meas.:	20140206

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	51.34	20140206	1120	20140206	1425			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	1120	60	51.34	0.61	33.02							0.02
STEP TEST STEP 2	1220	5	51.34	0.92	37.04	0.93	97	120				0.02
PUMP INLET	1425	4	51.34	0.62	37.04							0.02



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MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823AAX0021 Number: SD2-GAA086 Site type: Borehole

Distr./Farm No.: 443 Site Name/Descr.: SERETSESENCHO PTN. SWARTMODDER

Latitude [°]:	28.179900	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	8.47
Longitude [°]:	23.180600	Alt. No. 2:		Depth [m]:	78.68	WL status:	Static
Altitude [m]:	1400.00	Rep. inst.: GOLD		Col. ht. [m]:	0.52	Date WL meas.:	20140208

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:		Pulley Diam. [mm]:	
Type of Inst.:		Depth to Intk. [m]:	
Manufacturer:			
Engine:		Power Rating [kW]	
Manufacturer:		Pulley Diam. [mm]:	
Type of Power:			

USE APPLICATION:

Site Status: Unused
Purpose: Production (water supply)
Consumer: Non-urban
Application:

WATER CHEMISTRY:

Sample No.:	SD2-	Date sampled:	20140218	Depth sampl. [m]:	63.34	Comment:	
Main Parameters:		Calculated Parameters:		Bacteriol. Parameters:			
pH:	7.95	Na:	12.3	Cl:	25	Langel.:	0.79
EC: [mS/m]	83.1 †	K:	1.46	NO3 as N:	1.1	Aggr-Ind:	12.88
TDS:	580 †	Si:		SO4:	23.6	Ion-bal:	-3.64
T. Alk.:	471	Al:	< 0.05	F:	< 0.1	CaCO3:	468.81
Ca:	73	Fe:	< 0.05			SPC:	
Mg:	69.7	Mn:	0.06 †				

Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption
† Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit
! Value exceeds recommended minimum limit ¡ Value exceeds minimum allowable limit

CASING DETAILS:

Depth to Top [m]	to Bot. [m]	Diam. [mm]	Material	Thickn. [mm]	Type of openings	Openings [mm]:	Hor. Dist.	Vert. Dist.
0.00	7.00	165	Steel		Plain casing	Length Width		

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery [m]	%	T [m²/d]	Storage	Comment
STEP TEST STEP 1	20140208	40	63.34	0.52	54.34	11.89	78	60		



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Project No.: 11613568

PUMPING TEST REPORT

Date compiled: 20/02/2014

BASIC SITE INFORMATION: Site Identifier: 2823AAX0021 Number: SD2-GAA086 Site type: Borehole

Distr./Farm No.: 443

Site Name/Des.: SERETSESENCHO PTN. SWARTMODDER

Latitude [°] 28.179900
Longitude [°] 23.180600
Altitude [m]: 1400.00

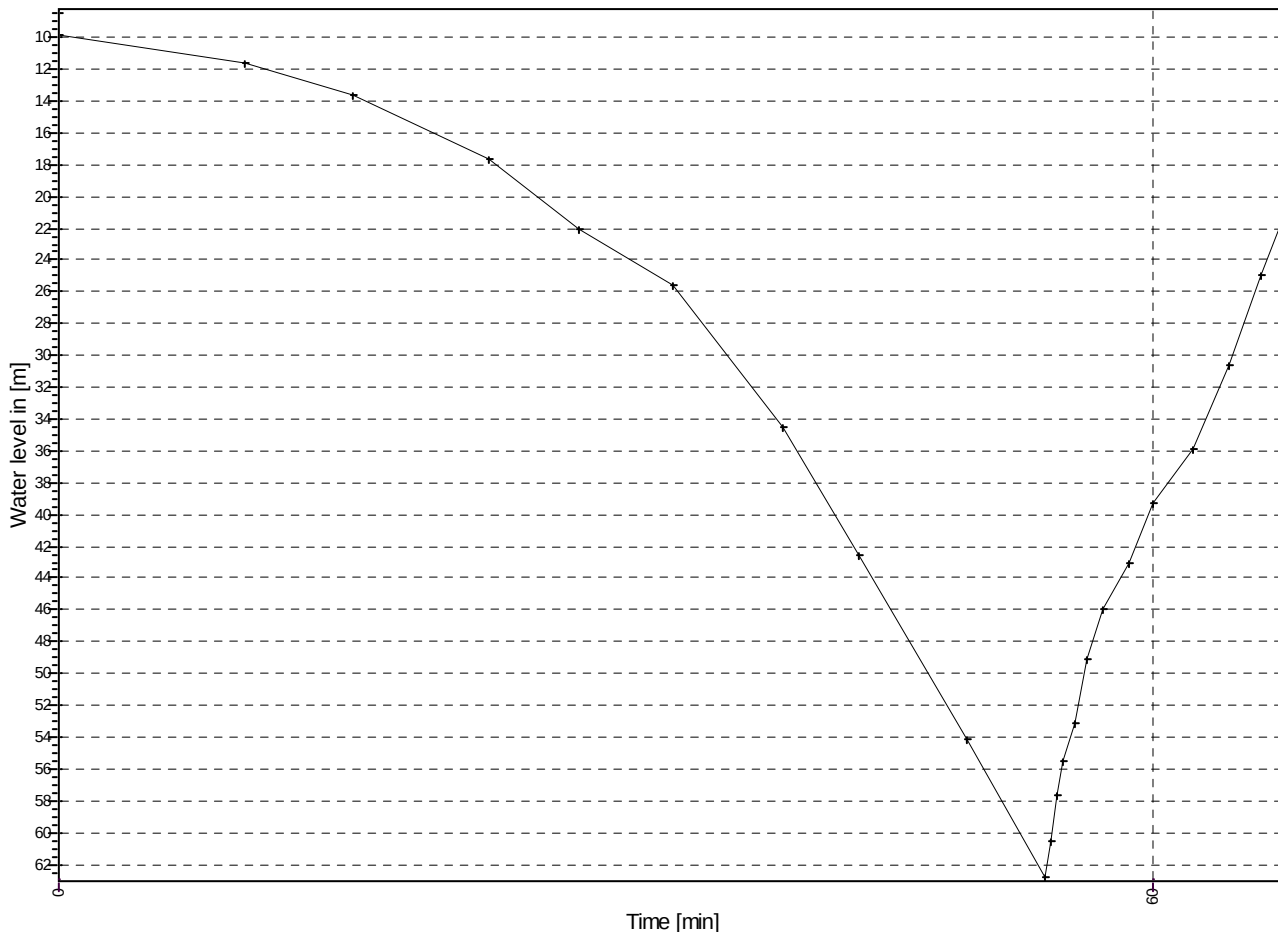
Alt. No. 1:
Alt. No. 2:
Rep. inst.: GOLD

Diam. [mm]: 165
Depth [m]: 78.68
Col. ht. [mm]: 0.52

Water lev. [m]: 8.47
Piezometer: 0
Date WL meas.: 20140208

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	63.34	20140208	1150	20140208	1330			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	1150	40	63.34	0.52	54.34	11.89	78	60				0.01



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MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823AAX0022 Number: SD2-GAA087 Site type: Borehole

Distr./Farm No.: 443 Site Name/Descr.: SERETSESENCHO PTN. SWARTMODDER

Latitude [°]:	28.187670	Alt. No. 1:		Diam. [mm]:	140	Water lev. [m]:	9.36
Longitude [°]:	23.174350	Alt. No. 2:		Depth [m]:	45.90	WL status:	Static
Altitude [m]:	1399.00	Rep. inst.: GOLD		Col. ht. [m]:	0.45	Date WL meas.:	20140207

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:			
Type of Inst.:	Windpump	Pulley Diam. [mm]:	
Manufacturer:	RECIPROCAL	Depth to Intk. [m]:	30.50
Engine:			
Manufacturer:		Power Rating [kW]	
Type of Power:	Wind	Pulley Diam. [mm]:	

USE APPLICATION:

Site Status: In use
Purpose: Production (water supply)
Consumer: Non-urban
Application: Agricultural - stock watering only

WATER CHEMISTRY:

Sample No.:	SD2-	Date sampled:	20140218	Depth sampl. [m]:	39.34	Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters:		
pH:	7.9	Na:	8.34	Cl:	14.9	Langel.:	0.70	E.Coli:
EC: [mS/m]	64.1	K:	1.3	NO3 as N:	2.43	Aggr-Ind:	12.76	Faec. co:
TDS:	470	Si:		SO4:	21	Ion-bal:	2.16	Total Co:
T. Alk.:	347	Al:	< 0.05	F:	0.19	CaCO3:	396.88	SPC:
Ca:	83.9	Fe:	< 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit ¡ Value exceeds minimum allowable limit				
Mg:	45.6	Mn:	< 0.05					

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery [m]	%	[min]	T [m²/d]	Storage	Comment
STEP TEST STEP 1	20140207	60	39.34	0.56	6.39						
STEP TEST STEP 2	20140207	20	39.34	1.06	29.53	0.26	99	120			
PUMP INLET	20140207	4	39.34	0.69	29.53						

PUMPING TEST REPORT

Date compiled: 20/02/2014

BASIC SITE INFORMATION: Site Identifier: 2823AAX0022 Number: SD2-GAA087 Site type: Borehole

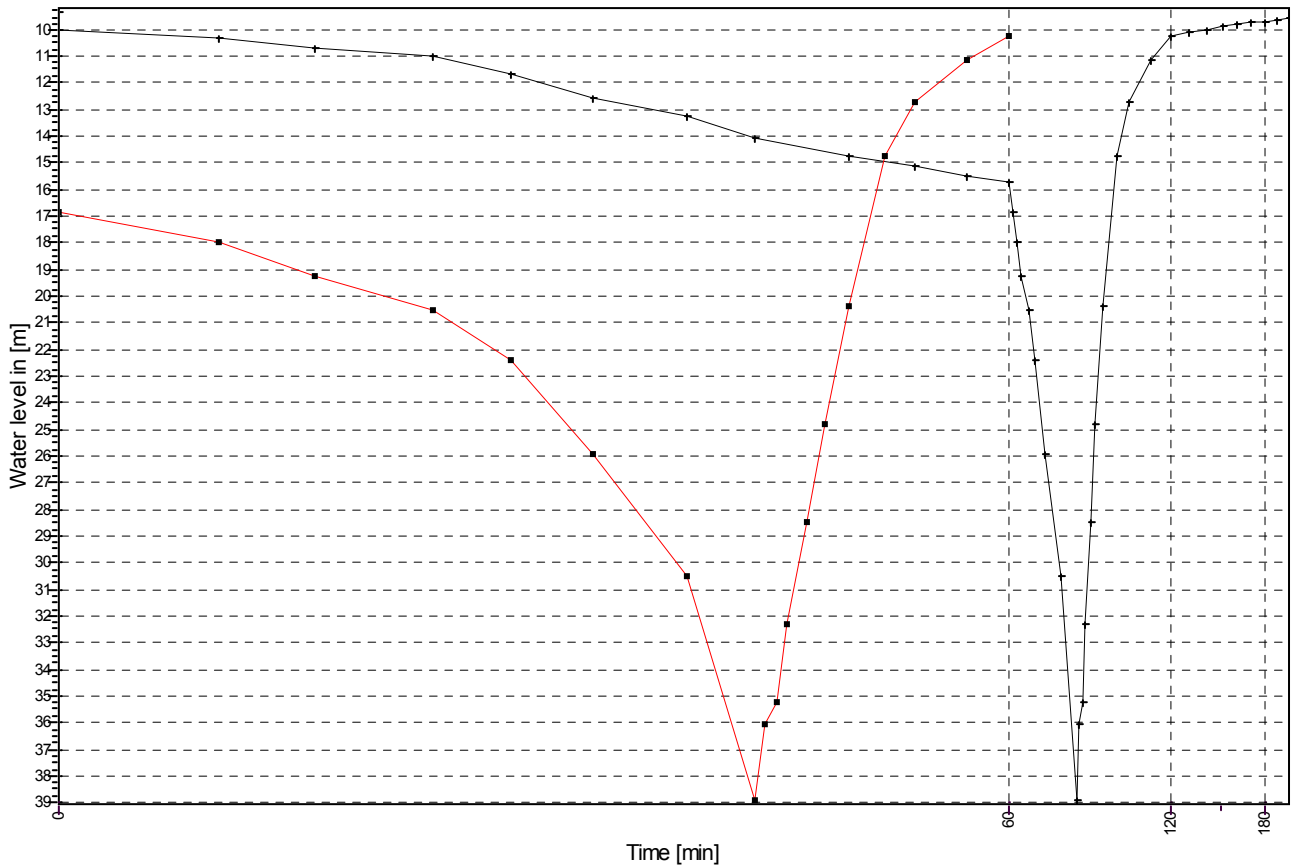
Distr./Farm No.: 443

Site Name/Des.: SERETSESENCHO PTN. SWARTMODDER

Latitude [°]	28.187670	Alt. No. 1:		Diam. [mm]:	140	Water lev. [m]:	9.36
Longitude [°]	23.174350	Alt. No. 2:		Depth [m]:	45.90	Piezometer:	0
Altitude [m]:	1399.00	Rep. inst.: GOLD		Col. ht. [mm]:	0.45	Date WL meas.:	20140207

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	39.34	20140207	1230	20140207	1550			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	1230	60	39.34	0.56	6.39							0.09
STEP TEST STEP 2	1330	20	39.34	1.06	29.53	0.26	99	120				0.04
PUMP INLET	1241	4	39.34	0.69	29.53							0.02



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SAMUEL WILLEMSE - BASIC SITE INFORMATION

SITE LOCATION										GEOHYDROLOGY				MANAGEMENT RECOMMEND.			
Site Identifier:	Number:	District	Site name/Description	Site type:	Latitude [°]	Longitude [°]	Altitude [m]	Col. ht. [m]	Diam. [mm]	Depth [m]	Water l. [m]	Yield[l/s]	Rec. abs.[l/s]	Depth to Intk. [m]	Dis. rate[l/s]	Duty c. [hrs/d]	Daily abs. [m³/d]
2823AAX0018	SD2-GAA083	443	SERETSESENCHO PTN. SION	F	28.17044967	23.175170001	1406.00										
2823AAX0020	SD2-GAA085	443	SERETSESENCHO PTN. SWARTMODDER	B	28.16387967	23.152520001	1419.88	0.16	165		14.06						
SUMMARY:		Site Type: B = Borehole F = Fountain / Spring							Maximum:		14.06						
Nr. of sites:		2							Minimum:		14.06						
									Sum:								
									Average:		14.06						

NOTE:
 "Yield" represents cumulative blow yield
 The recommended abstraction ("Rec. abs.")
 is based on a 24 hour duty cycle
 (based on test pumping result)



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SAMUEL WILLEMSE - TIME DEPENDENT CHEMISTRY REPORT

Site Identifier: 2823AAX0018 **Number:** SD2-GAA083 **Site Name:** SERETSESENCHO PTN. SION

Samp. Nr./Type	Date/Time samp.	pH	EC	TDS	Ca	Mg	Na	K	Si	Al	Fe	Mn	Cl	SO4	NO3 as N	F	T. Alk.
SD2GAA83	20130528 1052	7.8	88.8 †	654 †	95.5	74 †	14.6	1.22	19.6	< 0.05	< 0.05	< 0.05	33.3	36.3	< 0.3	0.127	498

Site Identifier: 2823AAX0019 **Number:** SD2-GAA084 **Site Name:** SERETSESENCHO PTN. SWARTMODDER

Samp. Nr./Type	Date/Time samp.	pH	EC	TDS	Ca	Mg	Na	K	Si	Al	Fe	Mn	Cl	SO4	NO3 as N	F	T. Alk.
SD2GAA84	20130528 1105	7.65	73.3 †	484	74.6	60.8	11.1	1.38	15.9	< 0.05	< 0.05	< 0.05	21.4	16.9	9.65	< 0.1	386
SD2GAA84	20140218 0800	7.86	73.8 †	514 †	74	67.1	11.1	1.43		< 0.05	< 0.05	0.06 †	19.8	14.3	8.74	0.14	386

Chemistry Standard: SABS for human consumption
 † Value exceeds recommended maximum limit
 ‡ Value exceeds maximum allowable limit
 ! Value exceeds recommended minimum limit
 j Value exceeds minimum allowable limit

Concentrations in [mg/l] where applicable
 EC [mS/m]
 Nitrate as N

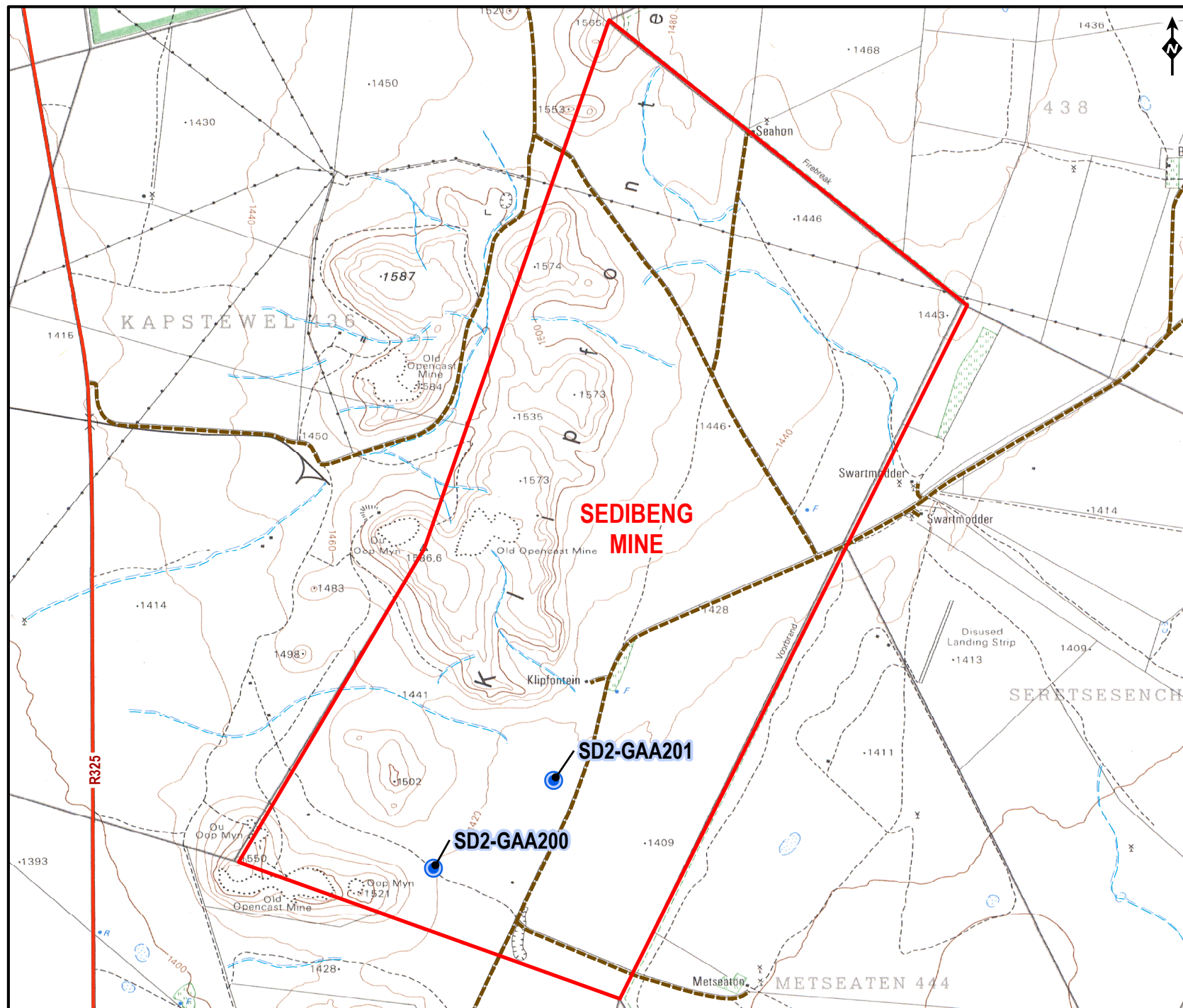
Sample Type Code Explanation:
 D: Drinking water
 E: Effluent
 K: Sewage
 O: Organic
 P: Pressed or pellet
 R: Rock
 S: Soil
 X: Other source



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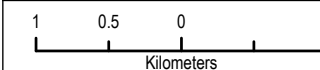


2.28 Sedibeng Mine



LEGEND

- Existing borehole survey
- Sedibeng Mine
- Arterial road
- Other
- Pan
- Rivers - Non perennial



RESOURCES/NOTES

Coordinate System: GCS WGS 1984
Datum: WGS 1984

PROJECT

GW ASSESSMENT VGG SCHEME

TITLE

SEDIBENG MINE

PROJECT No. 11613568	REV 0
SCALE 1:52 000	A4
GIS MB	15/07/2014
CHECK DB	15/07/2014
REVIEW FW	15/07/2014



MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: *Site Identifier:* 2823AAX0001 *Number:* SD2-GAA200 *Site type:* Borehole

Distr./Farm No.: 437 *Site Name/Descr.:* SEDIBENG MINE

<i>Latitude [°]:</i> 28.191490	<i>Alt. No. 1:</i>	<i>Diam. [mm]:</i> 200	<i>Water lev. [m]:</i> 37.94
<i>Longitude [°]:</i> 23.111130	<i>Alt. No. 2:</i> W4	<i>Depth [m]:</i> 57.00	<i>WL status:</i> Static
<i>Altitude [m]:</i> 1421.96	<i>Rep. inst.:</i> SRK	<i>Col. ht. [m]:</i> 0.17	<i>Date WL meas.:</i> 20120726

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:

Type of Inst.: Mono-type pump *Pulley Diam. [mm]:*
Manufacturer: *Depth to Intk. [m]:*

Engine:

Manufacturer: *Power Rating [kW]*
Type of Power: *Pulley Diam. [mm]:*

USE APPLICATION:

Site Status: In use
Purpose: Production (water supply)
Consumer: Non-urban
Application: Domestic - all purposes

WATER CHEMISTRY:

Sample No.:	W4	Date sampled:	20120214	Depth sampl. [m]:	59.00	Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters:		
pH:	7.8	Na:	19.1	Cl:	35	Langel.:	0.42	E.Coli:
EC: [mS/m]	90.4 †	K:	2.7	NO3 as N:	5.4	Aggr-Ind:	12.48	Faec. co:
TDS:	524 †	Si:		SO4:	43	Ion-bal:	7.08 †	Total Co:
T. Alk.:	294	Al:		F:	0.3	CaCO3:	425.41	SPC:
Ca:	65	Fe:	0.02	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit ¡ Value exceeds minimum allowable limit				
Mg:	64	Mn:	0.004					

TESTING DETAILS:

<i>Description</i>	<i>Date</i>	<i>Durat. [min]</i>	<i>Depth to intk. [m]</i>	<i>Disch. rate[l/s]</i>	<i>Drawd. [m]</i>	<i>Recovery [m] %</i>	<i>[min]</i>	<i>T [m²/d]</i>	<i>Storage</i>	<i>Comment</i>
STEP TEST STEP 1	20120213	60	88.50	5.09	0.19					
STEP TEST STEP 2	20120213	60	88.50	10.09	0.39					
STEP TEST STEP 3	20120213	60	88.50	15.00	0.66					
STEP TEST STEP 4	20120213	60	88.50	20.50	1.40	100	10			
CONSTANT	20120214	1440	59.00	30.00	1.48	100	1080	1469.2	0.0001	

RECOMMENDATIONS:

<i>Prior.</i>	<i>Rec. equipm.</i>	<i>Depth to intk. [m]</i>	<i>Type of power</i>	<i>Duty cyc. [hrs]</i>	<i>Disch. rate [l/s]</i>	<i>Water quality</i>	<i>Dyn. water level [m]</i>	<i>Crit. water level [m]</i>
1	Mono-type pump	59.00	Electric motor	12	20.00	CLASS 1	33.00	36.00

Note: 1. Install water level monitoring facility in borehole.



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Project No.: 11613568

PUMPING TEST REPORT

Date compiled: 21/07/2014

BASIC SITE INFORMATION: Site Identifier: 2823AAX0001 Number: SD2-GAA200 Site type: Borehole

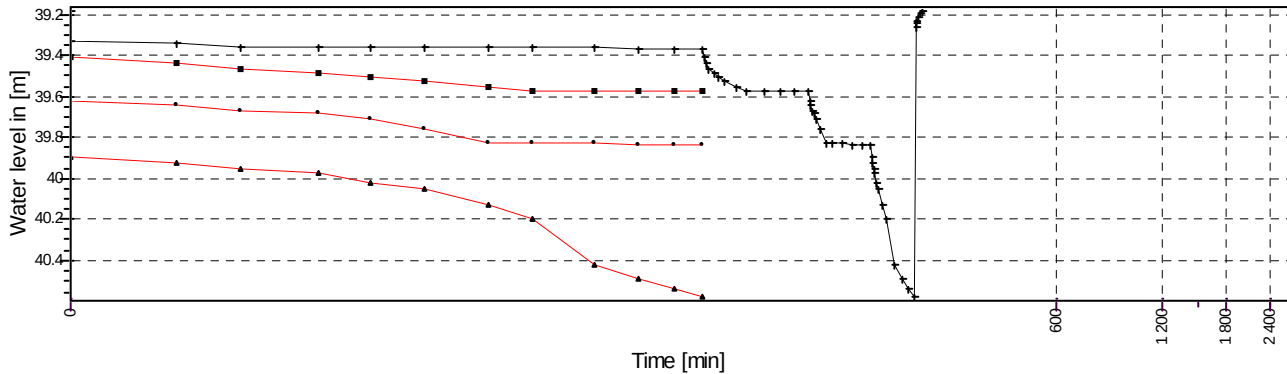
Distr./Farm No.: 437

Site Name/Des.: SEDIBENG MINE

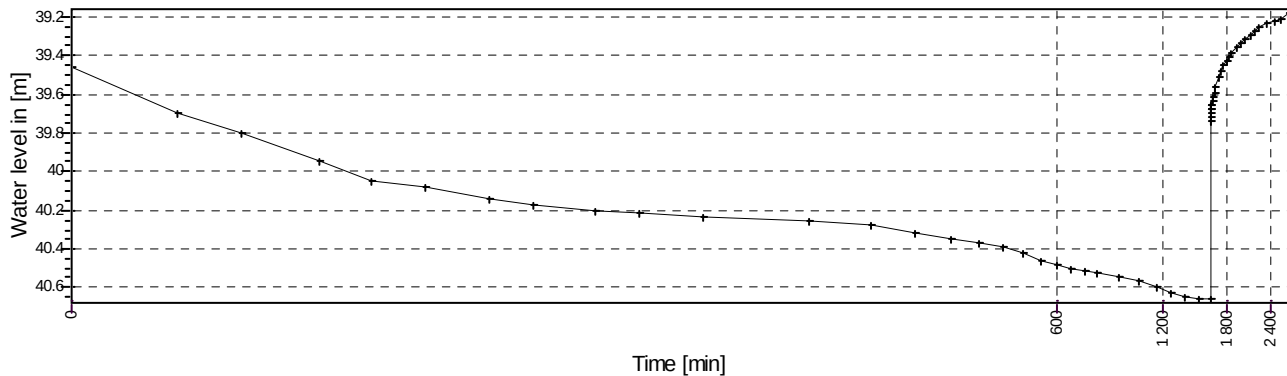
Latitude [°]	28.191490	Alt. No. 1:		Diam. [mm]:	200	Water lev. [m]:	37.94
Longitude [°]	23.111130	Alt. No. 2: W4		Depth [m]:	57.00	Piezometer:	0
Altitude [m]:	1421.96	Rep. inst.: SRK		Col. ht. [mm]:	0.17	Date WL meas.:	20120726

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



Constant Rate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	88.50	20120213	0910	20120213	1320			
GOLD	Constant rate test	59.00	20120214	1340	20120216	1040	1469.2	0.0001	10.00

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate [l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	0910	60	88.50	5.09	0.19							26.79
STEP TEST STEP 2	1010	60	88.50	10.09	0.39							25.87
STEP TEST STEP 3	1110	60	88.50	15.00	0.66							22.73
STEP TEST STEP 4	1210	60	88.50	20.50	1.40	100	10					14.64
CONSTANT	1340	1440	59.00	30.00	1.48	100	1080	1469.2			0.0001	20.27



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Project No.: 11613568

PUMPING TEST REPORT

Date compiled: 21/07/2014

BASIC SITE INFORMATION: Site Identifier: 2823AAX0002 Number: SD2-GAA201 Site type: Borehole

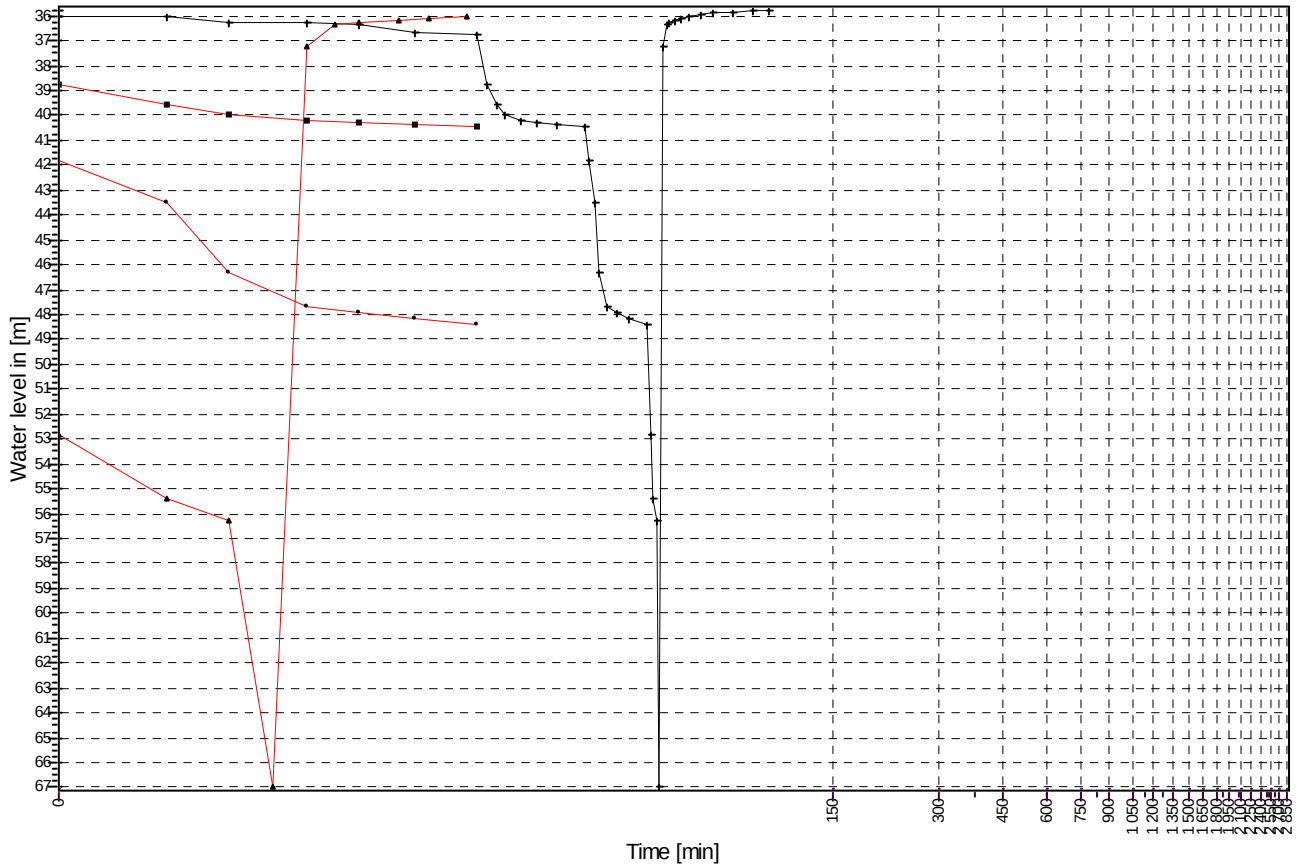
Distr./Farm No.: 437

Site Name/Des.: SEDIBENG MINE

Latitude [°]	28.183800	Alt. No. 1:		Diam. [mm]:	200	Water lev. [m]:	35.20
Longitude [°]	23.121620	Alt. No. 2: W3		Depth [m]:	102.00	Piezometer:	0
Altitude [m]:	1418.73	Rep. inst.: SRK		Col. ht. [mm]:	0.46	Date WL meas.:	20120726

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartbeesthoek94 (WGS 84)

Multirate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m²/d]	Storativ.	Rec. abs. [l/s]
GOLD	Calibration test	72.00	20120216	1225	20120216	1404			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m²/d]	Perm. [m/d]	Storat.	Q/st
CALIBRATION STEP 1	1225	15	72.00	4.00	0.96							4.17
CALIBRATION STEP 2	1240	15	72.00	9.01	4.65							1.94
CALIBRATION STEP 3	1255	15	72.00	18.50	12.60							1.47
CALIBRATION STEP 4	1310	4	72.00	31.17	28.00		100	50				1.11
PUMP INLET	1404	3	72.00	24.10	36.21							0.67



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Project No.: 11613568

MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823AAX0002 Number: SD2-GAA201 Site type: Borehole

Distr./Farm No.: 437 Site Name/Descr.: SEDIBENG MINE

Latitude [°]:	28.183800	Alt. No. 1:		Diam. [mm]:	200	Water lev. [m]:	35.20
Longitude [°]:	23.121620	Alt. No. 2:	W3	Depth [m]:	102.00	WL status:	Static
Altitude [m]:	1418.73	Rep. inst.:	SRK	Col. ht. [m]:	0.46	Date WL meas.:	20120726

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:	
Type of Inst.:	Pulley Diam. [mm]:
Manufacturer:	Depth to Intk. [m]:
Engine:	
Manufacturer:	Power Rating [kW]
Type of Power:	Pulley Diam. [mm]:

USE APPLICATION:

Site Status: Unused
Purpose: Production (water supply)
Consumer: Non-urban
Application: Domestic - all purposes

WATER CHEMISTRY:

Sample No.:	W3	Date sampled:	20120216	Depth sampl. [m]:	72.00	Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters.		
pH:	7.8	Na:	30	Cl:	43	Langel.:	0.40	E.Coli:
EC: [mS/m]	91.2 †	K:	2.1	NO3 as N:	3.9	Aggr-Ind:	12.47	Faec. co:
TDS:	538 †	Si:		SO4:	53	Ion-bal:	2.78	Total Co:
T. Alk.:	307	Al:		F:	0.4	CaCO3:	394.86	SPC:
Ca:	61	Fe:	0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit § Value exceeds minimum allowable limit				
Mg:	59	Mn:	0.001					

CASING DETAILS:

Depth to Top [m]	to Bot. [m]	Diam. [mm]	Material	Thickn. [mm]	Type of openings	Openings [mm]: Length Width	Hor. Dist.	Vert. Dist.
0.00	12.84	200	Steel		Plain casing			

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery [min]	%	T [m²/d]	Storage	Comment
CALIBRATION STEP 1	20120216	15	72.00	4.00	0.96					
CALIBRATION STEP 2	20120216	15	72.00	9.01	4.65					
CALIBRATION STEP 3	20120216	15	72.00	18.50	12.60					
CALIBRATION STEP 4	20120216	4	72.00	31.17	28.00	100	50			
PUMP INLET	20120216	3	72.00	24.10	36.21					
STEP TEST STEP 1	20120216	60	72.00	10.05	6.24					
STEP TEST STEP 2	20120216	60	72.00	15.06	9.44					
STEP TEST STEP 3	20120216	60	72.00	20.00	13.55					
STEP TEST STEP 4	20120216	60	72.00	25.02	19.15	0.06	100	210		
CONSTANT	20120217	1440	72.00	15.12	10.43	0.06	99	1440	254	0.001

RECOMMENDATIONS:

Prior.	Rec. equipm.	Depth to intk. [m]	Type of power	Duty cyc. [hrs]	Disch. rate [l/s]	Water quality	Dyn. water level [m]	Crit. water level [m]
1	Mono-type pump	60.00	Electric motor	12	9.50	CLASS 1	45.00	52.00

Note: 1. Install water level monitoring facility in borehole.



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Project No.: 11613568

PUMPING TEST REPORT

Date compiled: 21/07/2014

BASIC SITE INFORMATION: Site Identifier: 2823AAX0002 Number: SD2-GAA201 Site type: Borehole

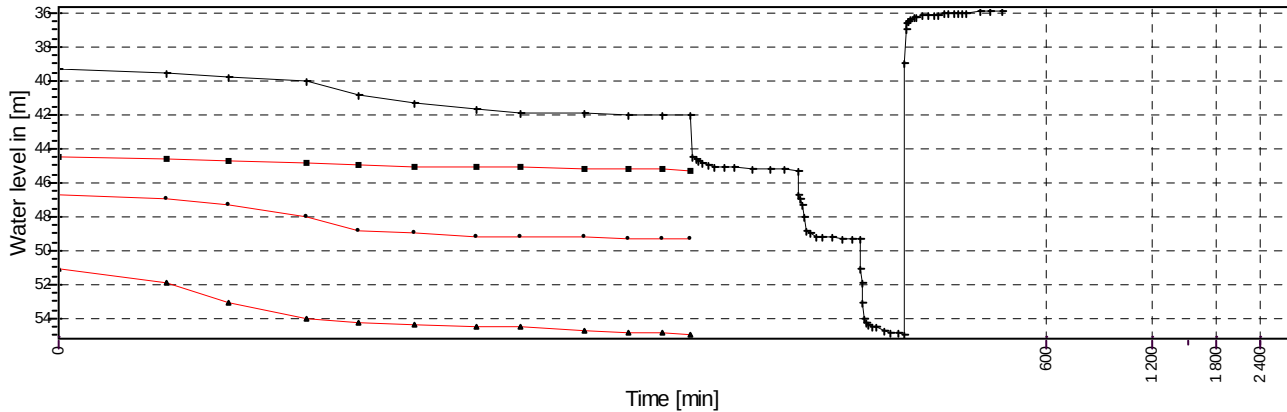
Distr./Farm No.: 437

Site Name/Des.: SEDIBENG MINE

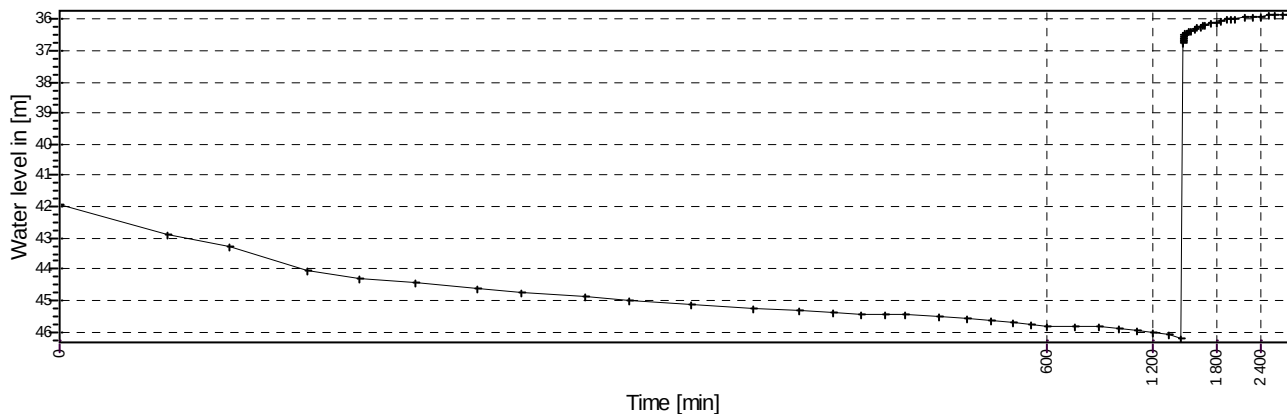
Latitude [°]	28.183800	Alt. No. 1:		Diam. [mm]:	200	Water lev. [m]:	35.20
Longitude [°]	23.121620	Alt. No. 2: W3		Depth [m]:	102.00	Piezometer:	0
Altitude [m]:	1418.73	Rep. inst.: SRK		Col. ht. [mm]:	0.46	Date WL meas.:	20120726

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



Constant Rate Test



PUMPING TEST:		Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m²/d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	72.00	20120216	1430	20120216	2200			
GOLD	Constant rate test	72.00	20120217	0730	20120219	0730	254	0.001	4.75

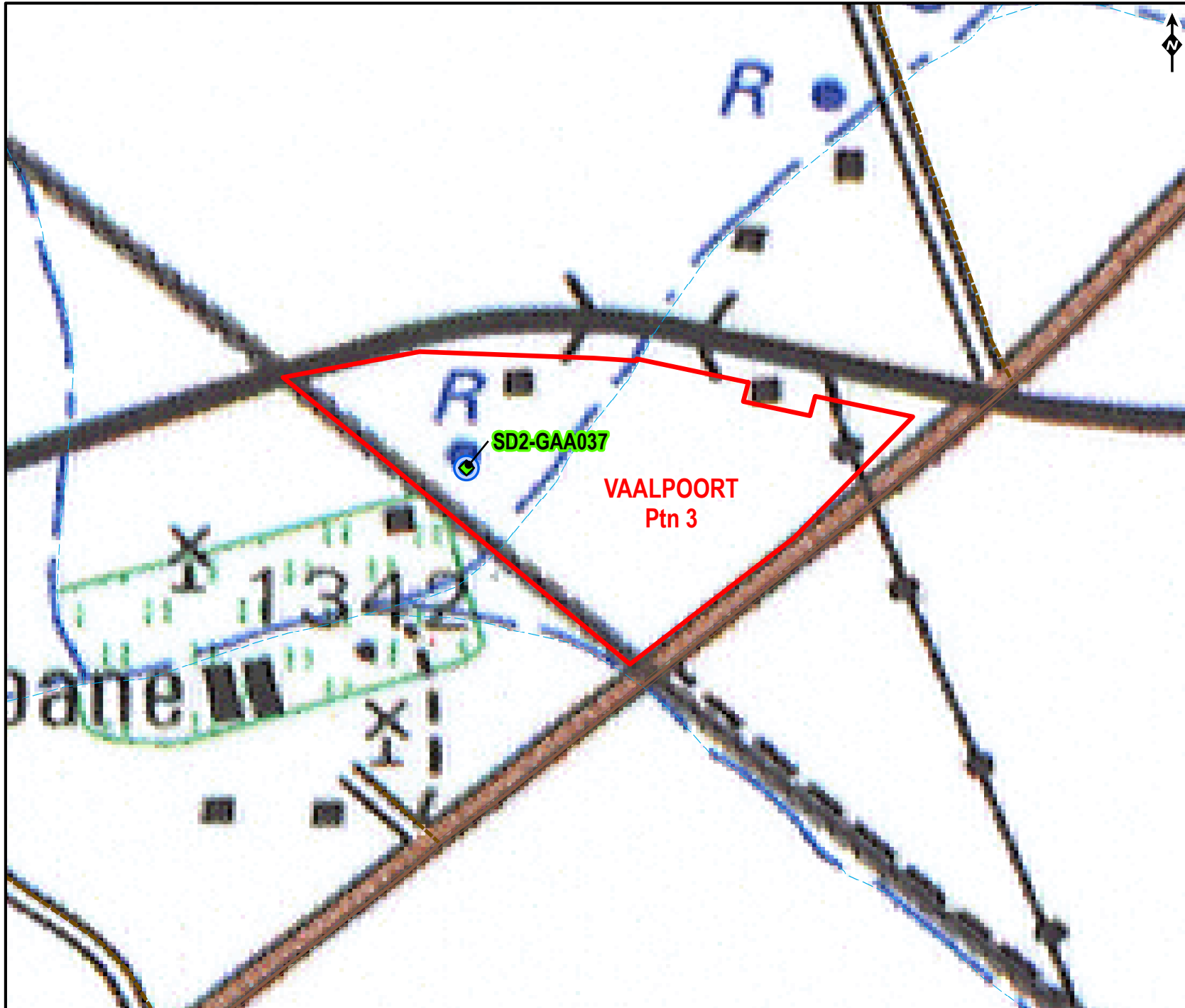
TESTING DETAILS:		Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m²/d]	Perm. [m/d]	Storat.	Q/st
STEP TEST	STEP 1	1430	60	72.00	10.05	6.24						1.61
STEP TEST	STEP 2	1530	60	72.00	15.06	9.44						1.60
STEP TEST	STEP 3	1630	60	72.00	20.00	13.55						1.48
STEP TEST	STEP 4	1730	60	72.00	25.02	19.15	0.06	100	210			1.31
CONSTANT		0730	1440	72.00	15.12	10.43	0.06	99	1440	254	0.001	1.45



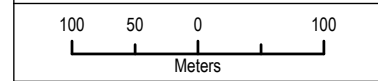
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Project No.: 11613568



2.29 W. Coetzee



- LEGEND**
- Existing borehole survey
 - Postmasburg municipality production borehole
 - Vaalpoort
 - Secondary road
 - Other
 - Rivers - Non perennial



RESOURCES/NOTES
Coordinate System: GCS WGS 1984
Datum: WGS 1984

PROJECT
GW ASSESSMENT VGG SCHEME

TITLE
VAALPOORT PTN 3
W COETZEE

PROJECT No. 11613568	REV 0
SCALE 1:6 000	A4
GIS MB	18/07/2014
CHECK DB	18/07/2014
REVIEW FW	18/07/2014



W COETZEE - BASIC SITE INFORMATION

SITE LOCATION										GEOHYDROLOGY				MANAGEMENT RECOMMEND.			
Site Identifier:	Number:	District	Site name/Description	Site type:	Latitude [°]	Longitude [°]	Altitude [m]	Col. ht. [m]	Diam. [mm]	Depth [m]	Water l. [m]	Yield[l/s]	Rec. abs.[l/s]	Depth to Intk. [m]	Dis. rate[l/s]	Duty c. [hrs/d]	Daily abs. [m³/d]
2823ACX0014	SD2-GAA037	579	VAALPOORT	B	28.27927967	23.153130001	1343.38	0.17	230	15.00	12.60				0	0	
SUMMARY:										Maximum:	15.00	12.60					
										Minimum:	15.00	12.60					
										Sum:							
Nr. of sites: 1										Average:	15.00	12.60					

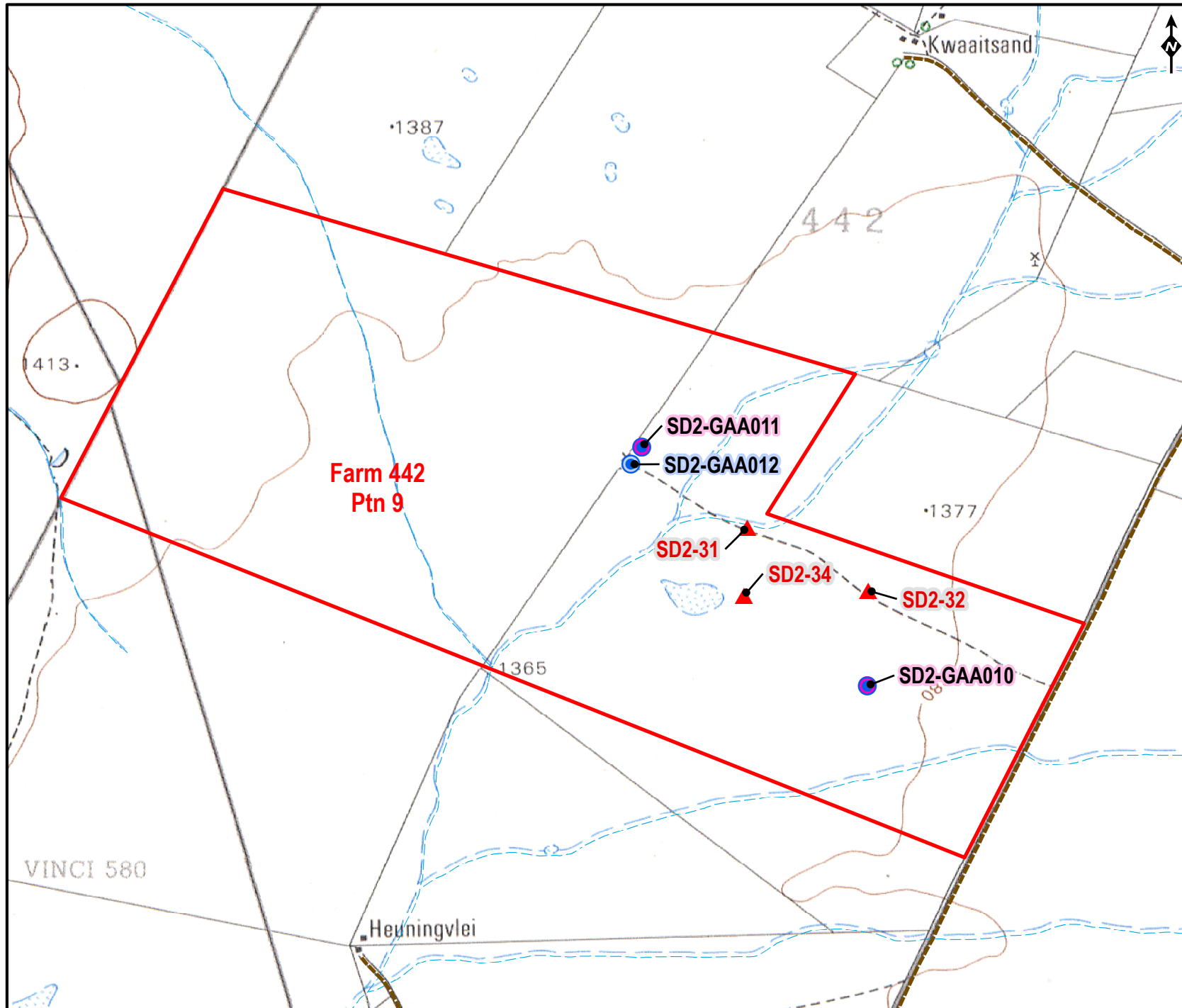
NOTE:
 "Yield" represents cumulative blow yield
 The recommended abstraction ("Rec. abs.")
 is based on a 24 hour duty cycle
 (based on test pumping result)



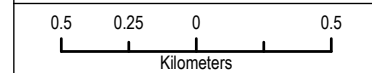
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 Fax: 012 - 364 4001
 Project No.: 11613568



2.30 William Jarvis



- LEGEND**
- ▲ Newly drilled borehole
 - Existing borehole survey
 - Existing borehole tested
 - ▭ Farm 442 Ptn 9
 - Other
 - - - Rivers - Non perennial



RESOURCES/NOTES
 Coordinate System: GCS WGS 1984
 Datum: WGS 1984

PROJECT
 GW ASSESSMENT VGG SCHEME

TITLE
FARM 442 PTN 9
WILLIAM JARVIS

PROJECT No. 11613568	REV 0
SCALE 1:28 000	A4
GIS MB	14/07/2014
CHECK DB	14/07/2014
REVIEW FW	14/07/2014



Borehole Construction and Geological Log

Date compiled: 08/01/2014

BASIC SITE INFORMATION: Site Identifier: 2823AAX0006 Number: SD2-31 Site type: Borehole

Distr./Farm No.: 442

Site Name/Des.: FARM 442

Region Type: Water supply authority

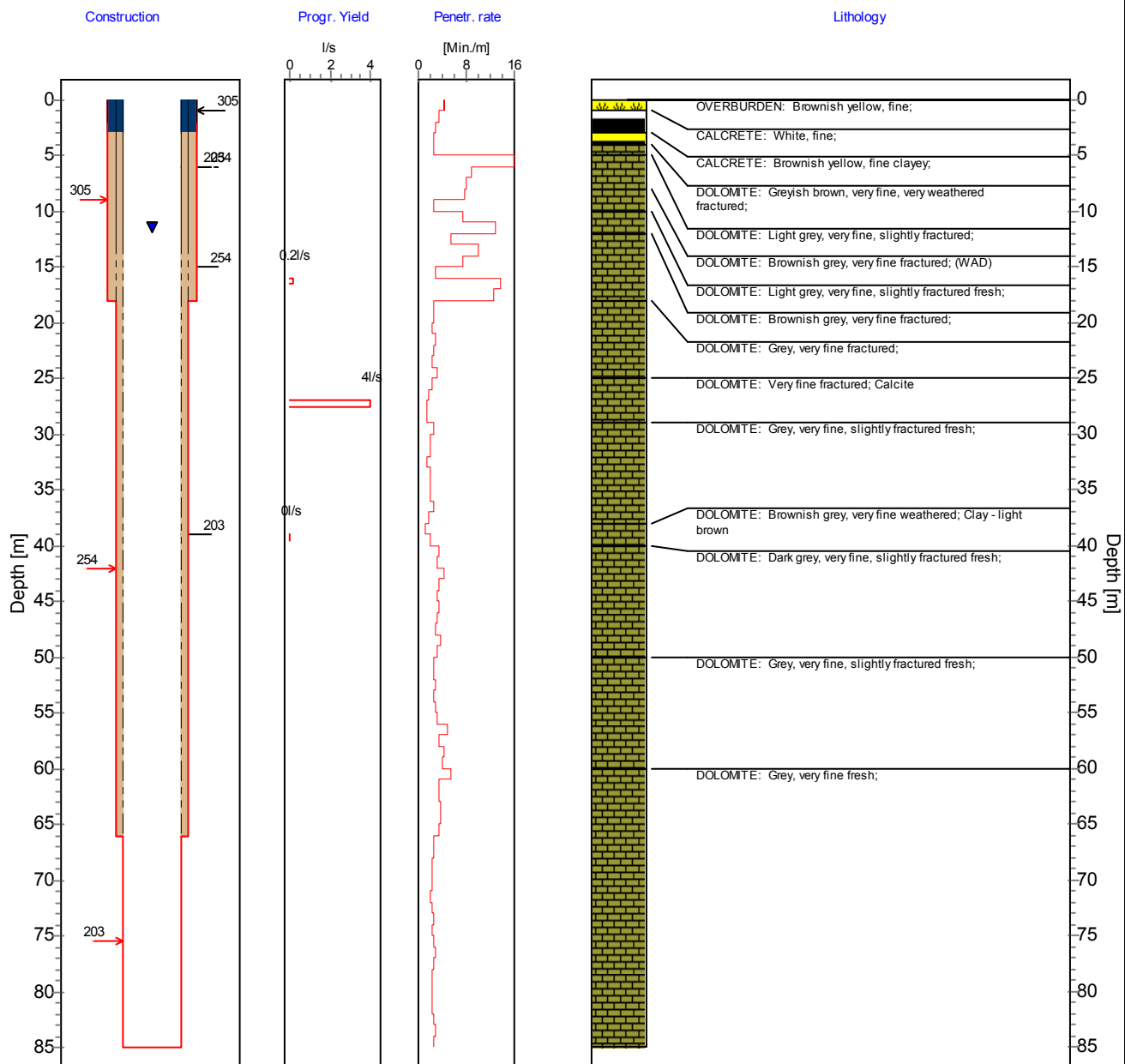
Region Descr.: TSANTSABANE LM

Latitude [°]: 28.219070	Reg./BB.:	Topo-set.:	Depth [m]: 84.50
Longitude [°]: 23.201140	G-Nr.:	Site status: Unused	Col. ht. [m]: 0.65
Altitude [m]: 1368.50		Site purp.: Observation	Diam. [mm]: 200
Coord. acc.: Accurate to within 1 units		Use applic.:	Drain. reg.: D73A
Coord. meth.: Altimeter		Equipment: No equipment	Rep. inst.: GOLD

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Construction and Geohydrological Legend

	Hole	165 →	Hole diameter [mm]		Sanitary seal
	Casing (plain / perforated, slotted)	← 152	Casing diameter [mm]		Gravel (> 2mm)
	Screen / Mesh Screen	▼	Waterlevel measured: 19/11/13		
	Piezometer	0:50 →	Piezometer (Nr. & Diameter [mm])		



COMMENT:



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Project No.: 11613568

MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823AAX0006 Number: SD2-31 Site type: Borehole

Distr./Farm No.: 442 Site Name/Descr.: FARM 442

Latitude [°]:	28.219070	Alt. No. 1:		Diam. [mm]:	200	Water lev. [m]:	10.73
Longitude [°]:	23.201140	Alt. No. 2:		Depth [m]:	84.50	WL status:	Static
Altitude [m]:	1368.50	Rep. inst.:	GOLD	Col. ht. [m]:	0.65	Date WL meas.:	20140127

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:	
Type of Inst.:	Pulley Diam. [mm]:
Manufacturer:	Depth to Intk. [m]:
Engine:	
Manufacturer:	Power Rating [kW]
Type of Power:	Pulley Diam. [mm]:

USE APPLICATION:

Site Status: Unused
Purpose: Observation
Consumer: Non-urban
Application:

WATER CHEMISTRY:

Sample No.:	SD2-31	Date sampled:	20131115	Depth sampl. [m]:	76.50	Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters:		
pH:	7.36	Na:	9.37	Cl:	18.9	Langel.:	0.13	E.Coli:
EC: [mS/m]	65.9	K:	2.14	NO3 as N:	4.59	Aggr-Ind:	12.19	Faec. co:
TDS:	422	Si:	16.4	SO4:	14.3	Ion-bal:	-0.41	Total Co:
T. Alk.:	339	Al:	< 0.05	F:	0.191	CaCO3:	371.04	SPC:
Ca:	80.3	Fe:	< 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit ¡ Value exceeds minimum allowable limit				
Mg:	41.5	Mn:	0.05					

AQUIFER INFORMATION:

Depth to Top [m]	Depth to Bot. [m]	Yield[l/s]	Method meas.	Aquifer type	Comment
16.00	16.50	0.20	Notch (V- or U-notch)		
27.00	27.50	4.00	Notch (V- or U-notch)		
39.00	39.50	0.00	Notch (V- or U-notch)		

CASING DETAILS:

Depth to Top [m] to Bot. [m]		Diam. [mm]	Material	Thickn. [mm]	Type of openings	Openings [mm]: Length Width		Hor. Dist.	Vert. Dist.
0.00	2.00	305	Steel		Plain casing				
0.00	12.00	254	Steel		Plain casing				
12.00	18.00	254	Steel		Perforated or slotted				
0.00	12.00	203	Steel		Plain casing				
12.00	66.00	203	Steel		Perforated or slotted				

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery [m]	%	[min]	T [m²/d]	Storage	Comment
STEP TEST STEP 1	20131119	60	76.50	5.00	0.90						
STEP TEST STEP 2	20131119	60	76.50	10.24	5.99						
STEP TEST STEP 3	20131119	15	76.50	13.22	65.12	100	150				
PUMP INLET	20131119	3	76.50	9.86	65.16						
CONSTANT	20131119	1440	76.50	7.00	2.34	100	600				



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Project No.: 11613568

PUMPING TEST REPORT

Date compiled: 31/03/2014

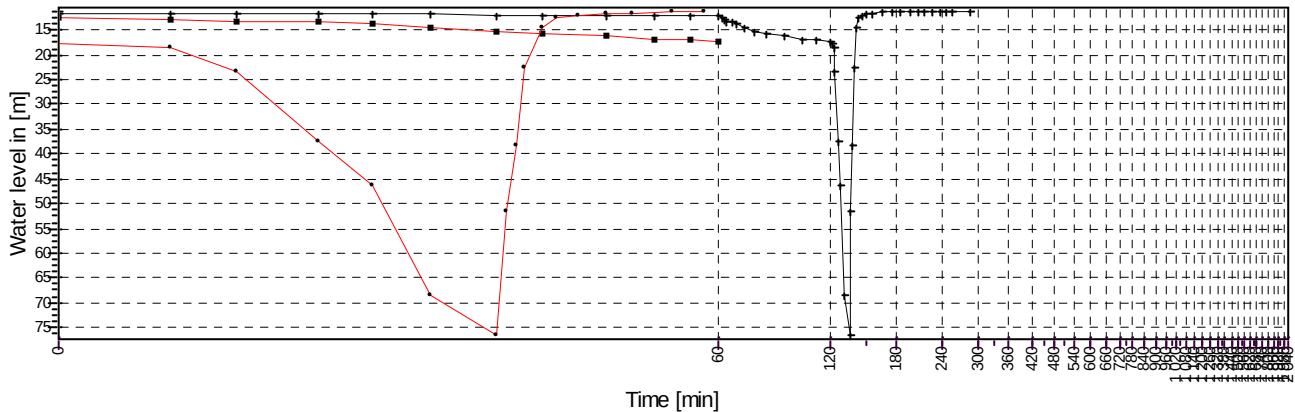
BASIC SITE INFORMATION: Site Identifier: 2823AAX0006 Number: SD2-31 Site type: Borehole

Distr./Farm No.: 442 Site Name/Des.: FARM 442

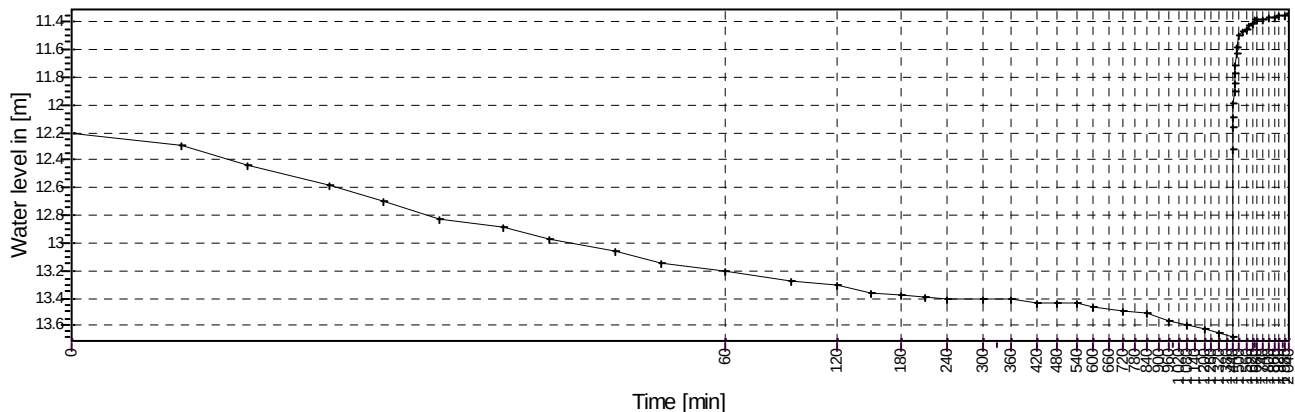
Latitude [°]	28.219070	Alt. No. 1:		Diam. [mm]:	200	Water lev. [m]:	10.73
Longitude [°]	23.201140	Alt. No. 2:		Depth [m]:	84.50	Piezometer:	0
Altitude [m]:	1368.50	Rep. inst.: GOLD		Col. ht. [mm]:	0.65	Date WL meas.:	20140127

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



Constant Rate Test



PUMPING TEST:		Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
Rep. Inst.	Meth. tested								
GOLD	Step test	76.50	20131119	1230	20131119	1715			
GOLD	Constant rate test	76.50	20131119	1740	20131121	0340			

TESTING DETAILS:		Durat. [min]	Depth to intk. [m]	Disch. rate [l/s]	Drawd. [m]	Recov. [m]	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
Description	Time start.					%					
STEP TEST STEP 1	1230	60	76.50	5.00	0.90						5.56
STEP TEST STEP 2	1330	60	76.50	10.24	5.99						1.71
STEP TEST STEP 3	1430	15	76.50	13.22	65.12	100	150				0.20
PUMP INLET	1715	3	76.50	9.86	65.16						0.15
CONSTANT	1740	1440	76.50	7.00	2.34	100	600				2.99



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Project No.: 11613568

Borehole Construction and Geological Log

Date compiled: 08/01/2014

BASIC SITE INFORMATION: Site Identifier: 2823AAX0007 Number: SD2-32 Site type: Borehole

Distr./Farm No.: 442

Site Name/Des.: FARM 442

Region Type: Water supply authority

Region Descr.: TSANTSABANE LM

Latitude [°]: 28.222000

Reg./BB.:

Topo-set.:

Depth [m]: 90.40

Longitude [°]: 23.206830

G-Nr.:

Site status: Unused

Col. ht. [m]: 0.25

Altitude [m]: 1374.80

Site purp.: Observation

Diam. [mm]: 200

Coord. acc.: Accurate to within 1 units

Use applic.:

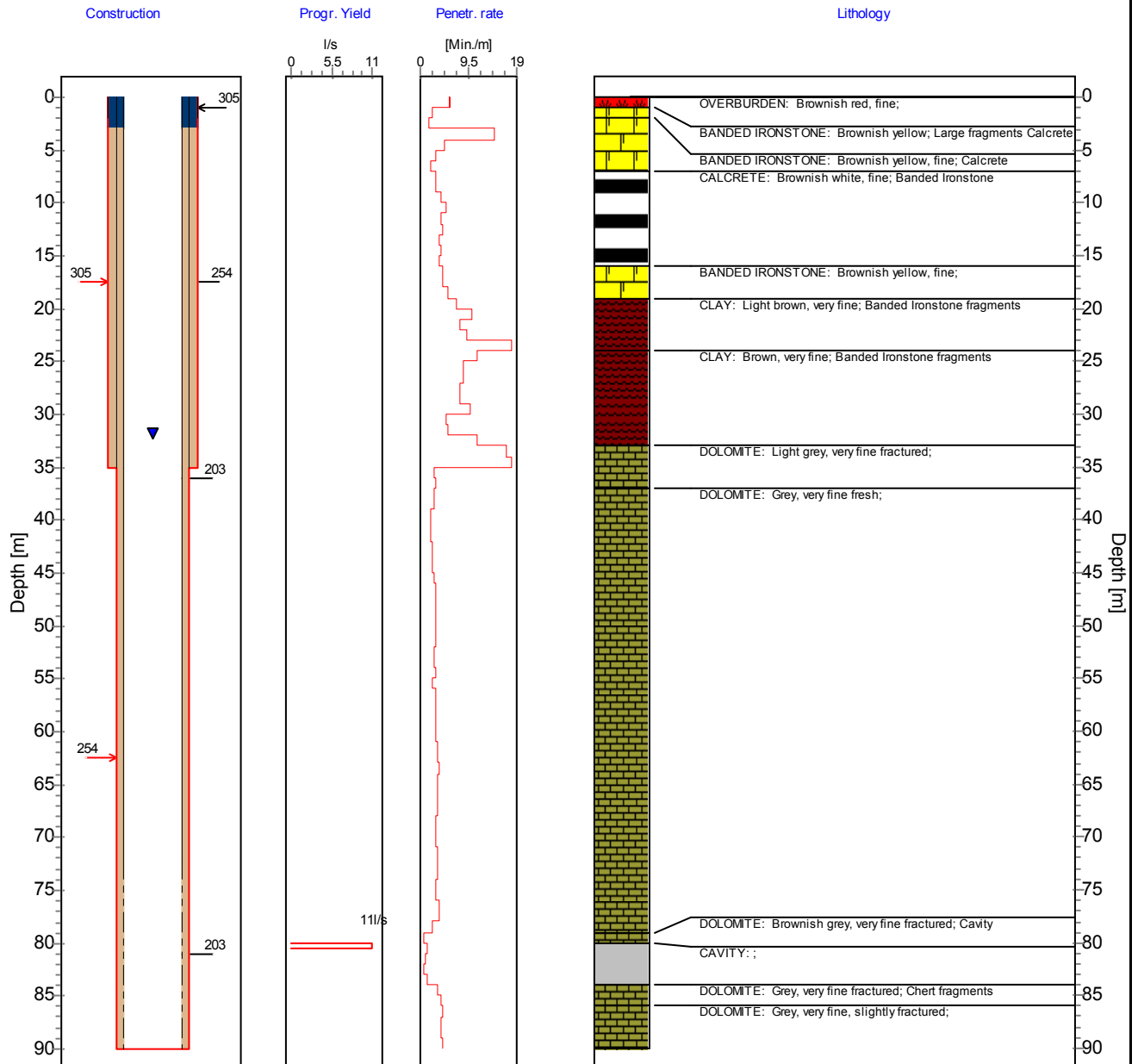
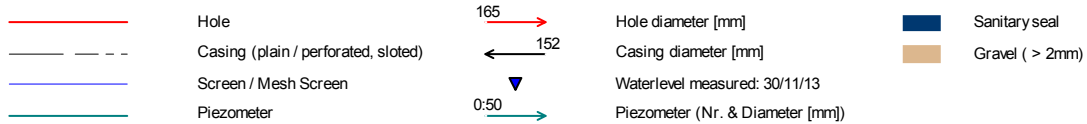
Drain. reg.: D73A

Coord. meth.: Altimeter

Equipment: No equipment

Rep. inst.: GOLD

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Construction and Geohydrological Legend

COMMENT:



Golder Associates Africa, Pretoria
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Project No.: 11613568

MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823AAX0007 Number: SD2-32 Site type: Borehole

Distr./Farm No.: 442 Site Name/Descr.: FARM 442 WELLFIELD

Latitude [°]:	28.222000	Alt. No. 1:		Diam. [mm]:	200	Water lev. [m]:	31.81
Longitude [°]:	23.206830	Alt. No. 2:		Depth [m]:	90.40	WL status:	Static
Altitude [m]:	1374.80	Rep. inst.:	GOLD	Col. ht. [m]:	0.25	Date WL meas.:	20131130

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:	
Type of Inst.:	Pulley Diam. [mm]:
Manufacturer:	Depth to Intk. [m]:
Engine:	
Manufacturer:	Power Rating [kW]
Type of Power:	Pulley Diam. [mm]:

USE APPLICATION:

Site Status: Unused
Purpose: Observation
Consumer: Non-urban
Application:

WATER CHEMISTRY:

Sample No.:	SD2-32	Date sampled:	20131202	Depth sampl. [m]:	82.50	Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters:		
pH:	8.17	Na:	11.7	Cl:	22.8	Langel.:	0.72	E.Coli:
EC: [mS/m]	46.8	K:	2.33	NO3 as N:	5.03	Aggr-Ind:	12.75	Faec. co:
TDS:	436	Si:	16.7	SO4:	13.5	Ion-bal:	3.17	Total Co:
T. Alk.:	238	Al:		F:	0.17	CaCO3:	294.03	SPC:
Ca:	64.6	Fe:	< 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit ‡ Value exceeds minimum allowable limit				
Mg:	32.3	Mn:						

AQUIFER INFORMATION:

Depth to Top [m]	Depth to Bot. [m]	Yield[l/s]	Method meas.	Aquifer type	Comment
80.00	80.50	11.00	Notch (V- or U-notch)		

CASING DETAILS:

Depth to Top [m]	to Bot. [m]	Diam. [mm]	Material	Thickn. [mm]	Type of openings	Openings [mm]: Length Width	Hor. Dist.	Vert. Dist.
0.00	2.00	305	Steel		Plain casing			
0.00	35.00	254	Steel		Plain casing			
0.00	72.00	203	Steel		Plain casing			
72.00	90.00	203	Steel		Perforated or slotted			

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery [m] %	[min]	T [m²/d]	Storage	Comment
STEP TEST STEP 1	20131130	60	82.50	5.22	8.12					
STEP TEST STEP 2	20131130	60	82.50	8.13	26.10					
STEP TEST STEP 3	20131130	15	82.50	12.26	50.68	100	80			
PUMP INLET	20131130	3	82.50	10.74	50.69					
CONSTANT	20131201	1440	82.50	8.08	32.79	100	180	61	0.05	

RECOMMENDATIONS:

Prior.	Rec. equipm.	Depth to intk. [m]	Type of power	Duty cyc. [hrs]	Disch. rate [l/s]	Water quality	Dyn. water level [m]	Crit. water level [m]
1	Mono-type pump	72.00	Electric motor	24	5.00	CLASS 0	52.00	60.00

Note: 1. Production borehole
2. Install water level monitoring facility in borehole



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Project No.: 11613568

PUMPING TEST REPORT

Date compiled: 31/03/2014

BASIC SITE INFORMATION:

Site Identifier: 2823AAX0007 Number: SD2-32

Site type: Borehole

Distr./Farm No.: 442

Site Name/Des.: FARM 442

Latitude [°] 28.222000
Longitude [°] 23.206830
Altitude [m]: 1374.80

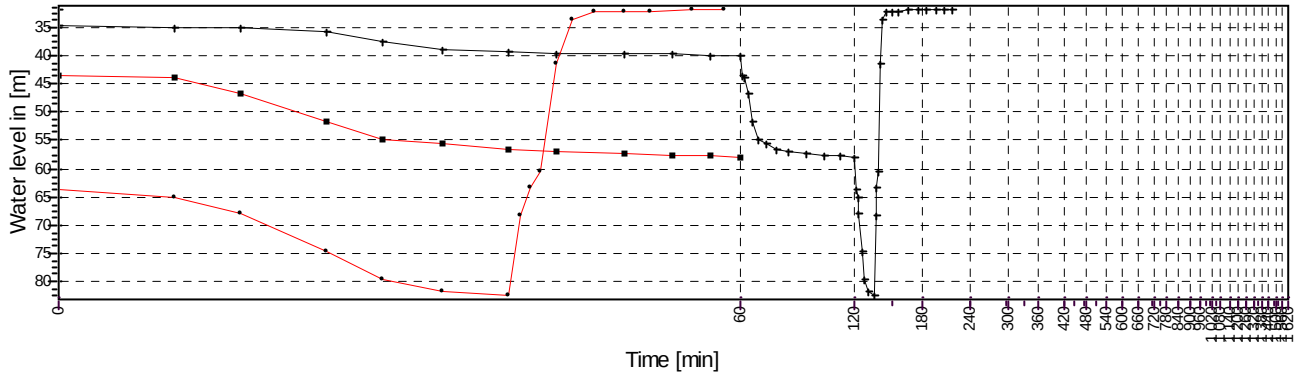
Alt. No. 1:
Alt. No. 2:
Rep. inst.: GOLD

Diam. [mm]: 200
Depth [m]: 90.40
Col. ht. [mm]: 0.25

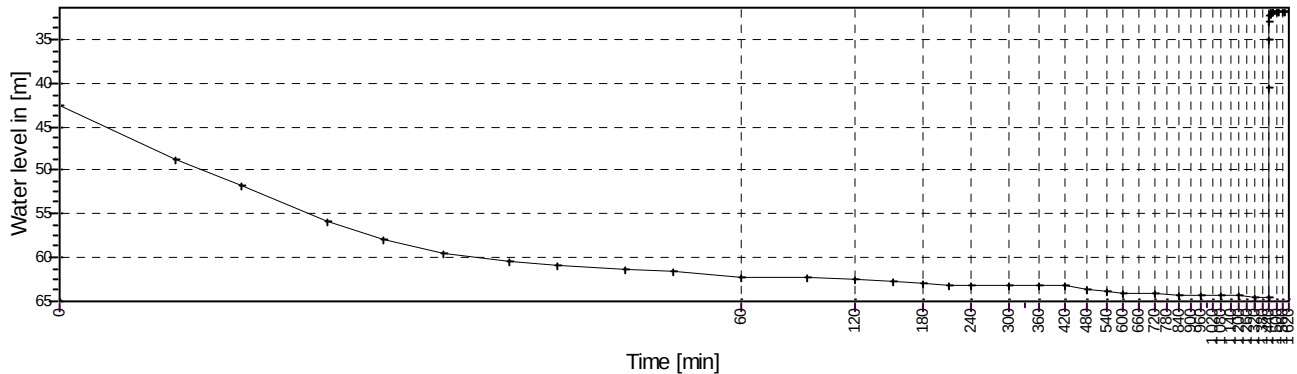
Water lev. [m]: 31.81
Piezometer: 0
Date WL meas.: 20131130

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



Constant Rate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m²/d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	82.50	20131130	1510	20131130	1845			
GOLD	Constant rate test	82.50	20131201	0740	20131202	1040			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m²/d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	1510	60	82.50	5.22	8.12							0.64
STEP TEST STEP 2	1610	60	82.50	8.13	26.10							0.31
STEP TEST STEP 3	1710	15	82.50	12.26	50.68		100	80				0.24
PUMP INLET	1845	3	82.50	10.74	50.69							0.21
CONSTANT	0740	1440	82.50	8.08	32.79		100	180				0.25



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Project No.: 11613568

BASIC SITE INFORMATION: Site Identifier: 2823AAX0008 Number: SD2-34 Site type: Borehole

Distr./Farm No.: 442

Site Name/Des.: FARM 442

Region Type: Water supply authority

Region Descr.: TSANTSABANE LM

Latitude [°]: 28.222290

Reg./BB.:

Topo-set:

Depth [m]: 34.46

Longitude [°]: 23.201010

G-Nr.:

Site status: Unused

Col. ht. [m]: 0.25

Altitude [m]: 1369.54

Site purp.: Observation

Diam. [mm]: 216

Coord. acc.: Accurate to within 1 units

Use applic.:

Drain. reg.: D73A

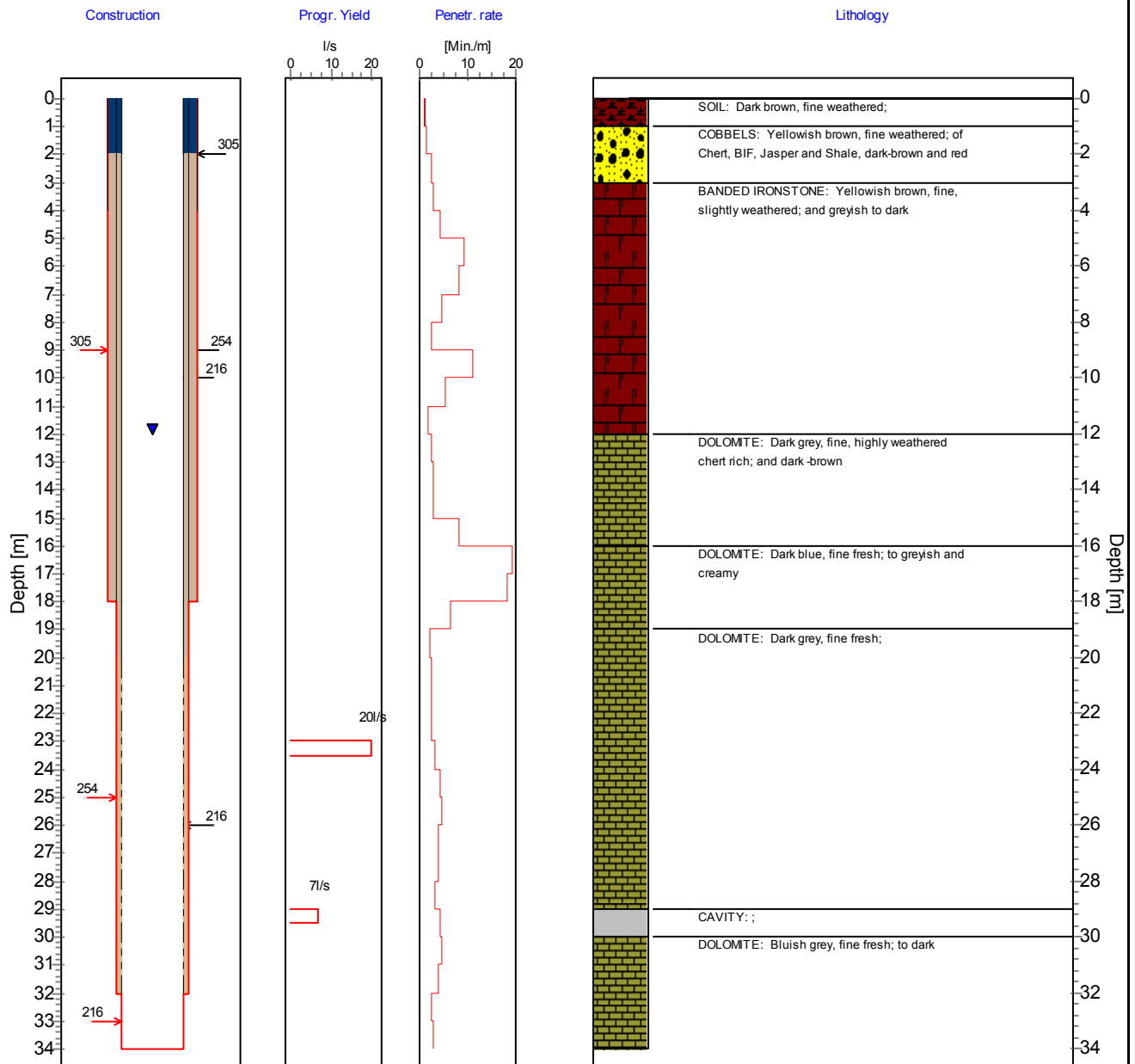
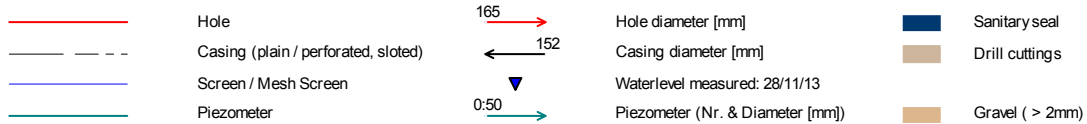
Coord. meth.: Altimeter

Equipment: No equipment

Rep. inst.: GOLD

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Construction and Geohydrological Legend



COMMENT:



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 Project No.: 11613568

MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823AAX0008 Number: SD2-34 Site type: Borehole

Distr./Farm No.: 442 Site Name/Descr.: FARM 442 WELLFIELD

Latitude [°]:	28.222290	Alt. No. 1:		Diam. [mm]:	216	Water lev. [m]:	11.68
Longitude [°]:	23.201010	Alt. No. 2:		Depth [m]:	34.46	WL status:	Static
Altitude [m]:	1369.54	Rep. inst.:	GOLD	Col. ht. [m]:	0.50	Date WL meas.:	20140228

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:		Pulley Diam. [mm]:	
Type of Inst.:		Depth to Intk. [m]:	
Manufacturer:			
Engine:		Power Rating [kW]	
Manufacturer:		Pulley Diam. [mm]:	
Type of Power:			

USE APPLICATION:

Site Status: Unused
Purpose: Observation
Consumer: Non-urban
Application:

WATER CHEMISTRY:

Sample No.:	SD2-34	Date sampled:	20131204	Depth sampl. [m]:	28.50	Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters.		
pH:	7.94	Na:	9.42	Cl:	20.3	Langel.:	0.66	E.Coli:
EC: [mS/m]	52.1	K:	1.83	NO3 as N:	4.89	Aggr-Ind:	12.71	Faec. co:
TDS:	512 †	Si:	18.3	SO4:	14	Ion-bal:	10.29 ‡	Total Co:
T. Alk.:	272	Al:		F:	0.225	CaCO3:	386.86	SPC:
Ca:	87.3	Fe:	< 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit ‡ Value exceeds minimum allowable limit				
Mg:	41.1	Mn:						

AQUIFER INFORMATION:

Depth to Top [m]	Depth to Bot. [m]	Yield[l/s]	Method meas.	Aquifer type	Comment
23.00	23.50	20.00	Notch (V- or U-notch)		
29.00	29.50	7.00	Notch (V- or U-notch)		

CASING DETAILS:

Depth to Top [m]	to Bot. [m]	Diam. [mm]	Material	Thickn. [mm]	Type of openings	Openings [mm]: Length Width	Hor. Dist.	Vert. Dist.
0.00	4.00	305	Steel		Plain casing			
0.00	18.00	254	Steel		Plain casing			
0.00	20.00	216	Steel		Plain casing			
20.00	32.00	216	Steel		Perforated or slotted			

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery [m] %	T [m²/d]	Storage	Comment
STEP TEST STEP 1	20131202	60	28.50	5.53	0.12				
STEP TEST STEP 2	20131202	60	28.50	10.04	0.28				
STEP TEST STEP 3	20131202	60	28.50	20.02	0.92				
STEP TEST STEP 4	20131202	60	28.50	30.10	1.99	100	110		
CONSTANT (1)	20131203	1440	28.50	20.06	1.40	0.04	97	1440	
CONSTANT (2)	20140228	4320	28.84	30.04	2.77	100	1560	872	0.05

RECOMMENDATIONS:

Prior.	Rec. equipm.	Depth to intk. [m]	Type of power	Duty cyc. [hrs]	Disch. rate [l/s]	Water quality	Dyn. water level [m]	Crit. water level [m]
1	Mono-type pump	28.00	Electric motor	24	10.00	CLASS 1	13.00	22.00

Note: 1. Production borehole
2. Install water level monitoring facility in borehole



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Project No.: 11613568

PUMPING TEST REPORT

Date compiled: 31/03/2014

BASIC SITE INFORMATION:

Site Identifier: 2823AAX0008 Number: SD2-34

Site type: Borehole

Distr./Farm No.: 442

Site Name/Des.: FARM 442

Latitude [°] 28.222290
Longitude [°] 23.201010
Altitude [m]: 1369.54

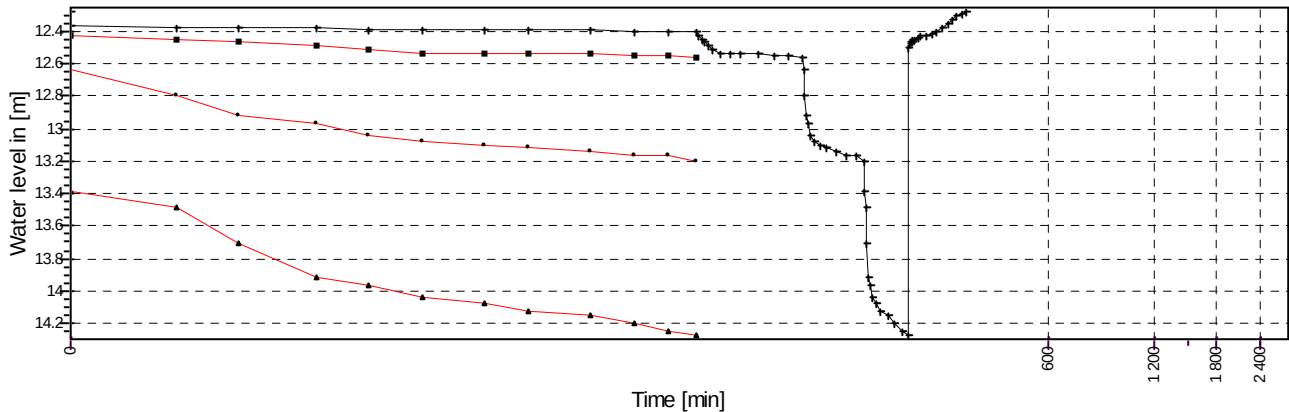
Alt. No. 1:
Alt. No. 2:
Rep. inst.: GOLD

Diam. [mm]: 216
Depth [m]: 34.46
Col. ht. [mm]: 0.50

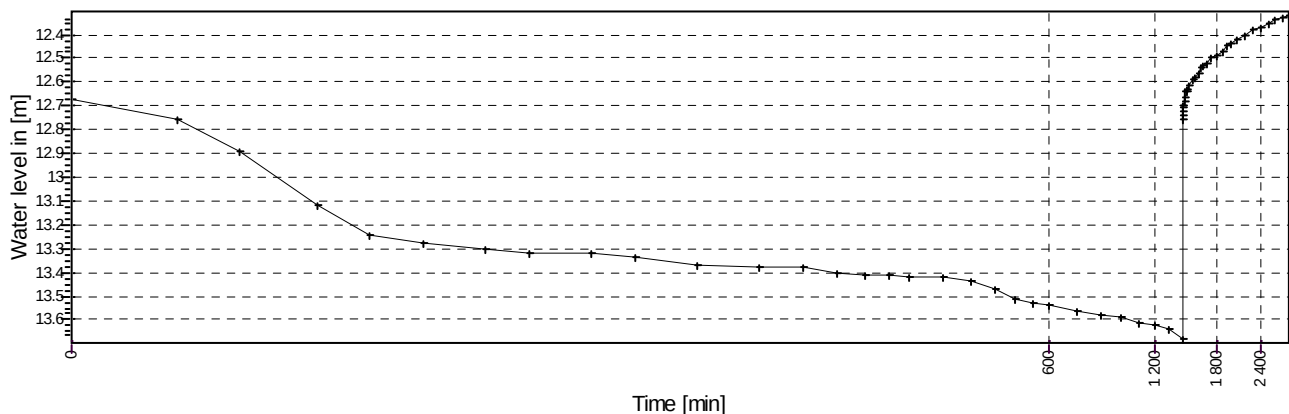
Water lev. [m]: 11.68
Piezometer: 0
Date WL meas.: 20140228

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



Constant Rate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	28.50	20131202	1530	20131202	2120			
GOLD	Constant rate test	28.50	20131203	0830	20131205	0830			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate [l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	1530	60	28.50	5.53	0.12							46.08
STEP TEST STEP 2	1630	60	28.50	10.04	0.28							35.86
STEP TEST STEP 3	1730	60	28.50	20.02	0.92							21.76
STEP TEST STEP 4	1830	60	28.50	30.10	1.99		100	110				15.13
CONSTANT	0830	1440	28.50	20.06	1.40	0.04	97	1440				14.33



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PUMPING TEST REPORT

Date compiled: 10/04/2014

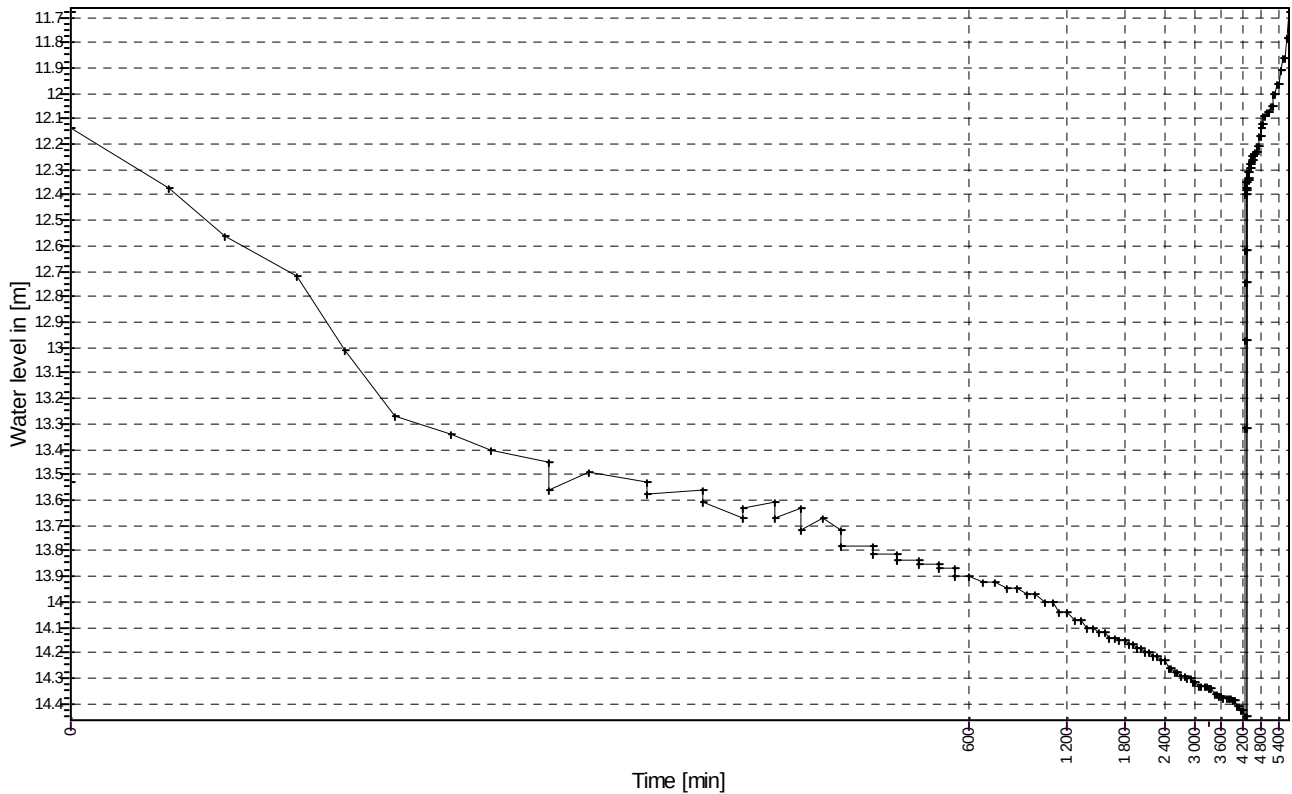
BASIC SITE INFORMATION: Site Identifier: 2823AAX0008 Number: SD2-34 Site type: Borehole

Distr./Farm No.: 442 Site Name/Des.: FARM 442

Latitude [°]	28.222290	Alt. No. 1:		Diam. [mm]:	216	Water lev. [m]:	11.68
Longitude [°]	23.201010	Alt. No. 2:		Depth [m]:	34.46	Piezometer:	0
Altitude [m]:	1369.54	Rep. inst.: GOLD		Col. ht. [mm]:	0.50	Date WL meas.:	20140228

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Constant Rate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	28.50	20131202	1530	20131202	2120			
GOLD	Constant rate test	28.50	20131203	0830	20131205	0830			
GOLD	Constant rate test	28.84	20140228	0930	20140304	1030			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	1530	60	28.50	5.53	0.12							46.08
STEP TEST STEP 2	1630	60	28.50	10.04	0.28							35.86
STEP TEST STEP 3	1730	60	28.50	20.02	0.92							21.76
STEP TEST STEP 4	1830	60	28.50	30.10	1.99		100	110				15.13
CONSTANT (1)	0830	1440	28.50	20.06	1.40	0.04	97	1440				14.33
CONSTANT (2)	0930	4320	28.84	30.04	2.77		100	1560				10.84



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Project No.: 11613568

MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823AA00131 Number: SD2-GAA010 Site type: Borehole

Distr./Farm No.: 442 Site Name/Descr.: FARM 442 PTN. ELLENDALE

Latitude [°]:	28.226500	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	32.00
Longitude [°]:	23.206810	Alt. No. 2:		Depth [m]:	79.24	WL status:	Static
Altitude [m]:	1378.77	Rep. inst.: GOLD		Col. ht. [m]:		Date WL meas.:	20140127

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:			
Type of Inst.:	Windpump	Pulley Diam. [mm]:	
Manufacturer:	RECIPROCAL	Depth to Intk. [m]:	39.50
Engine:			
Manufacturer:		Power Rating [kW]	
Type of Power:	Wind	Pulley Diam. [mm]:	

USE APPLICATION:

Site Status: In use
Purpose: Production (water supply)
Consumer: Non-urban
Application: Domestic - all purposes

WATER CHEMISTRY:

Sample No.:	SD2-	Date sampled:	20140218	Depth sampl. [m]:	62.00	Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters:		
pH:	7.77	Na:	13.5	Cl:	30.4	Langel.:	0.53	E.Coli:
EC: [mS/m]	68.8	K:	2.85	NO3 as N:	5.24	Aggr-Ind:	12.59	Faec. co:
TDS:	478	Si:		SO4:	13.4	Ion-bal:	0.29	Total Co:
T. Alk.:	343	Al:	< 0.05	F:	< 0.1	CaCO3:	388.24	SPC:
Ca:	77.8	Fe:	< 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit ¡ Value exceeds minimum allowable limit				
Mg:	47.2	Mn:	< 0.05					

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery [m] %	[min]	T [m²/d]	Storage	Comment
STEP TEST STEP 1	20140127	60	62.00	1.04	1.01					
STEP TEST STEP 2	20140127	60	62.00	2.14	4.04					
STEP TEST STEP 3	20140127	60	62.00	4.02	13.92	100		10		



PUMPING TEST REPORT

Date compiled: 07/03/2014

BASIC SITE INFORMATION: Site Identifier: 2823AA00131 Number: SD2-GAA010 Site type: Borehole

Distr./Farm No.: 442

Site Name/Des.: FARM 442 PTN. ELLENDALE

Latitude [°] 28.226500
Longitude [°] 23.206810
Altitude [m]: 1378.77

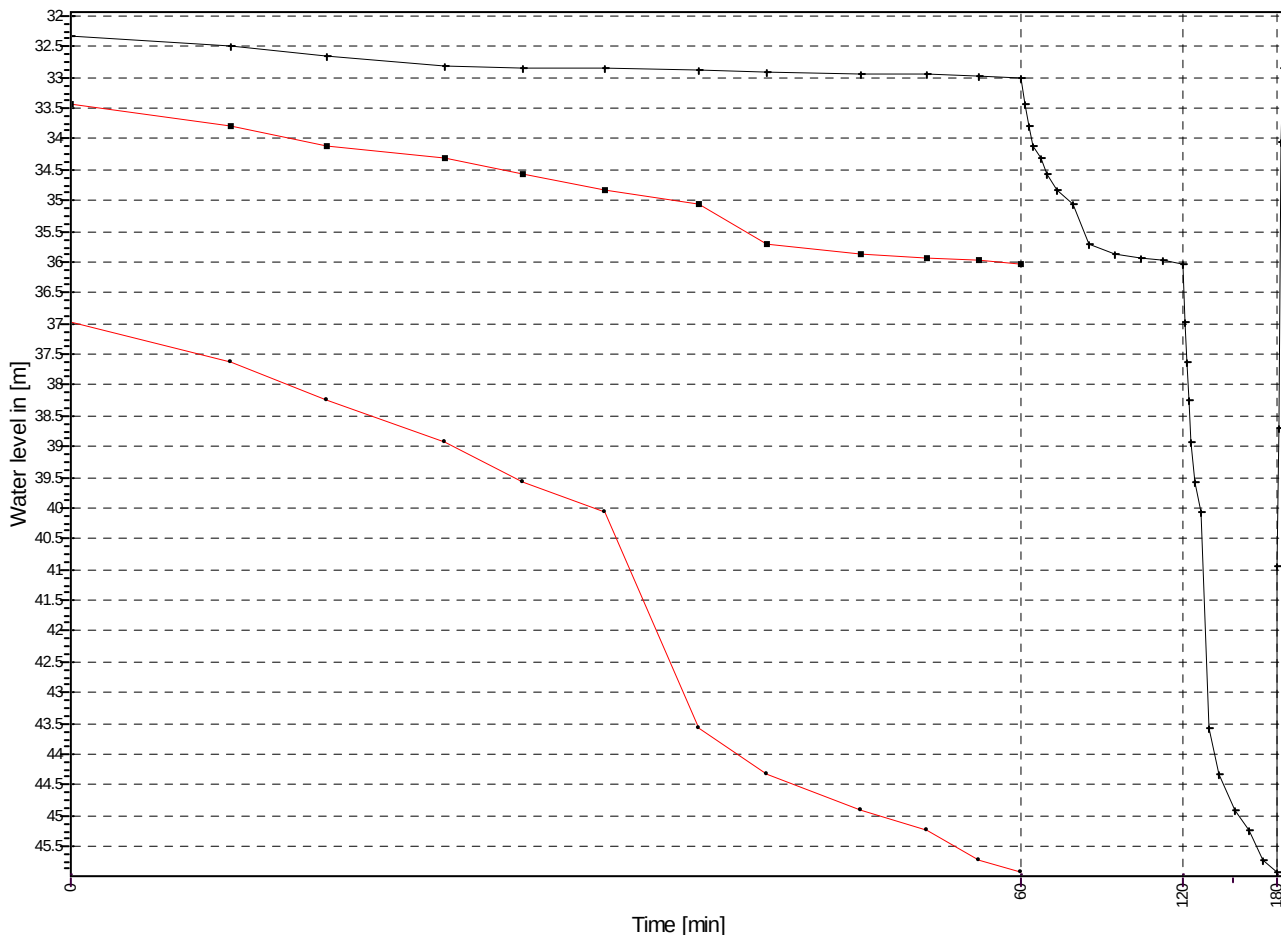
Alt. No. 1:
Alt. No. 2:
Rep. inst.: GOLD

Diam. [mm]: 165
Depth [m]: 79.24
Col. ht. [mm]:

Water lev. [m]: 32.00
Piezometer: 0
Date WL meas.: 20140127

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	62.00	20140127	0730	20140127	1040			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	0730	60	62.00	1.04	1.01							1.03
STEP TEST STEP 2	0830	60	62.00	2.14	4.04							0.53
STEP TEST STEP 3	0930	60	62.00	4.02	13.92		100		10			0.29



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Project No.: 11613568

MANAGEMENT RECOMMENDATIONS

BASIC SITE INFORMATION: Site Identifier: 2823AA00132 Number: SD2-GAA011 Site type: Borehole

Distr./Farm No.: 442 Site Name/Descr.: FARM 442 PTN. ELLENDALE

Latitude [°]:	28.215290	Alt. No. 1:		Diam. [mm]:	165	Water lev. [m]:	14.51
Longitude [°]:	23.196220	Alt. No. 2:		Depth [m]:	69.00	WL status:	Static
Altitude [m]:	1373.30	Rep. inst.: GOLD		Col. ht. [m]:	0.20	Date WL meas.:	20140126

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

EXISTING EQUIPMENT:

Pump:			
Type of Inst.:	Windpump	Pulley Diam. [mm]:	
Manufacturer:	RECIPROCAL	Depth to Intk. [m]:	21.50
Engine:			
Manufacturer:		Power Rating [kW]	
Type of Power:	Wind	Pulley Diam. [mm]:	

USE APPLICATION:

Site Status: In use
Purpose: Production (water supply)
Consumer: Non-urban
Application: Agricultural - stock watering only

WATER CHEMISTRY:

Sample No.:	SD2-	Date sampled:	20140218	Depth sampl. [m]:	62.00	Comment:		
Main Parameters:				Calculated Parameters:		Bacteriol. Parameters:		
pH:	7.72	Na:	8.24	Cl:	14.2	Langel.:	0.45	E.Coli:
EC: [mS/m]	61.6	K:	1.46	NO3 as N:	1.79	Aggr-Ind:	12.51	Faec. co:
TDS:	416	Si:		SO4:	20.2	Ion-bal:	0.10	Total Co:
T. Alk.:	332	Al:	< 0.05	F:	0.24	CaCO3:	361.08	SPC:
Ca:	74	Fe:	< 0.05	Concentrations in [mg/l]; Bact. param. in counts/100ml; Chemistry Standard: SABS for human consumption † Value exceeds recommended maximum limit ‡ Value exceeds maximum allowable limit ! Value exceeds recommended minimum limit ¡ Value exceeds minimum allowable limit				
Mg:	42.9	Mn:	< 0.05					

TESTING DETAILS:

Description	Date	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recovery [m] %	[min]	T [m²/d]	Storage	Comment
STEP TEST STEP 1	20140126	60	62.00	0.61	15.07					
STEP TEST STEP 2	20140126	50	62.00	1.02	47.28	99.00	120			
PUMP INLET	20140126	2	62.00	0.44	47.29					



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Project No.: 11613568

PUMPING TEST REPORT

Date compiled: 19/03/2014

BASIC SITE INFORMATION: Site Identifier: 2823AA00132 Number: SD2-GAA011 Site type: Borehole

Distr./Farm No.: 442

Site Name/Des.: FARM 442 PTN. ELLENDALE

Latitude [°] 28.215290

Alt. No. 1:

Diam. [mm]: 165

Water lev. [m]: 14.51

Longitude [°] 23.196220

Alt. No. 2:

Depth [m]: 69.00

Piezometer: 0

Altitude [m]: 1373.30

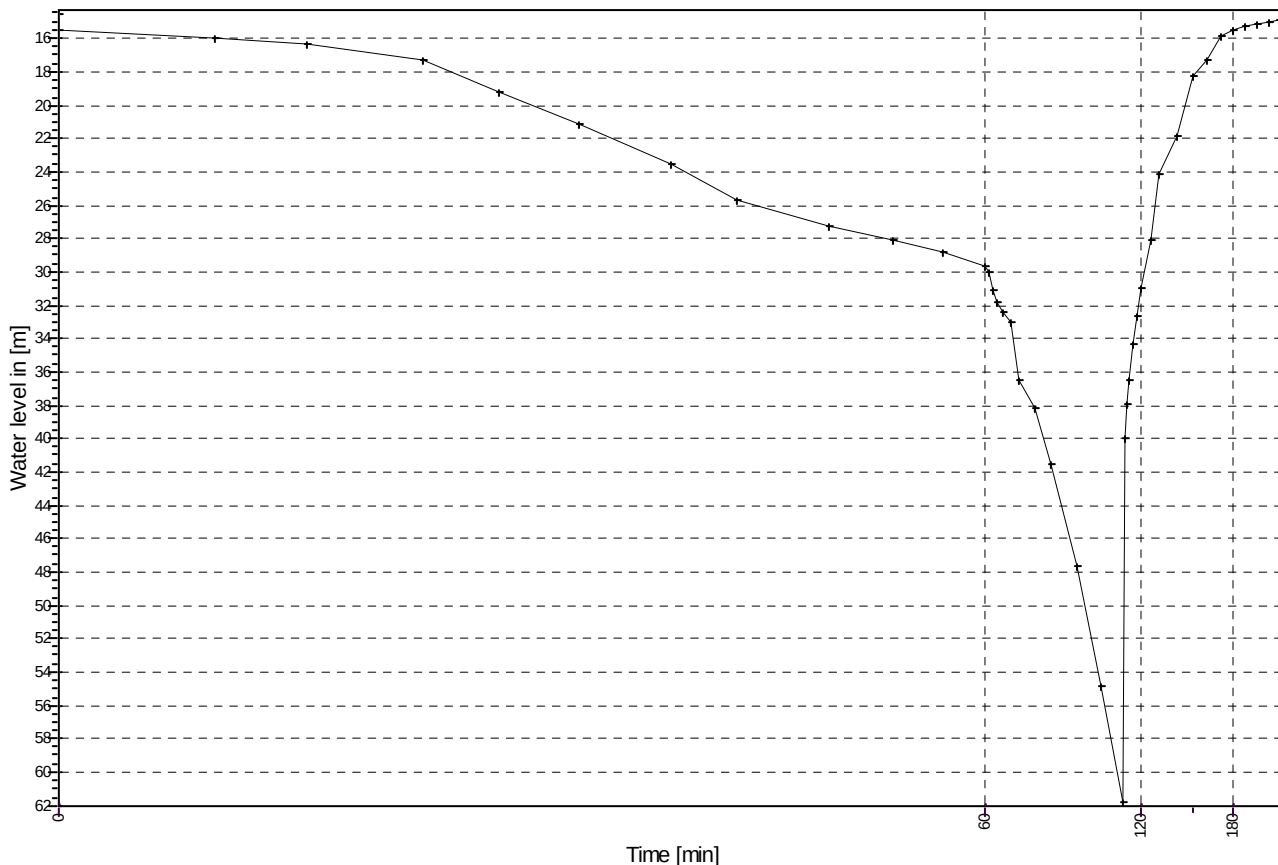
Rep. inst.: GOLD

Col. ht. [mm]: 0.20

Date WL meas.: 20140126

Coordinate System: Geographic Decimal Degrees (Longitude/Latitude), Hartebeesthoek94 (WGS 84)

Multirate Test



PUMPING TEST:

Rep. Inst.	Meth. tested	Depth to intake [m]	Starting Date	Time	Ending Date	Time	Transmis. [m ² /d]	Storativ.	Rec. abs. [l/s]
GOLD	Step test	62.00	20140126	0740	20140126	1130			

TESTING DETAILS:

Description	Time start.	Durat. [min]	Depth to intk. [m]	Disch. rate[l/s]	Drawd. [m]	Recov. [m]	%	Rec. Dur. [min]	Trans. [m ² /d]	Perm. [m/d]	Storat.	Q/st
STEP TEST STEP 1	0740	60	62.00	0.61	15.07							0.04
STEP TEST STEP 2	0840	50	62.00	1.02	47.28	99.00	120					0.02



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Project No.: 11613568

WILLIAM JARVIS - BASIC SITE INFORMATION

SITE LOCATION										GEOHYDROLOGY				MANAGEMENT RECOMMEND.			
Site Identifier:	Number:	District	Site name/Description	Site type:	Latitude [°]	Longitude [°]	Altitude [m]	Col. ht. [m]	Diam. [mm]	Depth [m]	Water l. [m]	Yield[l/s]	Rec. abs.[l/s]	Depth to Intk. [m]	Dis. rate[l/s]	Duty c. [hrs/d]	Daily abs. [m³/d]
2823AAX0005	SD2-GAA012	442	FARM 442 PTN. ELLENDALE	B	28.21610967	23.195690001	1372.45	0.50	165		9.42						
SUMMARY: Nr. of sites: 1										Maximum: 9.42 Minimum: 9.42 Sum: Average: 9.42							

Site Type:
B = Borehole

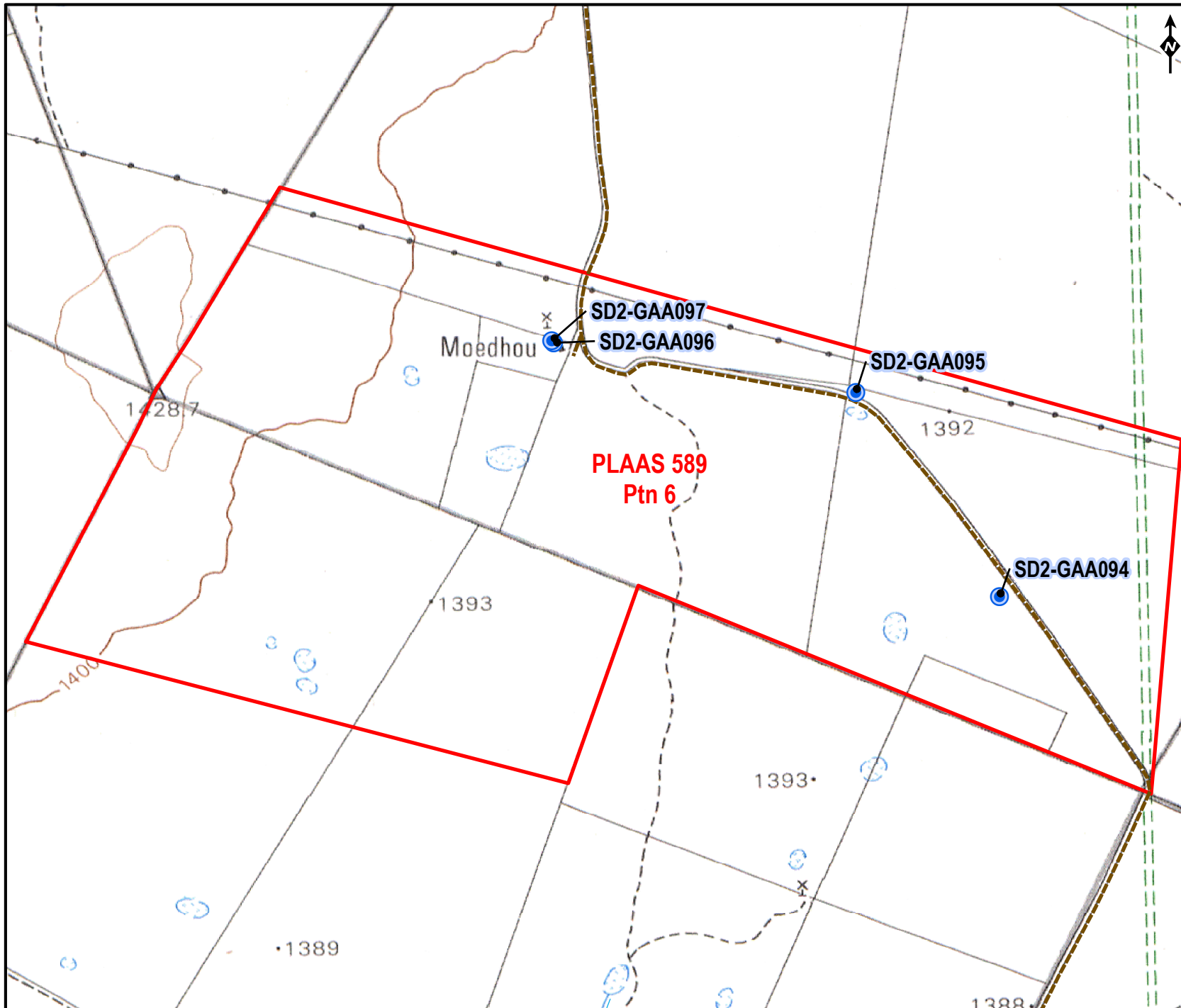
NOTE:
"Yield" represents cumulative blow yield
The recommended abstraction ("Rec. abs.")
is based on a 24 hour duty cycle
(based on test pumping result)



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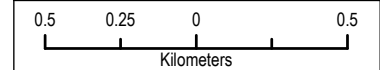


2.31 Winston and Vaughn Ayton



LEGEND

- Existing borehole survey
- Farm 589 Ptn 6
- Other
- Rivers - Non perennial



RESOURCES/NOTES

Coordinate System: GCS WGS 1984
Datum: WGS 1984

PROJECT

GW ASSESSMENT VGG SCHEME

TITLE

**FARM 589 PTN 6
WINSTON AYTON**

PROJECT No. 11613568	REV 0
SCALE 1:25 000	A4
GIS MB	14/07/2014
CHECK DB	14/07/2014
REVIEW FW	14/07/2014



WINSTON AYTON - BASIC SITE INFORMATION

SITE LOCATION										GEOHYDROLOGY				MANAGEMENT RECOMMEND.			
Site Identifier:	Number:	District	Site name/Description	Site type:	Latitude [°]	Longitude [°]	Altitude [m]	Col. ht. [m]	Diam. [mm]	Depth [m]	Water l. [m]	Yield[l/s]	Rec. abs.[l/s]	Depth to Intk. [m]	Dis. rate[l/s]	Duty c. [hrs/d]	Daily abs. [m³/d]
2823AA00113	SD2-GAA096	440	FARM 440 PTN. MOEDHOU	B	28.15973967	23.214680001	1397.00	0.31	165	41.50	3.69						
2823AA00114	SD2-GAA095	440	FARM 440 PTN. MOEDHOU	B	28.16183967	23.227360001	1394.00	0.31	165								
2823AA00115	SD2-GAA094	440	FARM 440 PTN. MOEDHOU	B	28.17040967	23.233390001	1394.00	0.55	165		13.32						
2823AAX0025	SD2-GAA097	440	FARM 440 PTN. MOEDHOU	B	28.15965967	23.214610001	1397.00	0.29	165								
SUMMARY:										Maximum:	41.50	13.32					
										Minimum:	41.50	3.69					
										Sum:							
										Average:	41.50	8.51					

SUMMARY:

Site Type:
B = Borehole

Nr. of sites: 4

Maximum: 41.50 13.32
Minimum: 41.50 3.69
Sum:
Average: 41.50 8.51

NOTE:
 "Yield" represents cumulative blow yield
 The recommended abstraction ("Rec. abs.")
 is based on a 24 hour duty cycle
 (based on test pumping result)



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WINSTON AYTON - TIME DEPENDENT CHEMISTRY REPORT

Site Identifier: 2823AAX0025 **Number:** SD2-GAA097 **Site Name:** FARM 440 PTN. MOEDHOU

Samp. Nr./Type	Date/Time samp.	pH	EC	TDS	Ca	Mg	Na	K	Si	Al	Fe	Mn	Cl	SO4	NO3 as N	F	T. Alk.
SD2GAA97	20130528 1430	7.28	97.6 †	680 †	93.7	71.1 †	35.7	1.94	25.5	< 0.05	< 0.05	< 0.05	67.6	44.6	12.3 †	0.282	424

Chemistry Standard: SABS for human consumption
† Value exceeds recommended maximum limit
‡ Value exceeds maximum allowable limit
! Value exceeds recommended minimum limit
j Value exceeds minimum allowable limit

Concentrations in [mg/l] where applicable
EC [mS/m]
Nitrate as N

Sample Type Code Explanation:
D: Drinking water
E: Effluent
K: Sewage
O: Organic
P: Pressed or pellet
R: Rock
S: Soil
X: Other source



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APPENDIX A

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