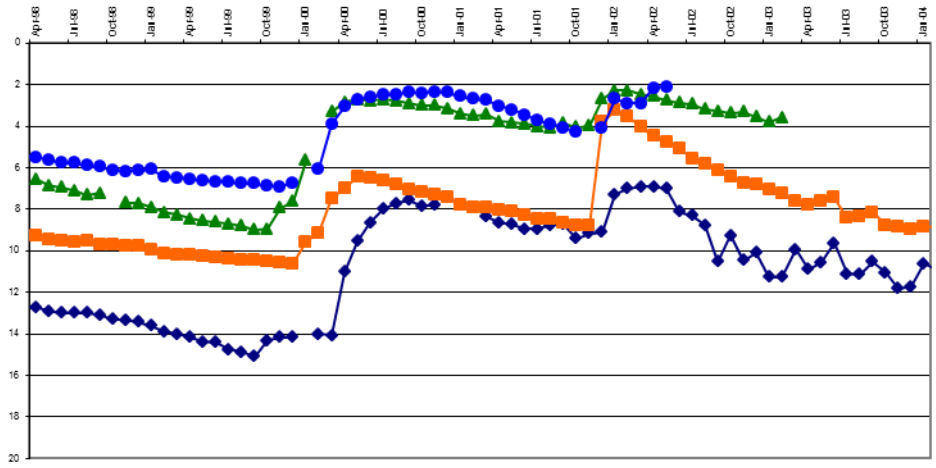
LIMPOPO REGION

DIRECTORATE
WATER REGULATION AND USE

STATUS REPORT ON
GROUNDWATER LEVELS & TRENDS
1 FEBRUARY 2012 – 1 FEBRUARY 2013



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MARCH 2013

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TABLE OF CONTENTS

LIST OF MAPS

LIST OF GRAPHS

LIST OF TABLES

SUMMARY

This report deals with the period representing the start to midway through the current wet season. Rainfall thus far varies over the province with respect to total recorded, intensity as well as period when it occurred. Extreme precipitation was recorded in the northern and north eastern parts of the Province and serious flooding occurred in some areas which prevented the collection of groundwater level data at some stations in these areas. The effect of the heavy rainfall on groundwater levels is very evident with levels rising dramatically over a short period of time. A 24m rise was observed at Tswera. Although most groundwater levels indicate a rise since the start of the rainy season it is not the case at all stations. A significant number, but not all, of stations not indicating a rise are however affected by abstraction.

Despite the widespread but varying recharge of groundwater indicated, it is mostly not sufficient to reverse the underlying long-term trend of slow decline. Comparing current groundwater levels with that of the corresponding time last year indicate that most levels are currently still somewhat lower than in February 2012. The overall decline is generally not large and is considered to be part of a long-term cycle. Available long-term data clearly indicate that the current situation represent a healthy resource as far as quantity is concerned.

Local deviations to the general trend do occur and serious impacts by abstraction are notable in some localities and closer monitoring and sound aquifer management is required in these areas.

A serious matter of concern is the growing number of monitoring stations being forcibly opened, the monitoring instruments removed and pumps installed. Despite special locking lids, concrete construction around the boreholes, identification plates and awareness programs, incidents are increasing.

1. BACKGROUND

Groundwater level data is collected and evaluated quarterly from monitoring stations distributed over the Limpopo Province. Short and long-term groundwater level trends and rainfall distribution over the Limpopo Province (MAP 1) is discussed.

Groundwater level data was collected during February 2013. All water level values used are that on the 1st of each month in question and taken at 12H00 in the case of electronic data. Where electronic data is not available the hand measurement taken during the site visit is used. Due to flooded areas as well as roads and bridges washed away during recent flooding a number of monitoring stations could not be visited.

2. GROUNDWATER LEVELS

2.1 GROUNDWATER LEVEL TREND; NOVEMBER 2012 TO FEBRUARY 2013

The majority of stations indicate a rise in water level since the start of the rainy season indicating that the recent rains did result in some recharge. Recharge in the western part of the Province was limited as indicated by a number of stations still with lower water levels than at the start of the season. (MAP 2)

Depicting only those stations with higher water levels since the start of the rainy season, MAP 3 indicate that the magnitude of rise varies from a few centimetres to a number of metres. The highest rise in water level was recorded at Tswera. This area was identified as a potential red flag area due to fast declining water levels and a special monitoring project in the area is currently being established.

171 Of the stations visited have data for both dates, 32 of these (18.7%) indicate a decline in groundwater level with the average being -0.23m. 139 Stations (81.3%)recorded a rise in groundwater level with an average rise of 1.8m.

2.2 GROUNDWATER LEVEL TREND; FEBRUARY 2012 TO FEBRUARY 2013

From MAP 4 it can be noted that the majority of groundwater levels are currently lower than that of the corresponding time last year. The good recharge resulting from the very high rainfall recorded in the northern parts is evident from the concentration of higher groundwater levels in that area. This is a very positive trend as water levels in the area have been a matter of some concern for some time.

MAP 5 depicts the distribution and extent of water level decline of those stations with lower water level than the corresponding time last year. The decline at the majority of stations varies from 1.5 to 2metre. Due to the widespread abstraction of groundwater conditions can nowhere be classified as “Natural” and generally represent the combined effect of abstraction superimposed on the natural trend. Some stations however are directly influenced by nearby pumping, the effect of which overshadow or intensify the natural trend. A few of these is labelled on the map.

A groundwater level currently lower than measured last year does not necessarily indicate a worsening situation at that specific location. Numerous factors control the groundwater level behaviour, both natural and due to human activity and each case need to be evaluated individually. Examples are discussed under point "4.2"

165 Stations have data for the whole year. 95 (57%) of these have lower groundwater levels with an average decline of -0.7m, while the 70 stations (43%) indicate higher water levels.

More detail on the groundwater level behaviour over different periods the past year is presented in TABLES 1 TO 11

3. RAINFALL

The total rainfall recorded from November 2012 to end of January 2013 is depicted on Map 6. The correlation between higher rainfall areas and higher groundwater levels as discussed above can be seen from the high rainfall recorded especially in the north and north eastern parts.

The percentage of normal rainfall since July 2012 is presented on MAP 7 compiled by the South African Weather Services and also illustrates the above normal rainfall for the north and north eastern parts of Limpopo.

GRAPH 1 illustrates seasonal rainfall at some stations spread over the Province since 2010. The graphs for stations "Louis Trichardt" and "Tzaneen" clearly indicate the extreme high rainfall received in that areas compared to the past few seasons.

4. CURRENT GROUNDWATER LEVEL TRENDS; SOME EXAMPLES

4.1. RISING GROUNDWATER LEVELS; SEASONAL RECHARGE

4.1.1 GROUNDWATER LEVEL TREND AT STATION A6 PONTDRIFT (Locality indicated on MAP 3)

The response in groundwater level to recharge is indicated by GRAPH 2. A stable condition is indicated from November 2012 until approximately the 20th of January 2013 where after the groundwater level started to rise steeply. A rise of 2.6m occurred in 23 days.

4.1.2 GROUNDWATER LEVEL TREND AT STATION A6 VENETIA ROAD (Locality indicated on MAP 3)

This station is located 32 km south east from station A6Pontdrift and displays the same trend. (GRAPH 3) This response can be noted at most of the monitoring stations north of the Soutpansberg but the magnitude of the rise diminishes southward towards the mountain. An even greater rise is displayed at some stations to the east.

4.1.3 GROUNDWATER LEVEL TREND AT STATION A9 TSWERA (Locality indicated on MAP 3)

The most dramatic rise in groundwater level since the rains is displayed by the graph for station A9 Tswera which recorded a rise of 24 55m rise at one point. (GRAPH 4) The water levels in this area raised concern for some time now and a special monitoring project is currently being implemented there. The recent heavy rains resulting in some severe flood damage also resulted in the groundwater levels returning to original levels some years ago.

4.2. LOWER GROUNDWATER LEVELS; VARIOUS FACTORS

As mentioned above (2.2) a level lower than that recorded the previous year does not necessarily indicate a bad situation and should be evaluated case specific. Below are some examples of different situations where lower water levels are not considered to be a concern.

4.2.1 GROUNDWATER LEVEL TREND AT STATION A4 NABOOM-VAALWATER (Locality indicated on MAP 5)

The current water level is 2.8m lower than the corresponding time last year. Only considering this figure it would seem to be a bad situation but studying GRAPH 5 the following can be said:

The current level is considerably higher than 3 years ago and about the same as 2 years ago. Good rainfall seasons were experienced the past 3 seasons with very high rainfall in December 2011 as well as December 2012. It is common to have some time lag between rainfall and recharge and it can be seen from this graph as well. The high December rainfall received the past 2 years resulted in rising levels by January and later amplified by some additional rains. The cumulative effect was a constantly rising trend since December 2009 reaching a peak by February 2012, since when the level began to decline from what may most probably be an “abnormal” high to the “normal”. Rainfall this season was received later than the previous 2 seasons and also less thus far. The February 2013 level however already represent a rising level since January and may rise some more even if no rainfall is received.

It can be concluded that despite a lower current level than a year ago, current levels still indicate a very healthy situation.

The land use is mostly game farming and cattle farming to a lesser extent.

4.2.2 GROUNDWATER LEVEL TREND AT STATION B5 MODDERFONTEIN (Locality indicated on MAP 5)

This station is located on a dolomitic area and the current water level is 3.9m lower than last year (GRAPH 7) Very long-term data is available for the station

and large steep seasonal fluctuations characterise the trend and is normal for the geological setting. From the graph it is clear that despite the decline, the water level is still in an excellent situation if the long-term trend is considered.

4.2.3 GROUNDWATER LEVEL TREND AT STATION BRANDWAG

Data and trend for this station is not normal part of this report as it is a part of the Kruger National Park project. It is included however to illustrate, as far is still possible, the "natural" slow declining trend in water levels generally as discussed in a number of reports for some time now. The station is located in an area of no impact within a 50+ km radius and is considered to represent natural conditions. The decline is 1.9m over a period of three and a half years, an average of 4cm/month. This decline is considered to be part of a normal medium-long-term trend.

5. IMPACTS OF ABSTRACTION ON GROUNDWATER LEVELS

5.1 GROUNDWATER LEVEL TREND AT STATION A7 PAPKUIL (Locality indicated on MAP 5)

The major land use in this area is irrigation farming with cattle on lesser extent. The water level indicates a constant relative steep declining trend since end of October 2009. Some pumping effect is notable on inset graph which displays the hourly measured water levels over a 1 month period. From knowledge of the area of the station it is known that after some years of inactivity extensive irrigation has commenced again in 2009. It is clear that the trend displayed is the combined effect of the existing irrigation amplified by the new nearby abstraction.

The 4.6m lower water level since a year ago is not a completely natural decline and would bear monitoring.

5.2 GROUNDWATER LEVEL TREND AT STATION A6 TOLWE (Locality indicated on MAP 5)

The decline the past year is only 1.8 m, as is the case with a large number of stations in the Province, but the current water level represents the level after some recent recharge (GRAPH 8). The decline has been constant for some time now and the level has lowered by 5m in the past 4 years which is somewhat above the average. Although irrigation does not take place immediate adjacent to the monitoring station, there is a number irrigation schemes in the area. The combined effect of these is displayed by the graph.

5.3 GROUNDWATER LEVEL TREND AT STATION A7 LANGJAN NATURE RESERVE (Locality indicated on MAP 5)

The water level trend at A7 Lang Jan Nature Reserve is much the same at that displayed at A6Tolwe which is an accelerated rate of decline over some time

(GRAPH 10). Extensive irrigation is taking place in the area and the effect on groundwater level is obvious.

5.3 GROUNDWATER LEVEL TREND AT STATION A7 ZANDRIVIERSPOORT 3 (Locality indicated on MAP 5)

This station is only 5km north of A7Papkuil and directly affected by nearby abstraction (Graph 11). The abstraction is however not large-scale and serves as domestic water supply to 5 households. On the inset graph, depicting hourly measurement over a 1 month period, the pumping effect is clearly visible. In contrast to the trend at A7 Papkuil, the overall trend is a rising one despite the abstraction. This clearly indicates the difference between over abstraction and sustainable use.

6. IMPORTANCE OF GROUNDWATER MANAGEMENT

The graphs above used to illustrate the effects of abstraction highlight the importance of aquifer management. If abstraction volumes and water level trends are not monitored it is impossible to know how the source is reacting to abstraction and whether it can be sustained. Failure would come as a surprise and usually the source is blamed as unreliable while poor management is the actual reason for failure.

The sub directorate Water Resource Information Management is striving to maintain a reliable network of monitoring stations to assist in the evaluation of regional groundwater level trends. A matter of serious concern is the growing number of stations taken over and equipped with pumps without consideration to the ownership, purpose or even the suitability of the borehole as production borehole.

Some examples:

- B7 Bismarck: A steel hut was constructed on the borehole but no pump was ever installed. The borehole is in any case not fit for production. It took 30 months of negotiations to get the keys to the hut and gain access again. By that time the data logger has failed and no data could be retrieved. If the Rand value of data is calculated the loss of 30 months data runs into the hundreds of thousands. Not to mention the inability to evaluate the groundwater situation for more than 2 years.
- B8Nwamitwa: The same happened here with the addition that a pump was installed despite the fact that the borehole yield is not sufficient to be economically used and the water quality was never analysed. The pump was never used and apparently the engine disappeared. Negotiations to have the pump removed have been on-going for 21 months and a promise was now given that the pump will be removed. Up to now almost 2 years data lost. The data loggers valued at R16 000 could not be retrieved and it is unknown what happened to it.
- B8 Mbaula: The lid was cut open and a pump installed for cattle drinking water. The loggers were retrieved but the pump is still in the hole after 9 months. A

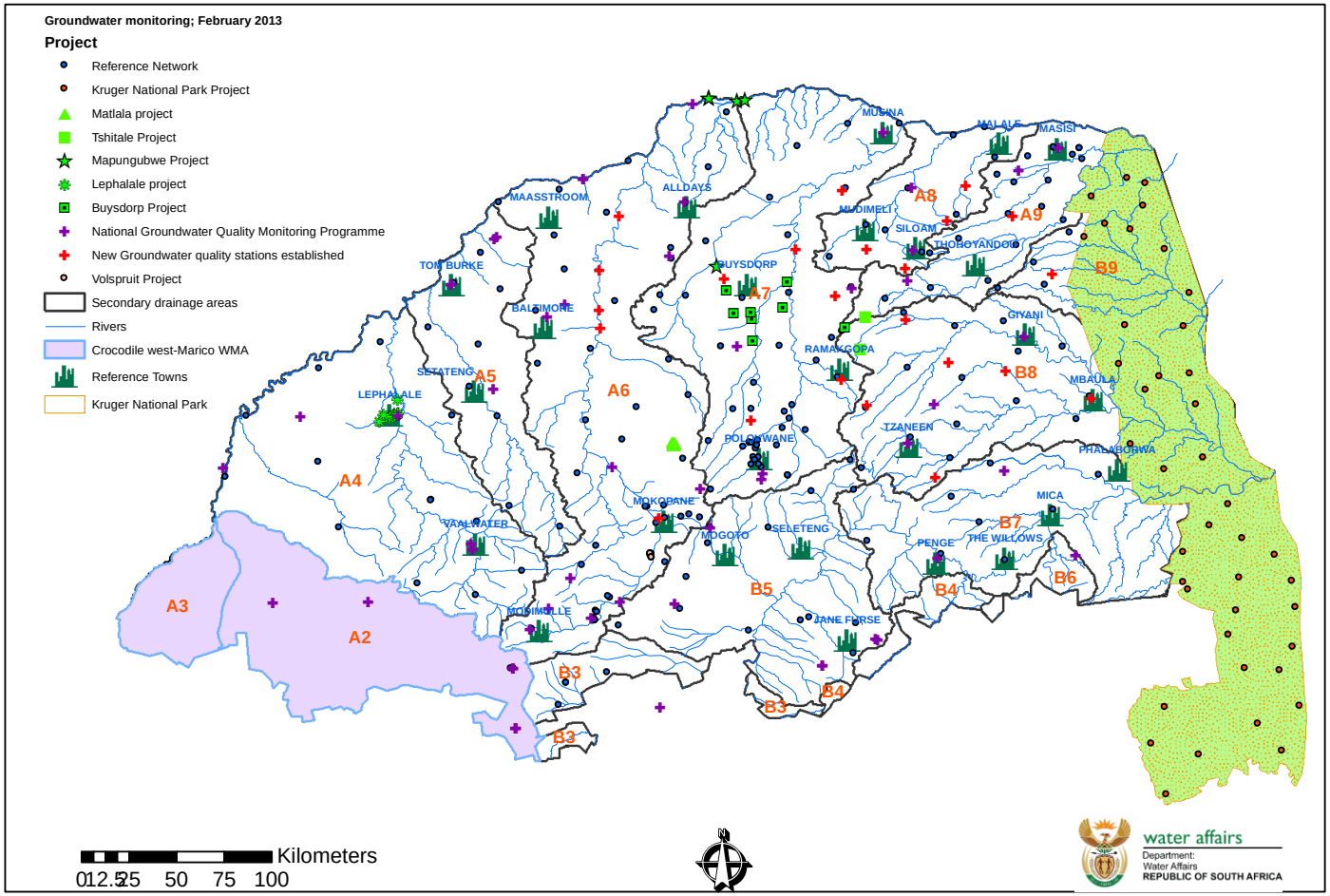
replacement hole was drilled and will be equipped with data loggers. On a small aluminium plate on top of the lid it is indicated that the borehole is a Water Affairs monitoring station, the station name and 4 different telephone numbers that can be contacted for more information but nobody bothered.

7. ACKNOWLEDGEMENTS

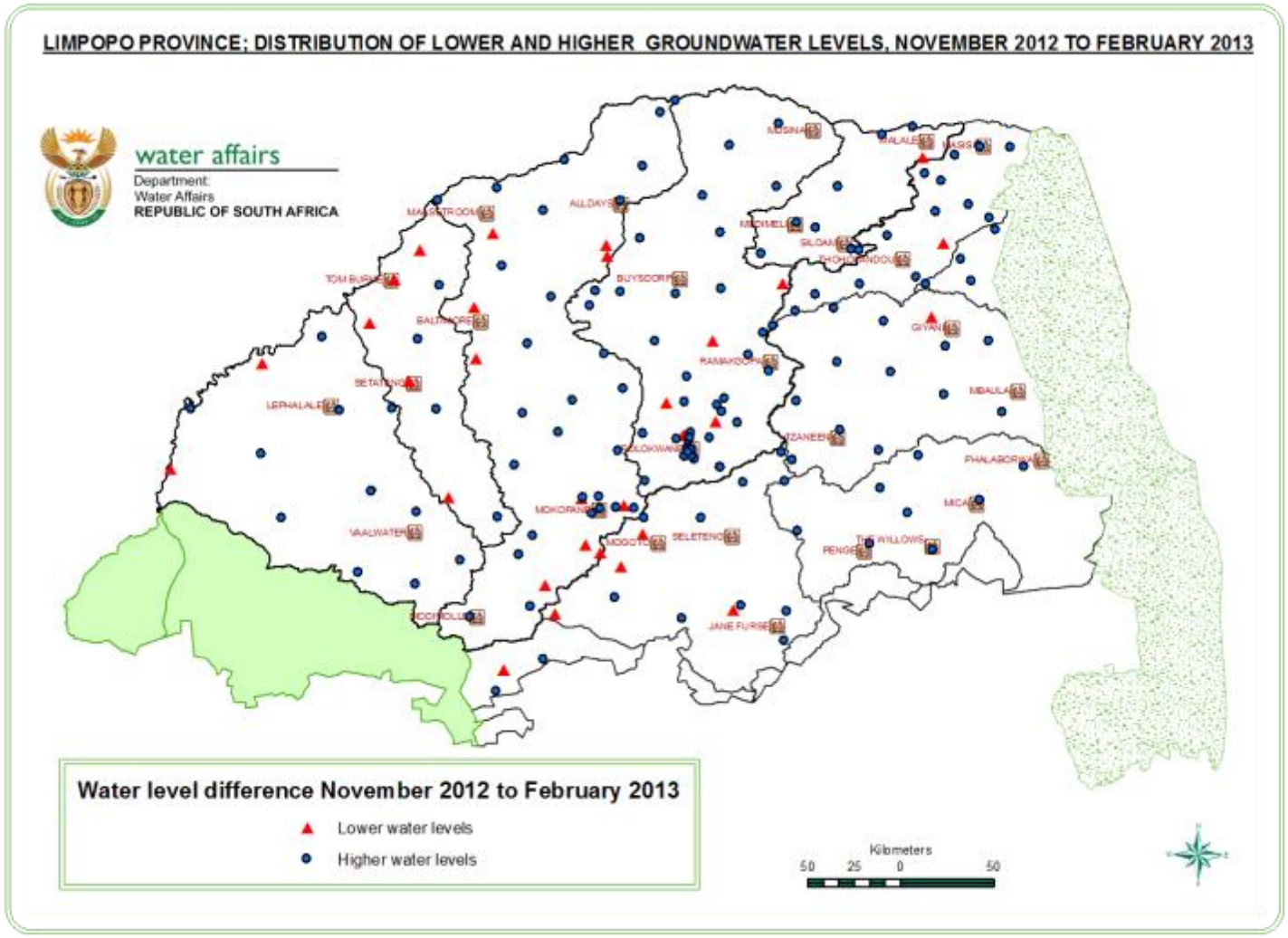
7.1. info@weathersa.co.zahttp://www.weathersa.co.za/

(Rainfall data for Limpopo Province as well as map 7)

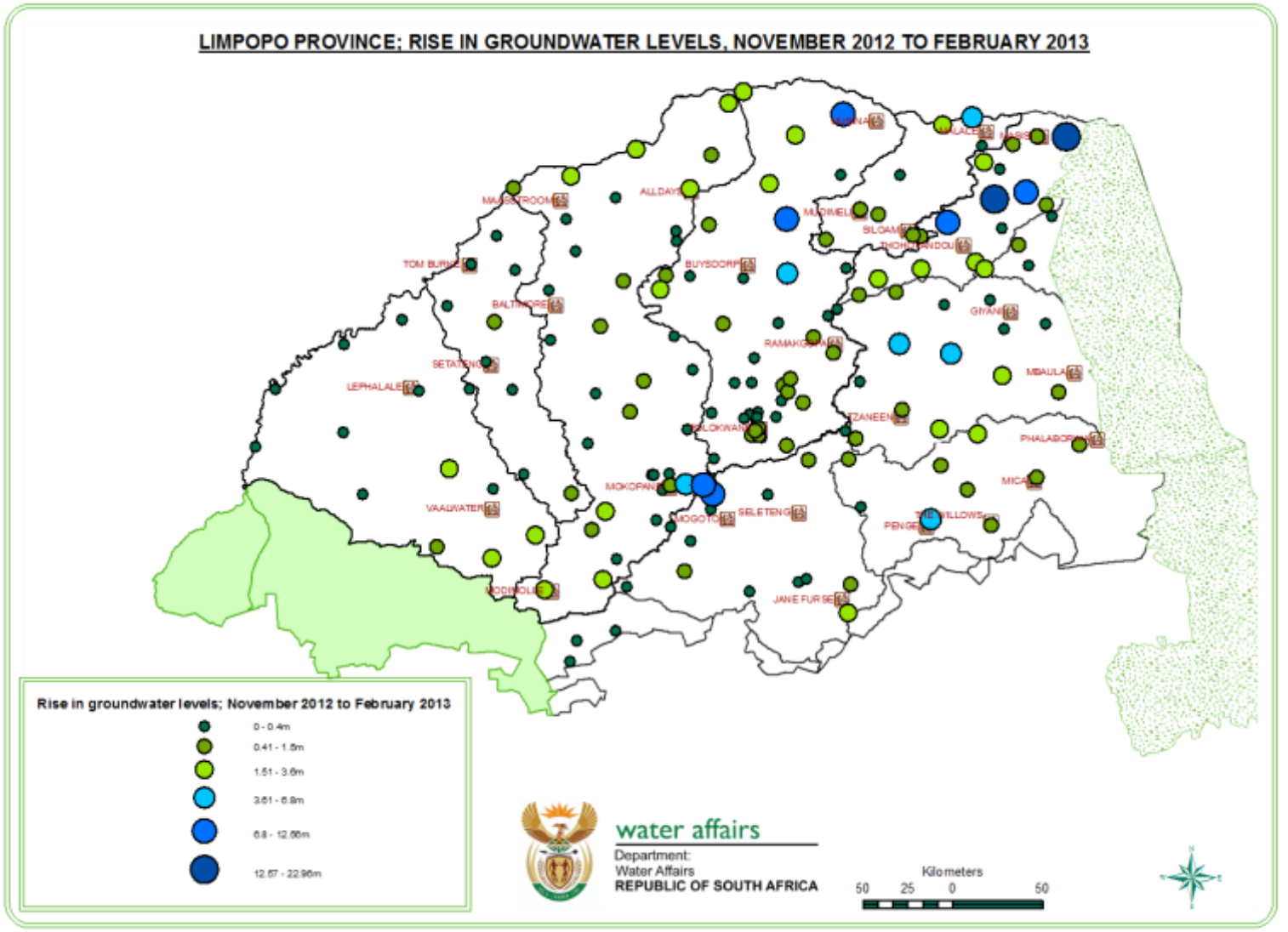
LIMPOPO GROUNDWATER LEVEL MONITORING STATIONS; FEBRUARY 2013



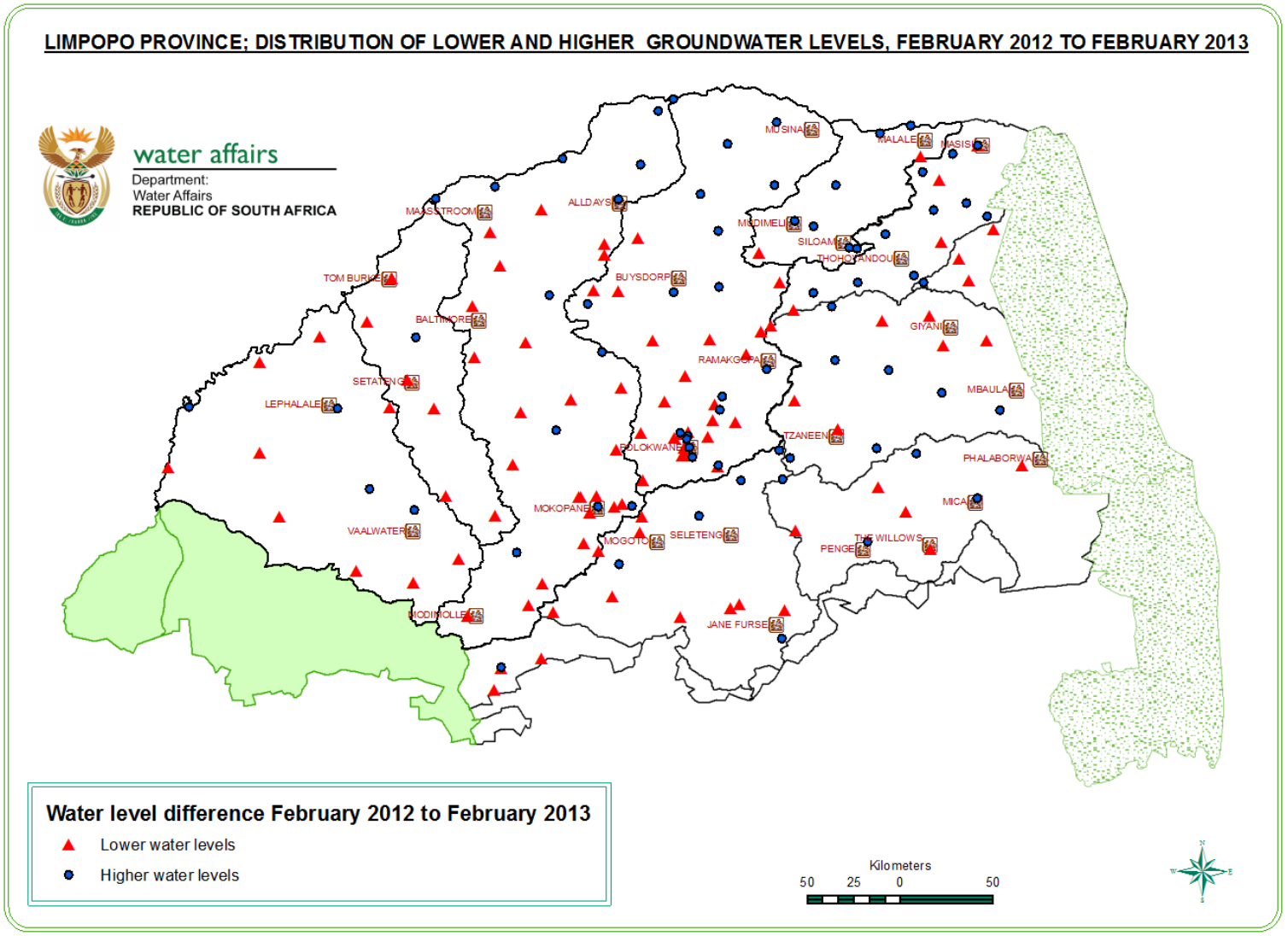
MAP 1


LIMPOPO PROVINCE: DISTRIBUTION OF LOWER AND HIGHER GROUNDWATER LEVELS, NOVEMBER 2012 TO FEBRUARY 2013
water affairs
Department:
Water Affairs
REPUBLIC OF SOUTH AFRICA
Water level difference November 2012 to February 2013
Lower water levels
Higher water levels
Kilometers
50 25 0 50

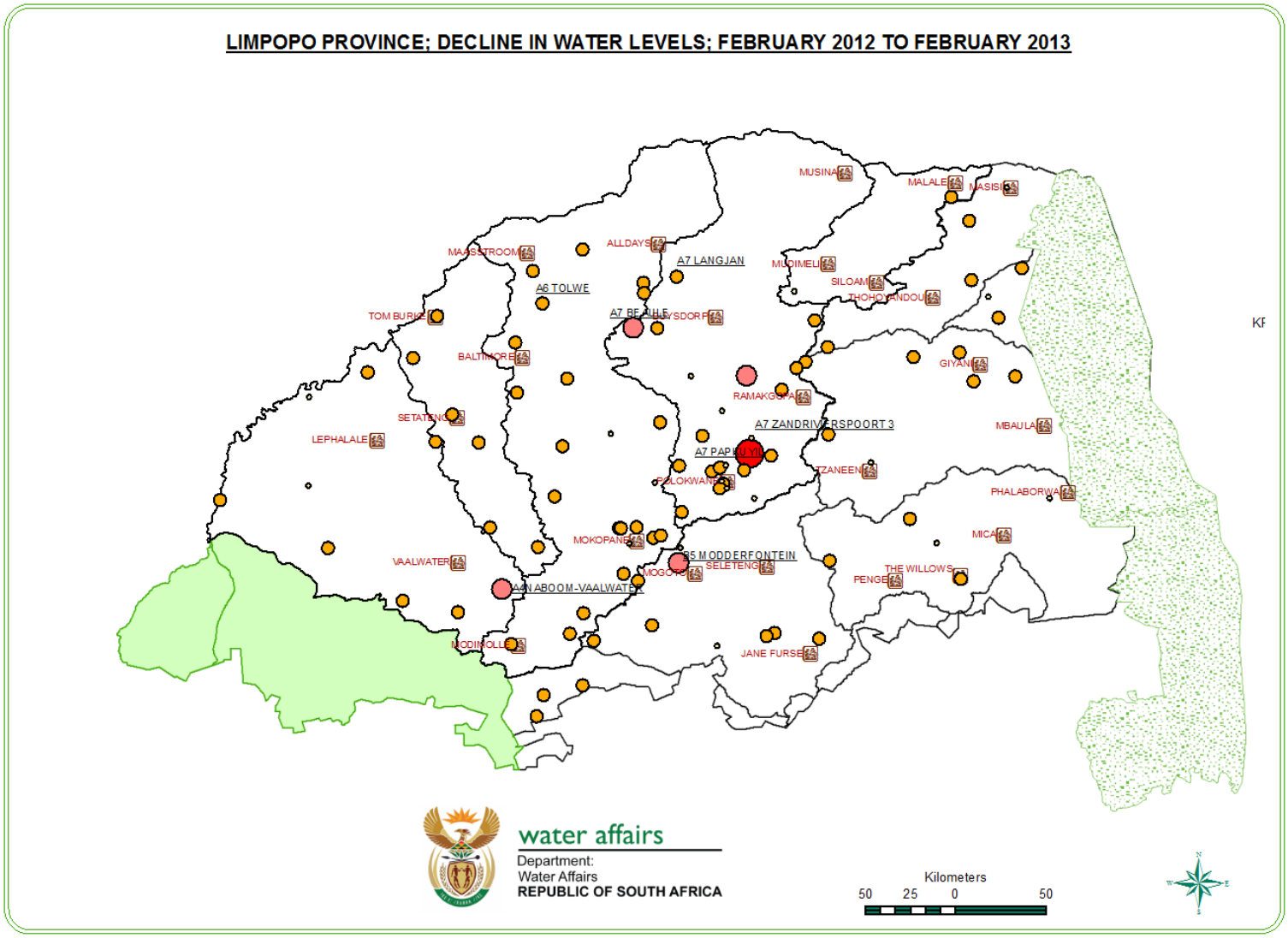
MAP 2


LIMPOPO PROVINCE; RISE IN GROUNDWATER LEVELS, NOVEMBER 2012 TO FEBRUARY 2013
Rise in groundwater levels; November 2012 to February 2013
0 - 0.4m
0.41 - 1.5m
1.51 - 3.6m
3.61 - 6.8m
6.8 - 12.56m
12.57 - 22.96m
water affairs
Department:
Water Affairs
REPUBLIC OF SOUTH AFRICA
Kilometers
50 25 0 50

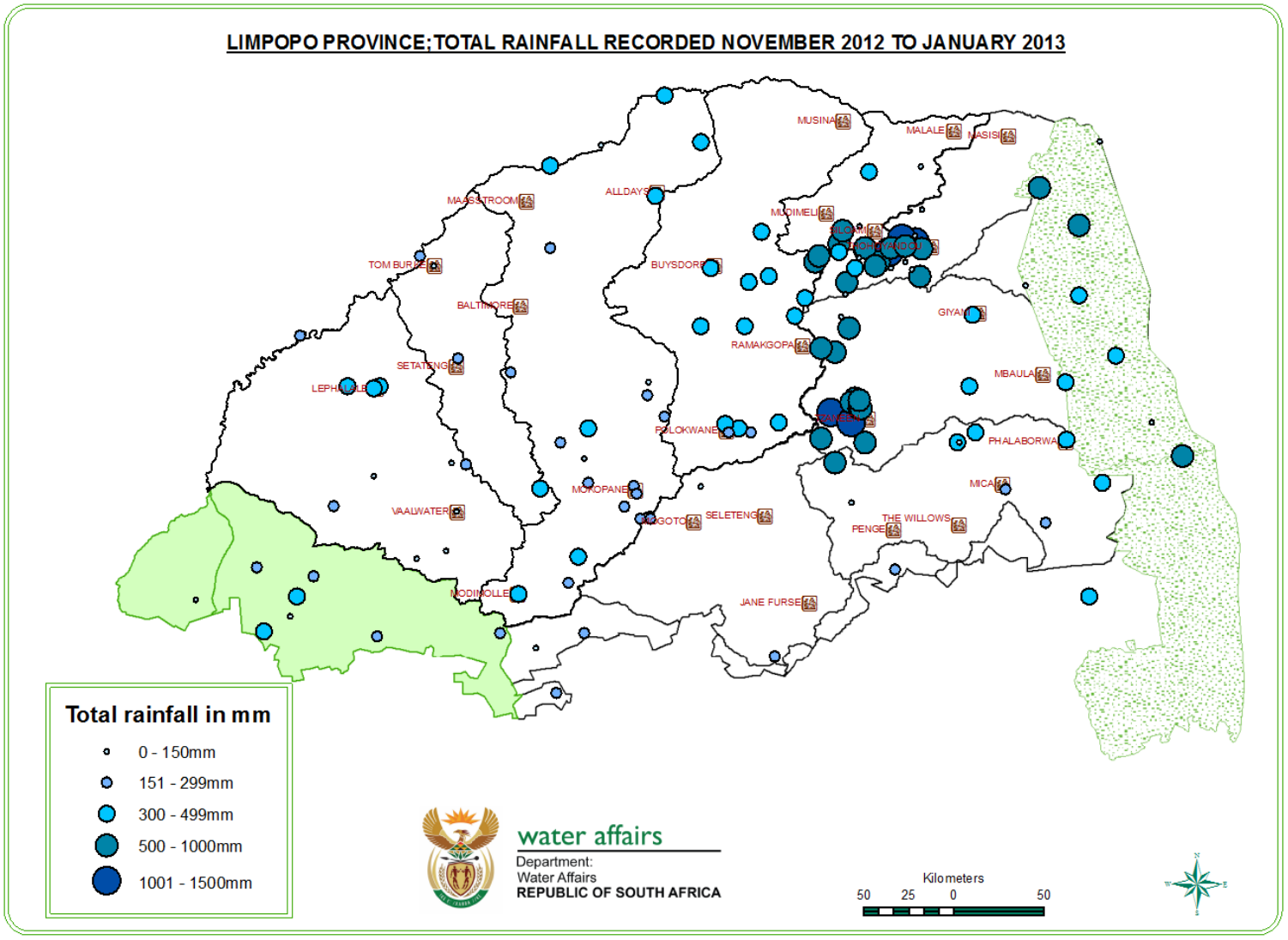
MAP 3


LIMPOPO PROVINCE; DISTRIBUTION OF LOWER AND HIGHER GROUNDWATER LEVELS, FEBRUARY 2012 TO FEBRUARY 2013
water affairs
Department:
Water Affairs
REPUBLIC OF SOUTH AFRICA
MUSINA
MALALE
MASISI
MASSTROOM
ALLDAYS
MODIMELE
SILOAM
THOHOYANDOU
TOM BURKE
BUYSDORP
BALTIMORE
GIYANI
RAMAKGOPA
SETATENG
MBAULA
LEPHALALE
TZANEEN
POLOKWANE
PHALABORWA
MOKOPANE
MICA
VAALWATER
SELETENG
MOGOTO
THE WILLOWS
PENGE
MODIMOLLE
JANE FURSE
Water level difference February 2012 to February 2013
Lower water levels
Higher water levels
Kilometers
50 25 0 50

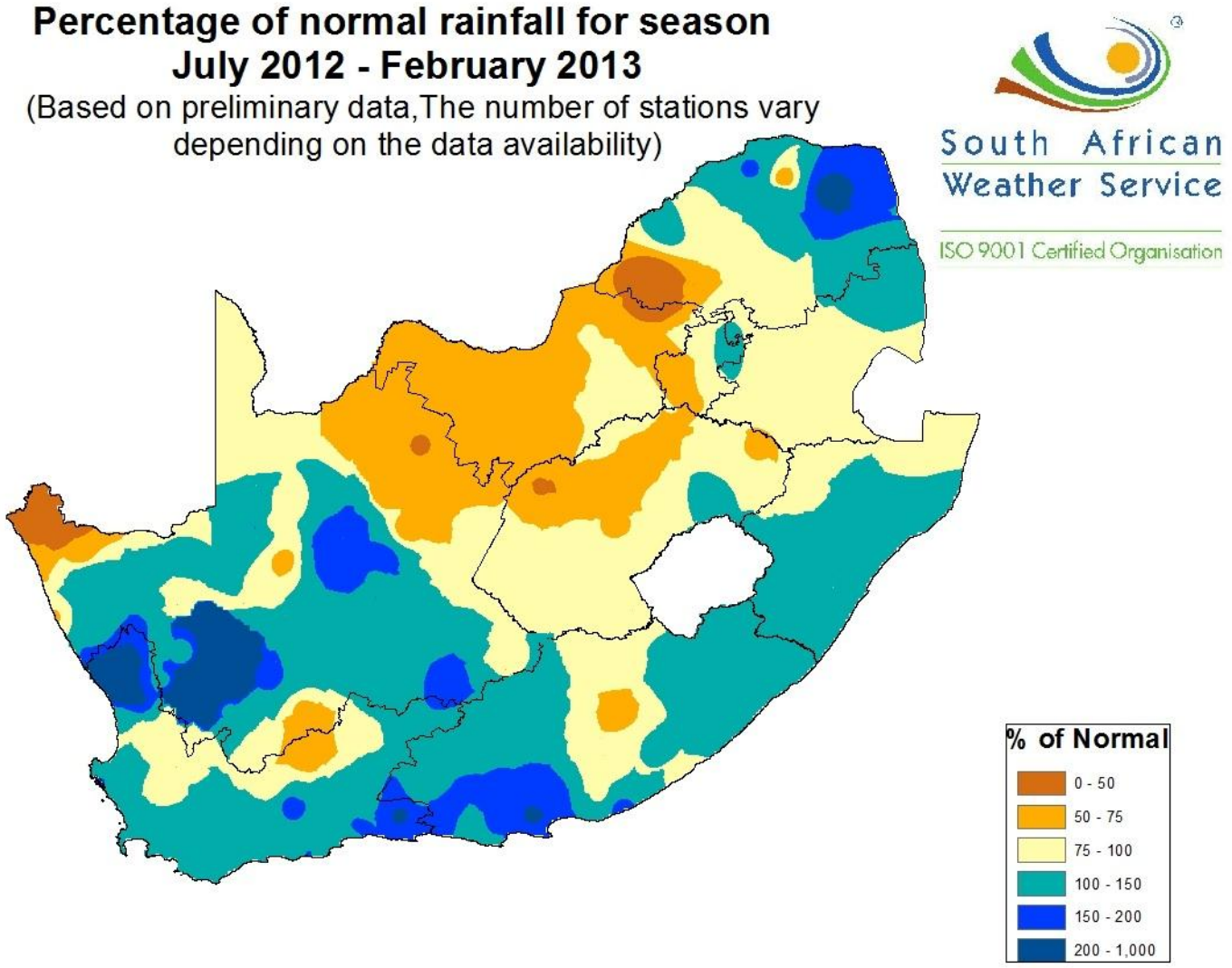
MAP 4


LIMPOPO PROVINCE; DECLINE IN WATER LEVELS; FEBRUARY 2012 TO FEBRUARY 2013
MUSINA
MALALE
MASISI
ALLDAYS
MASSTROOM
A7 LANGJAN
MUDIMELI
SILOAM
THOHOYANDOU
A6 TOLWE
TOM BURKE
A7 BEAULIEU
GIYANI
BALTIMORE
RAMAKGOPA
SETATENG
A7 ZANDRIVIERSPOORT 3
MBAULA
LEPHALALE
A7 PAPIONYI
TZANEEN
PHALABORWA
MOKOPANE
MICA
35 MODDERFONTEIN
VAALWATER
SELETENG
THE WILLOWS
PENGE
AAN ABOOM-VAALWATER
JANE FURSE
water affairs
Department:
Water Affairs
REPUBLIC OF SOUTH AFRICA
Kilometers
50 25 0 50

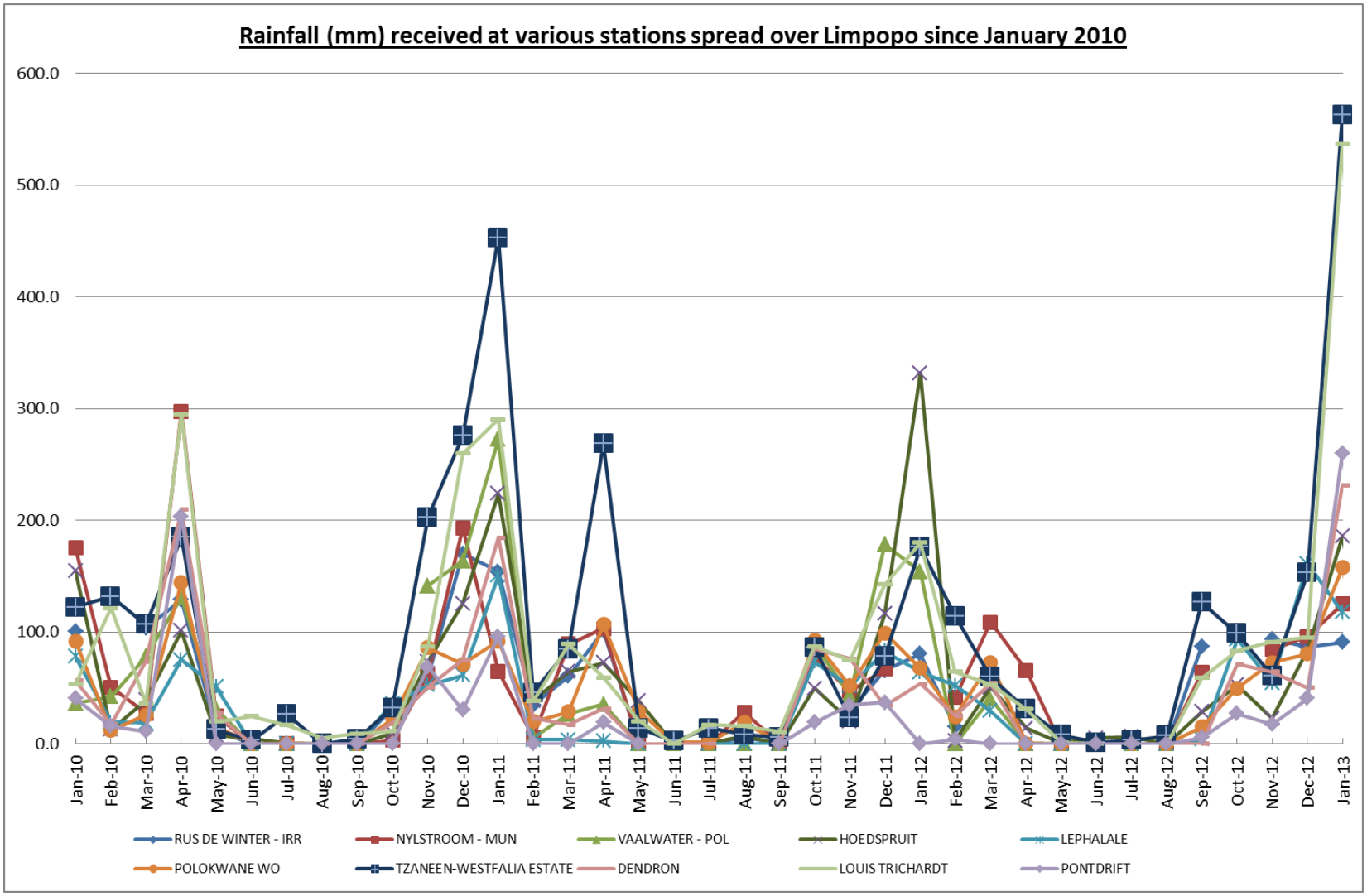
MAP 5


LIMPOPO PROVINCE;TOTAL RAINFALL RECORDED NOVEMBER 2012 TO JANUARY 2013
MUSINA
MALALE
MASISI
MASEBTROOM
ALLDAYS
MUDIMELI
TOM BURKE
BUYSDORP
BALTIMORE
GIYANI
RAMAKGOPA
SETATENG
LEPHALALE
MBAULA
POLOKWANE
PHALABORWA
MOKOPANE
MICA
VAALWATER
MOGOTO
SELETENG
THE WILLOWS
PENGE
MODIMOLLE
JANE FURSE
Total rainfall in mm
0 - 150mm
151 - 299mm
300 - 499mm
500 - 1000mm
1001 - 1500mm
water affairs
Department:
Water Affairs
REPUBLIC OF SOUTH AFRICA
Kilometers
50 25 0 50

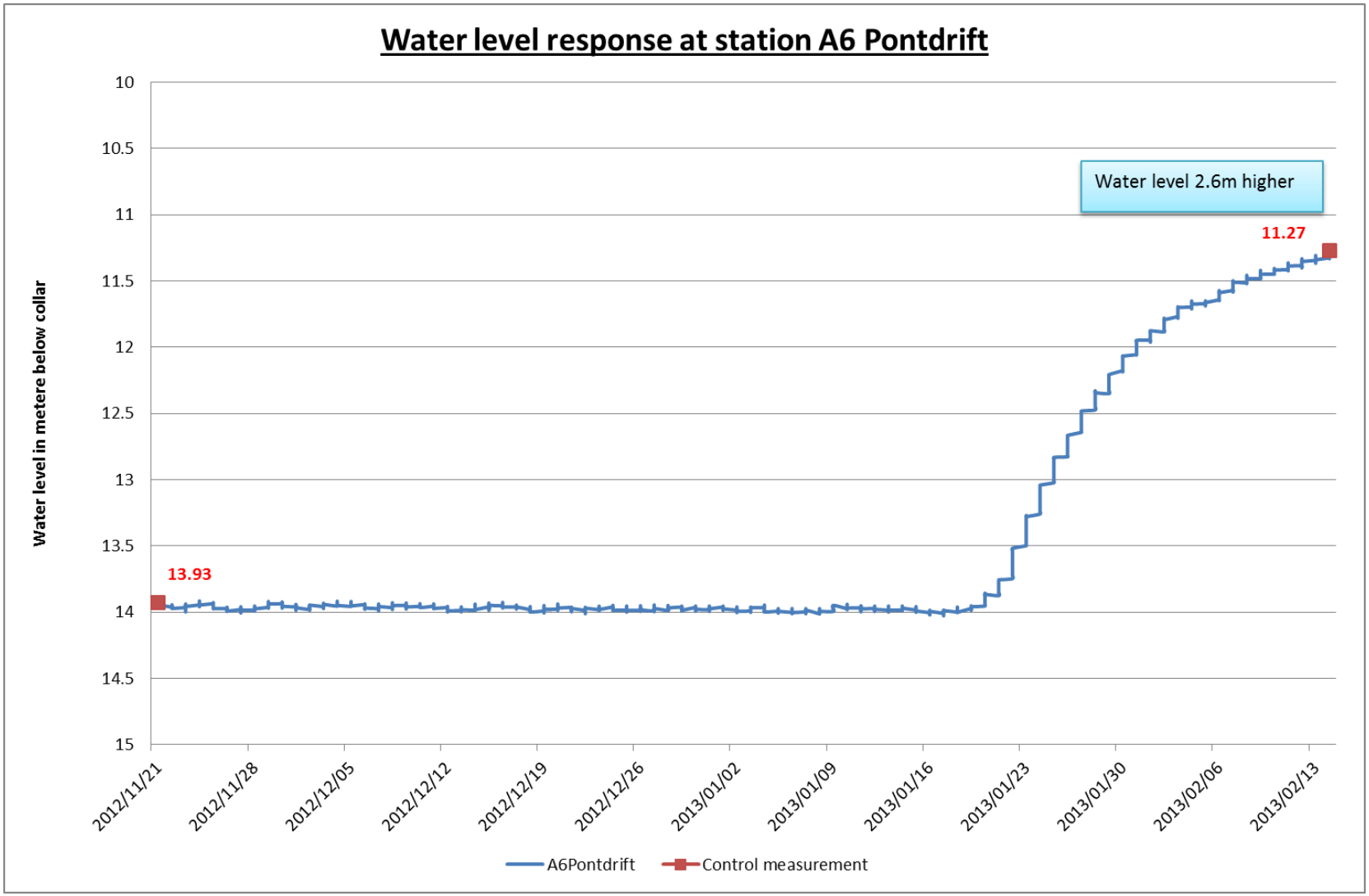
MAP 6


Percentage of normal rainfall for season
July 2012 - February 2013
(Based on preliminary data,The number of stations vary depending on the data availability)
South African Weather Service
ISO 9001 Certified Organisation
% of Normal
0 - 50
50 - 75
75 - 100
100 - 150
150 - 200
200 - 1,000

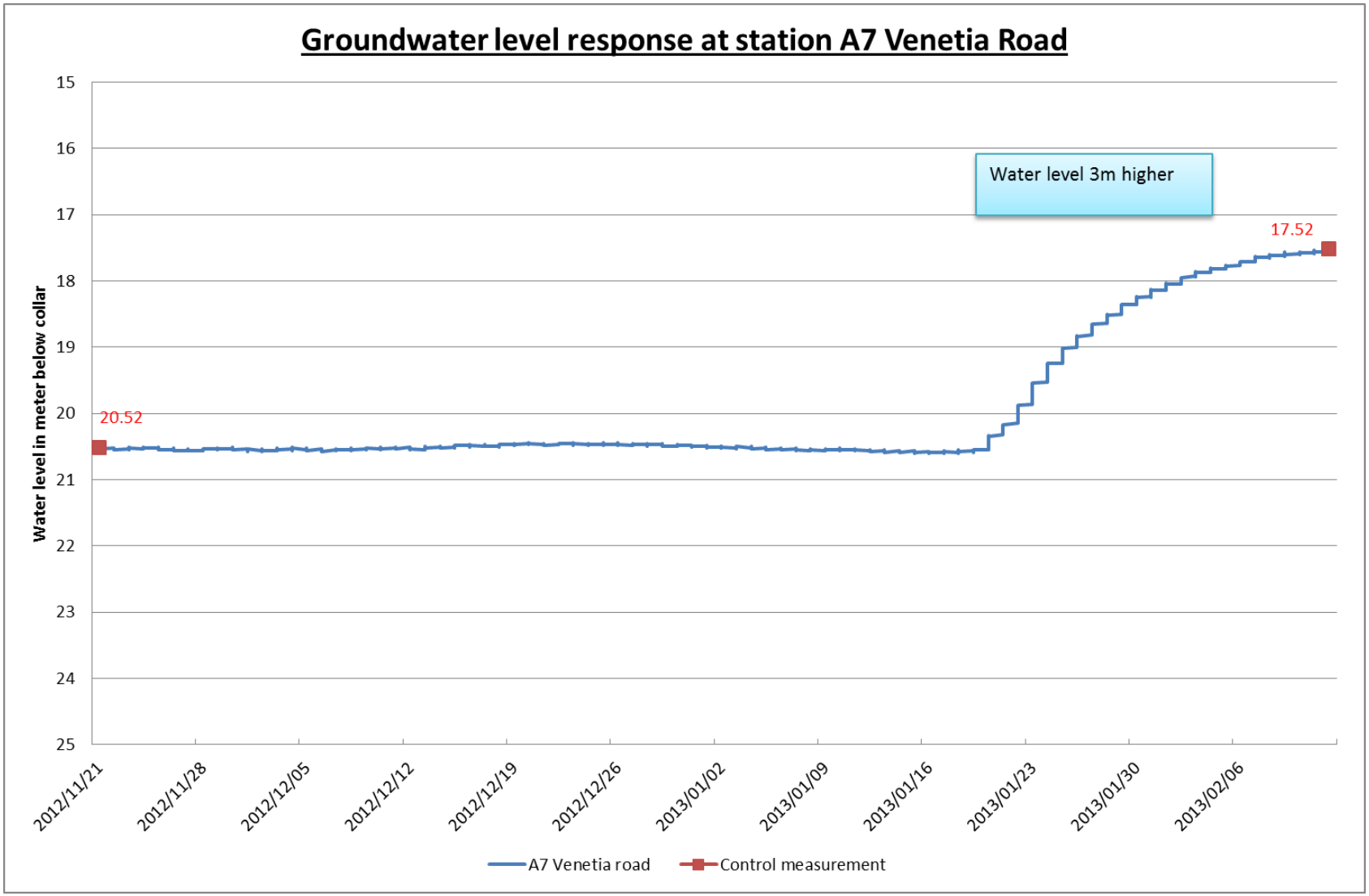
MAP 7


Rainfall (mm) received at various stations spread over Limpopo since January 2010
600.0
500.0
400.0
300.0
200.0
100.0
0.0
Jan-10
Feb-10
Mar-10
Apr-10
May-10
Jun-10
Jul-10
Aug-10
Sep-10
Oct-10
Nov-10
Dec-10
Jan-11
Feb-11
Mar-11
Apr-11
May-11
Jun-11
Jul-11
Aug-11
Sep-11
Oct-11
Nov-11
Dec-11
Jan-12
Feb-12
Mar-12
Apr-12
May-12
Jun-12
Jul-12
Aug-12
Sep-12
Oct-12
Nov-12
Dec-12
Jan-13
RUS DE WINTER - IRR
NYLSTROOM - MUN
VAALWATER - POL
HOEDSPRUIT
LEPHALALE
POLOKWANE WO
TZANEEN-WESTFALIA ESTATE
DENDRON
LOUIS TRICHARDT
PONTDRIFT

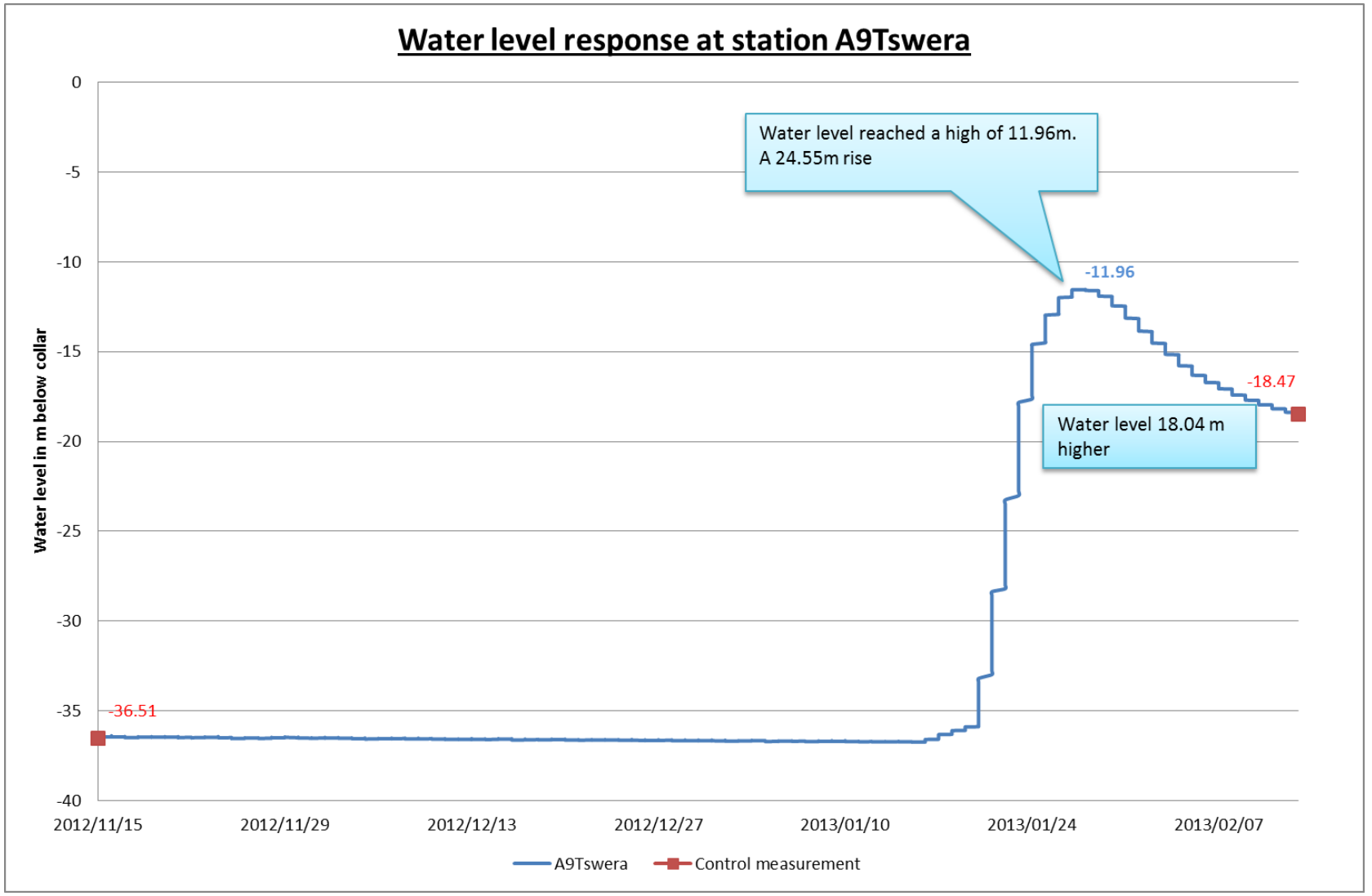
GRPAH 1


Water level response at station A6 Pontdrift
Water level in metere below collar
10
10.5
11
11.5
12
12.5
13
13.5
14
14.5
15
Water level 2.6m higher
11.27
13.93
2012/11/21
2012/11/28
2012/12/05
2012/12/12
2012/12/19
2012/12/26
2013/01/02
2013/01/09
2013/01/16
2013/01/23
2013/01/30
2013/02/06
2013/02/13
A6Pontdrift
Control measurement

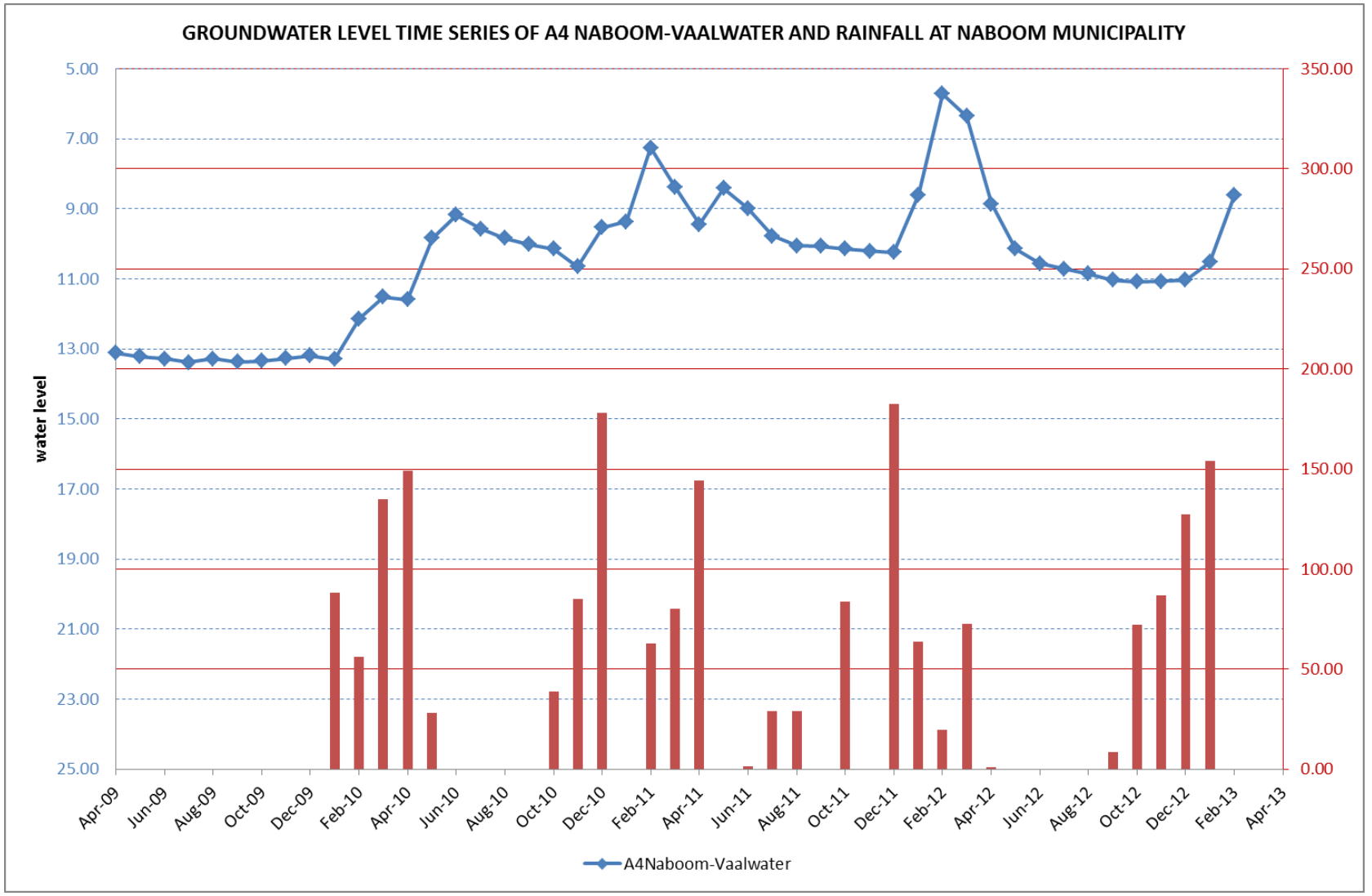
GRAPH 2


Groundwater level response at station A7 Venetia Road
Water level in meter below collar
15
16
17
18
19
20
21
22
23
24
25
Water level 3m higher
17.52
20.52
2012/11/21
2012/11/28
2012/12/05
2012/12/12
2012/12/19
2012/12/26
2013/01/02
2013/01/09
2013/01/16
2013/01/23
2013/01/30
2013/02/06
A7 Venetia road
Control measurement

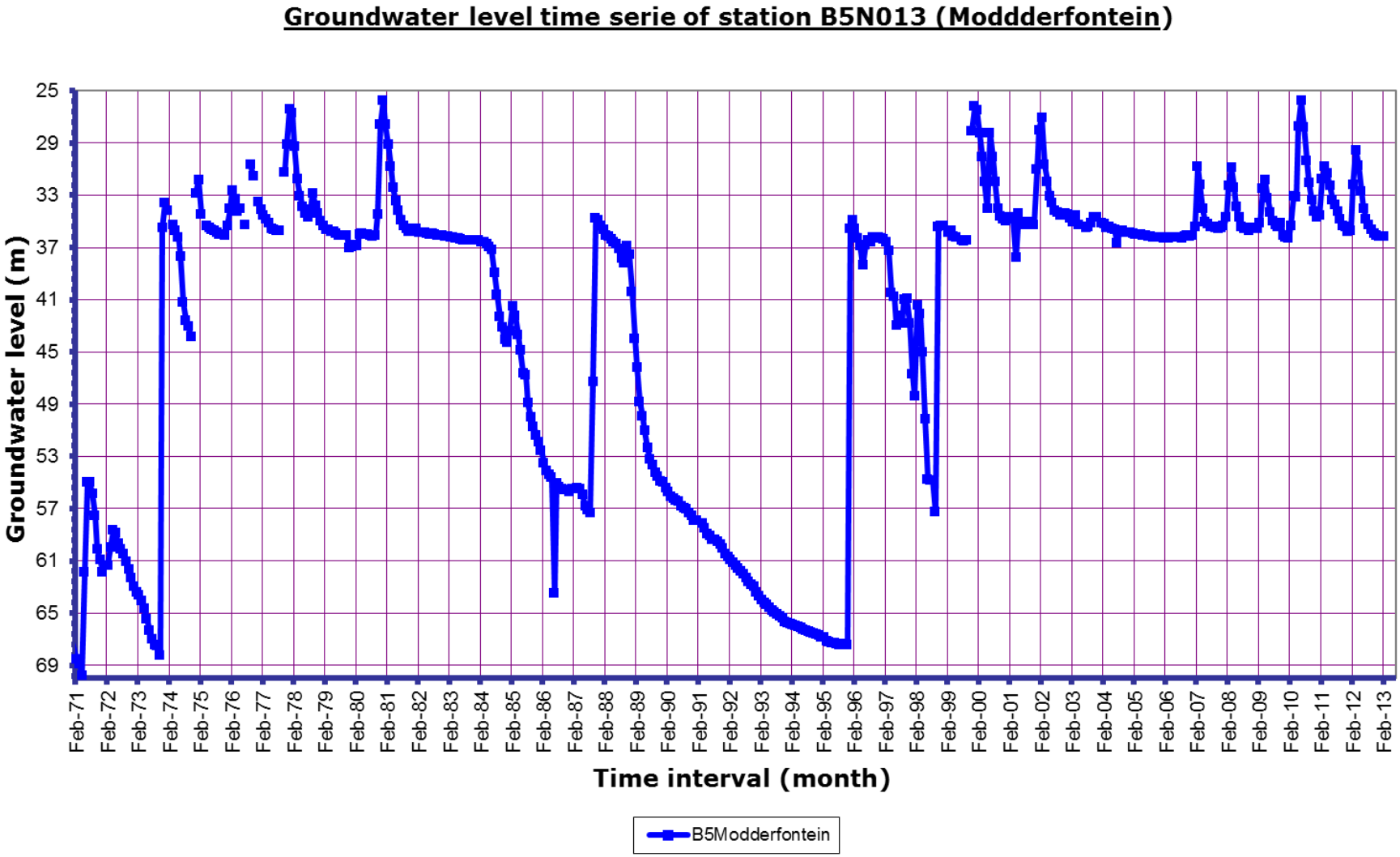
GRAPH 3


Water level response at station A9Tswera
Water level in m below collar
0
-5
-10
-15
-20
-25
-30
-35
-40
2012/11/15
2012/11/29
2012/12/13
2012/12/27
2013/01/10
2013/01/24
2013/02/07
Water level reached a high of 11.96m.
A 24.55m rise
-11.96
-18.47
Water level 18.04 m higher
-36.51
A9Tswera
Control measurement

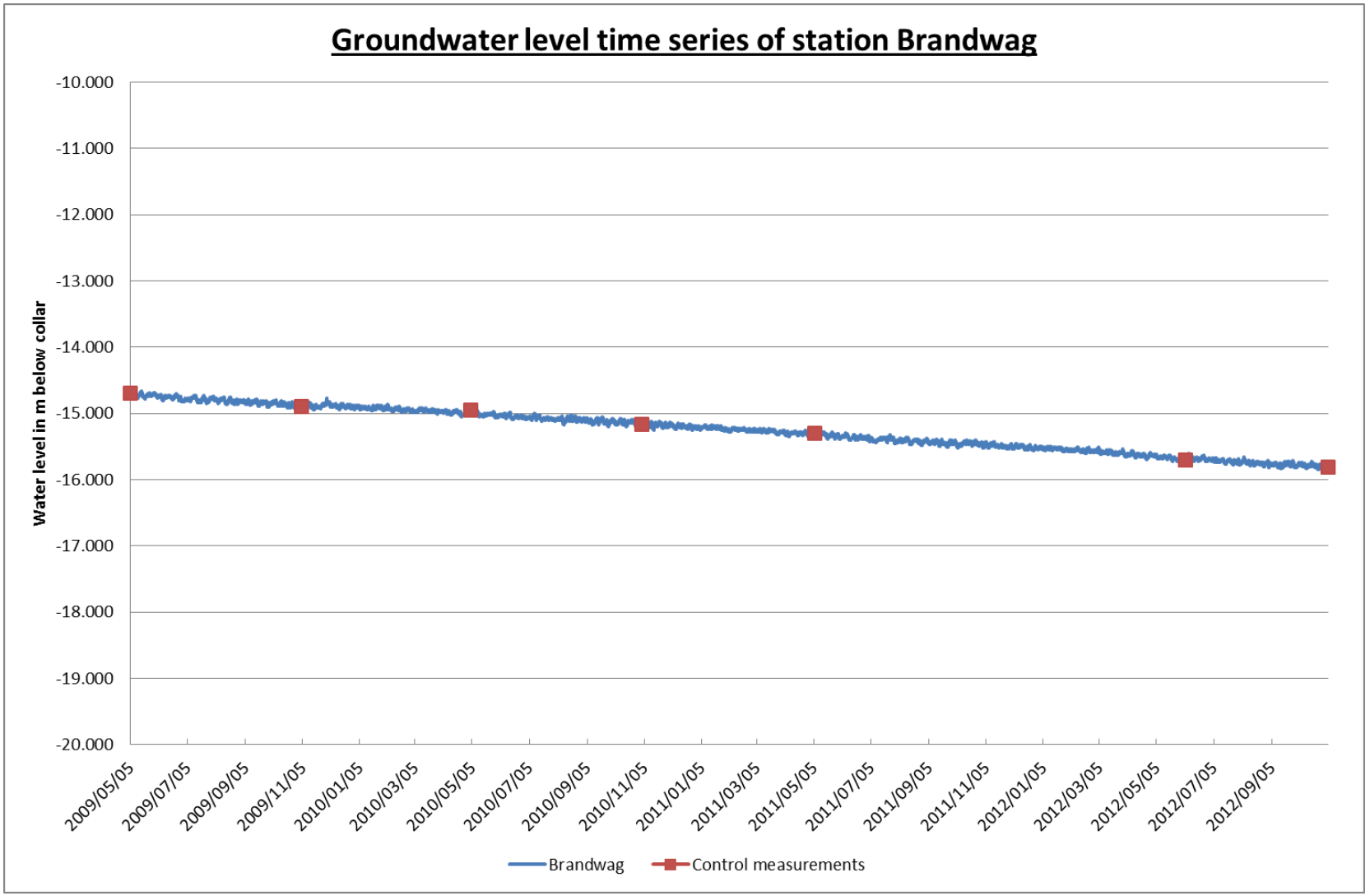
GRAPH 4


GROUNDWATER LEVEL TIME SERIES OF A4 NABOOM-VAALWATER AND RAINFALL AT NABOOM MUNICIPALITY
water level
5.00
7.00
9.00
11.00
13.00
15.00
17.00
19.00
21.00
23.00
25.00
350.00
300.00
250.00
200.00
150.00
100.00
50.00
0.00
Apr-09
Jun-09
Aug-09
Oct-09
Dec-09
Feb-10
Apr-10
Jun-10
Aug-10
Oct-10
Dec-10
Feb-11
Apr-11
Jun-11
Aug-11
Oct-11
Dec-11
Feb-12
Apr-12
Jun-12
Aug-12
Oct-12
Dec-12
Feb-13
Apr-13
A4Naboom-Vaalwater

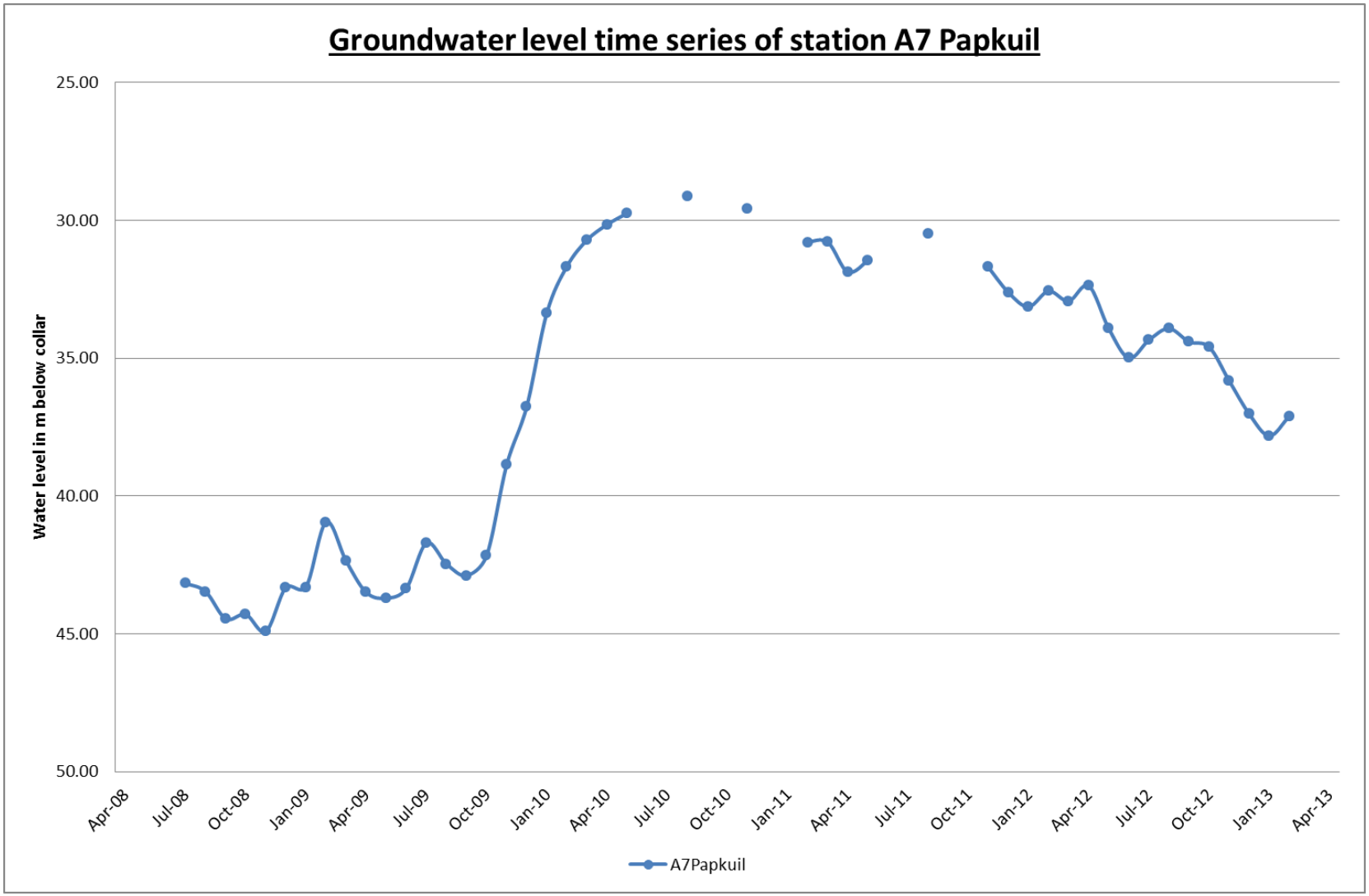
GRAPH 5


Groundwater level time serie of station B5N013 (Moddderfontein)
Groundwater level (m)
25
29
33
37
41
45
49
53
57
61
65
69
Feb-71
Feb-72
Feb-73
Feb-74
Feb-75
Feb-76
Feb-77
Feb-78
Feb-79
Feb-80
Feb-81
Feb-82
Feb-83
Feb-84
Feb-85
Feb-86
Feb-87
Feb-88
Feb-89
Feb-90
Feb-91
Feb-92
Feb-93
Feb-94
Feb-95
Feb-96
Feb-97
Feb-98
Feb-99
Feb-00
Feb-01
Feb-02
Feb-03
Feb-04
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Time interval (month)
B5Modderfontein

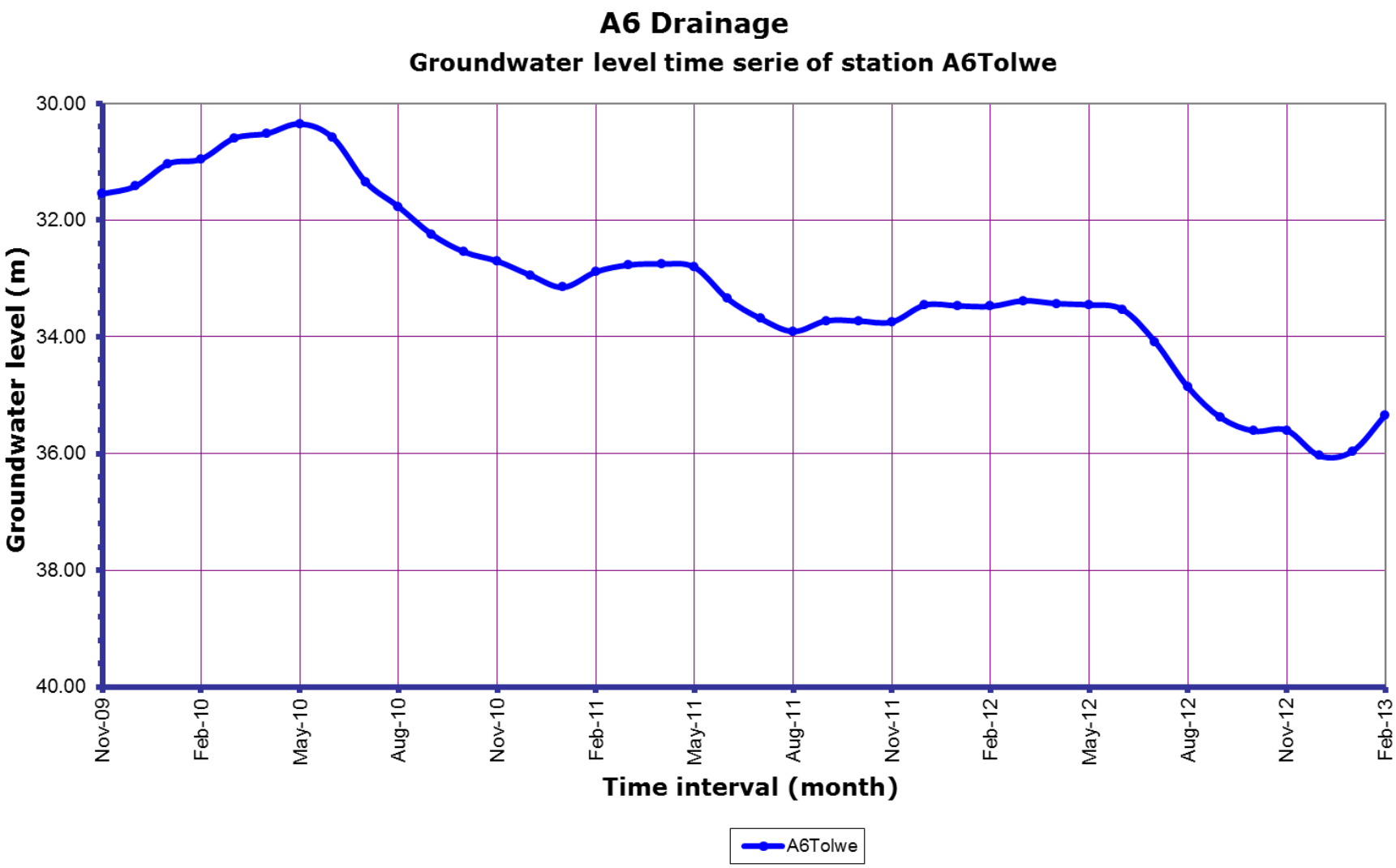
GRAPH 6


Groundwater level time series of station Brandwag
Water level in m below collar
-10.000
-11.000
-12.000
-13.000
-14.000
-15.000
-16.000
-17.000
-18.000
-19.000
-20.000
2009/05/05
2009/07/05
2009/09/05
2009/11/05
2010/01/05
2010/03/05
2010/05/05
2010/07/05
2010/09/05
2010/11/05
2011/01/05
2011/03/05
2011/05/05
2011/07/05
2011/09/05
2011/11/05
2012/01/05
2012/03/05
2012/05/05
2012/07/05
2012/09/05
Brandwag
Control measurements

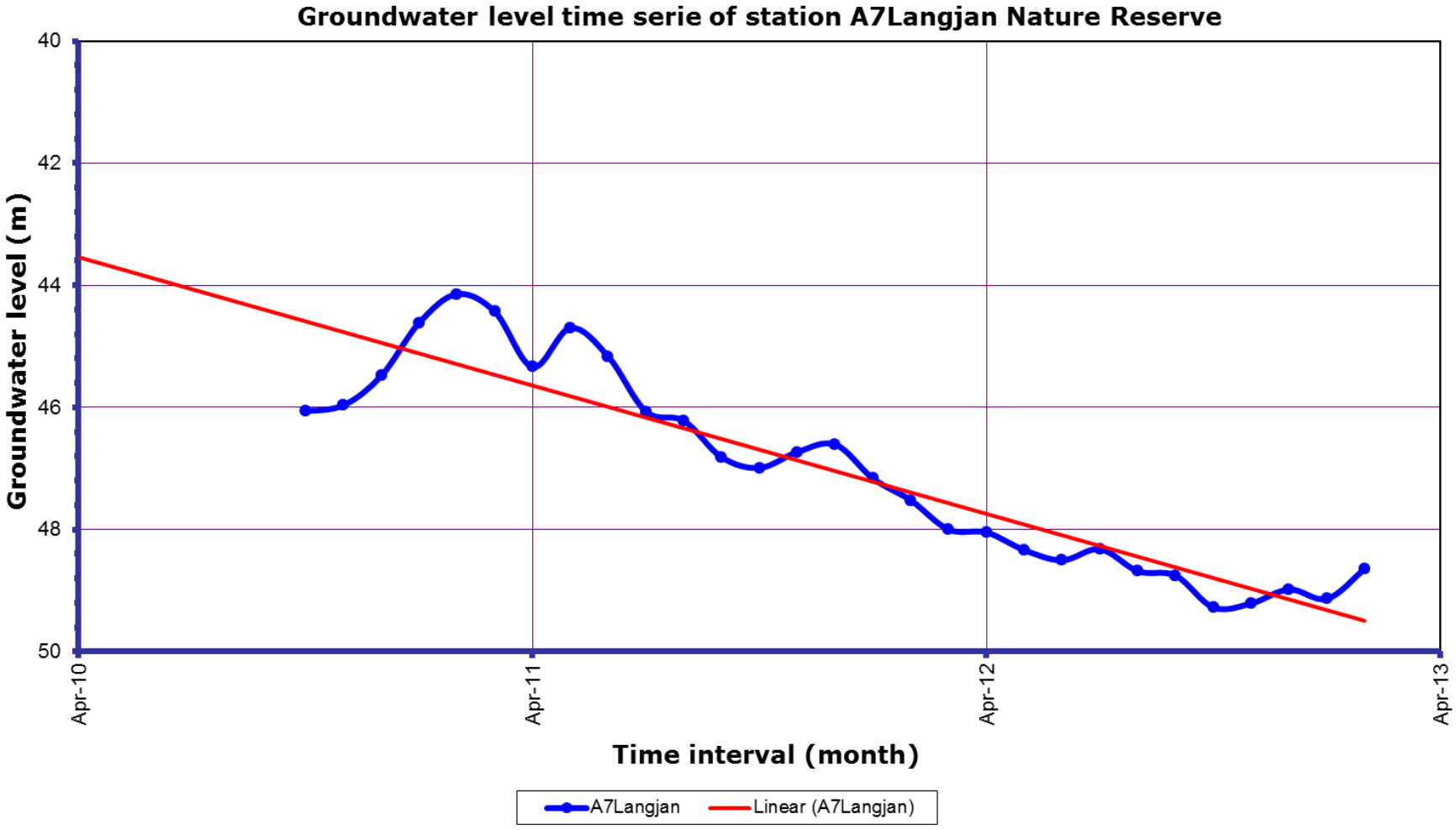
GRAPH 7


Groundwater level time series of station A7 Papkuil
Water level in m below collar
25.00
30.00
35.00
40.00
45.00
50.00
Apr-08
Jul-08
Oct-08
Jan-09
Apr-09
Jul-09
Oct-09
Jan-10
Apr-10
Jul-10
Oct-10
Jan-11
Apr-11
Jul-11
Oct-11
Jan-12
Apr-12
Jul-12
Oct-12
Jan-13
Apr-13
A7Papkuil

GRAPH 8

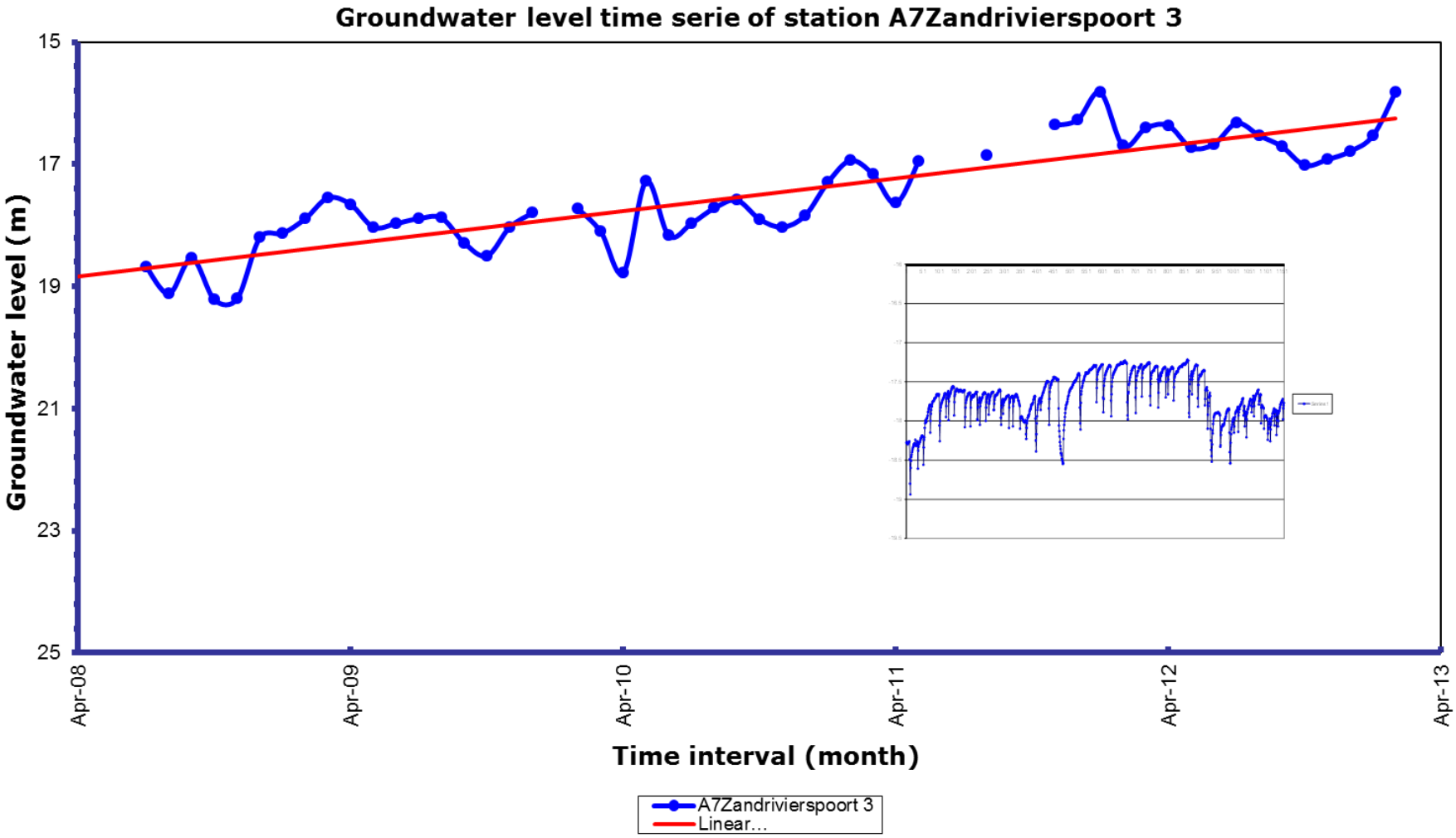

A6 Drainage
Groundwater level time serie of station A6Tolwe
Groundwater level (m)
30.00
32.00
34.00
36.00
38.00
40.00
Nov-09
Feb-10
May-10
Aug-10
Nov-10
Feb-11
May-11
Aug-11
Nov-11
Feb-12
May-12
Aug-12
Nov-12
Feb-13
Time interval (month)
A6Tolwe

GRAPH 9


Groundwater level time serie of station A7Langjan Nature Reserve
Groundwater level (m)
40
42
44
46
48
50
Apr-10
Apr-11
Apr-12
Apr-13
Time interval (month)
A7Langjan
Linear (A7Langjan)

GRAPH 10

A7 DRAINAGE



GRAPH 11

Drainage: A4		Water level differences in m			
February 2012 to November 2012	**Rise/fall (m)**	**November 2012 to February 2013**	**Rise/fall (m)**	**Februray 2012 to February 2013**	**Rise/fall (m)**
A4Naboom-Vaalwater	-5.35	A4Cumberland	-0.12	A4Naboom-Vaalwater	-2.88
A4Alma	-2.26	A4Stockpoort	-0.01	A4Rhenosterpoort	-0.74
A4Rhenosterpoort	-1.72	A4Vaalwater	0.00	A4MatlabasMamba	-0.62
A4MatlabasMamba	-0.68	A4Matlabas-Mokolo	0.06	A4Alma	-0.51
A4MokoloPoer se loop	-0.64	A4MatlabasMamba	0.06	A4Mokolo End	-0.31
A4Mokolo End	-0.43	A4Mokolo End	0.12	A4Cumberland	-0.30
A4Matlabas-Mokolo	-0.20	A4MatlabasLimpopo	0.12	A4Matlabas-Mokolo	-0.15
A4Cumberland	-0.18	A4Lephalale	0.40	A4Stockpoort	-0.09
A4Lephalale	-0.13	A4Rhenosterpoort	0.98	A4MatlabasLimpopo	-0.01
A4MatlabasLimpopo	-0.12	A4MokoloPoer se loop	1.05	A4Vaalwater	0.21
A4Stockpoort	-0.08	A4Alma	1.75	A4Lephalale	0.28
A4Vaalwater	0.21	A4Naboom-Vaalwater	2.47	A4MokoloPoer se loop	0.41
A4MokoloPoer se loop 2	New	A4MokoloPoer se loop 2	2.83	A4MokoloPoer se loop 2	New
Summary					
Number of stations	**Rise/fall (m)**	**Number of stations**	**Rise/fall (m)**	**Number of stations**	**Rise/fall (m)**
Stations no data 1		Stations no data 0		Stations no data 1	
Stations declining 10	-1.07	Stations declining 2		Stations declining 8	-0.70
Stations rising 1		Stations rising 11	0.89	Stations rising 3	0.22
Total stations used 12	-0.97	Total stations used 13	0.75	Total stations used 12	-0.39
Number of stations	**%**	**Number of stations**	**%**	**Number of stations**	**%**
With data 11	91.67%	With data 13	100.00%	With data 11	91.67%
Declining 10	90.91%	Declining 2	15.38%	Declining 8	72.73%
Rising 1	9.09%	Rising 11	84.62%	Rising 3	27.27%

TABLE 1

Drainage: A5		Water level differences in m			
February 2012 to November 2012	**Rise/fall (m)**	**November 2012 to February 2013**	**Rise/fall (m)**	**Februray 2012 to February 2013**	**Rise/fall (m)**
A5UpperLephalale	-3.33	A5Setateng	-0.12	A5UpperLephalale	-1.85
A5Western Lephalale	-0.60	A5Western Lephalale	-0.11	A5Western Lephalale	-0.71
A5Setateng	-0.58	A5Tom Burke	-0.01	A5Setateng	-0.70
A5SouthEast Lephalale	-0.56	A5Ongerep 2	0.00	A5Ongerep 2	-0.39
A5Kitty	-0.50	A5SouthEast Lephalale	0.23	A5SouthEast Lephalale	-0.34
A5Visgat	-0.39	A5Visgat	0.23	A5Tom Burke	-0.31
A5Ongerep 2	-0.39	A5Kitty	0.76	A5Visgat	-0.16
A5Tom Burke	-0.31	A5UpperLephalale	1.48	A5Kitty	0.26
Summary					
Number of stations	**Rise/fall (m)**	**Number of stations**	**Rise/fall (m)**	**Number of stations**	**Rise/fall (m)**
Stations no data 0		Stations no data 0		Stations no data 0	
Stations declining 8	-0.83	Stations declining 4	-0.06	Stations declining 7	-0.64
Stations rising 0		Stations rising 4	0.41	Stations rising 1	
Total stations used 8	-0.83	Total stations used 8	0.31	Total stations used 8	-0.52
Number of stations	**%**	**Number of stations**	**%**	**Number of stations**	**%**
With data 8	100.00%	With data 8	100.00%	With data 8	100.00%
Declining 8	100.00%	Declining 4	50.00%	Declining 7	87.50%
Rising 0	0.00%	Rising 4	50.00%	Rising 1	12.50%

TABLE 2

Drainage: A6	Water level differences in m				
February 2012 to November 2012	Rise/fall (m)	November 2012 to February 2013	Rise/fall (m)	Februray 2012 to February 2013	Rise/fall (m)
A6DeHoop	-9.72	A6Kromhoek2	-0.74	A6Volspruit	-1.92
A6Planknek2	-7.28	A6Kromhoek	-0.43	A6Tolwe	-1.86
A6Nylstroom2	-4.30	A6Volspruit	-0.33	A6Planknek2	-1.56
A6duToitkraal	-2.85	A6Weenen	-0.32	A6Kromhoek2	-1.18
A6Nylsvley3	-2.37	A6Blinkwater2	-0.30	A6Weenen	-1.13
A6Nylsvley4	-2.35	A6Norfolk	-0.25	A6Blinkwater2	-0.98
A6Nylsvley1	-2.23	A6Baltimore	-0.21	A6Kromhoek	-0.88
A6Tolwe	-2.12	A6Grootvalley 2	-0.07	A6Marken road	-0.88
A6Volspruit	-1.59	A6Zwartwater 2	-0.06	A6Baltimore	-0.77
A6Nylsvley2	-1.37	A6Marken road	-0.03	A6Klipput	-0.77
A6Dardenellen	-1.25	A6Klipput	-0.03	A6Mahwelereng	-0.73
A6Steilloop	-0.98	A6Blinkwater	0.02	A6Nylstroom2	-0.70
A6Vlakfontein	-0.94	A6Mmotlane	0.03	A6Norfolk	-0.64
A6Gilead 2	-0.90	A6Marnitz	0.04	A6Grootvalley 2	-0.48
A6Mahwelereng	-0.88	A6MokopaneNyl	0.07	A6Nylsvley1	-0.45
A6Marken road	-0.84	A6Mashashane	0.10	A6Cantebury	-0.43
A6Weenen	-0.81	A6Mahwelereng	0.14	A6Nelly	-0.41
A6Nelly	-0.79	A6Rapitsi	0.19	A6Mmotlane	-0.30
A6Klipput	-0.74	A6Tolwe	0.26	A6Rapitsi	-0.30
A6Cantebury	-0.70	A6Cantebury	0.27	A6Steilloop	-0.29
A6Blinkwater2	-0.68	A6Nelly	0.39	A6Blinkwater	-0.20
A6Zwartwater	-0.62	A6Sekhung	0.47	A6MokopaneNyl	-0.13
A6Alldays	-0.61	A6Mokopane Dorp	0.60	A6Mashashane	-0.04
A6Mokopane Dorp	-0.59	A6Upper Sterk2	0.63	A6Gilead 2	-0.04
A6Baltimore	-0.57	A6Steilloop	0.69	A6Mokopane Dorp	0.01
A6Rapitsi	-0.49	A6Zwartwater	0.83	A6Zwartwater	0.21
A6Bridgewater	-0.46	A6Gilead 2	0.87	A6Vlakfontein	0.23
A6Maasstroom	-0.45	A6Bridgewater	1.03	A6Sekhung	0.35

TABLE 3

Drainage: A6		Water level differences in m			
February 2012 to November 2012	**Rise/fall (m)**	**November 2012 to February 2013**	**Rise/fall (m)**	**Februray 2012 to February 2013**	**Rise/fall (m)**
A6Kromhoek	-0.45	A6Vlakfontein	1.17	A6Bridgewater	0.57
A6Kromhoek2	-0.44	A6Nylsvley1	1.79	A6Alldays	1.24
A6Grootvalley 2	-0.41	A6Alldays	1.86	A6Pontdrift	1.80
A6Norfolk	-0.39	A6Pontdrift	2.02	A6Maasstroom	2.14
A6Mmotlane	-0.33	A6Rykdom	2.05	A6Dardenellen	2.16
A6Pontdrift	-0.22	A6Maasstroom	2.59	A6DeHoop	2.84
A6Blinkwater	-0.22	A6Dardenellen	3.41	A6Upper Sterk2	3.70
A6MokopaneNyl	-0.20	A6Nylstroom2	3.60	A6duToitkraal	Flooded
A6Mashashane	-0.14	A6Planknek2	5.73	A6Nylsvley2	Flooded
A6Sekhung	-0.11	A6DeHoop	12.56	A6Nylsvley7	Flooded
A6Upper Sterk2	3.07	A6duToitkraal		A6Nylsvley6	Flooded
A6Nylsvley7	Flooded	A6Nylsvley2	Flooded	A6Nylsvley3	Flooded
A6Nylsvley6	Flooded	A6Nylsvley7	Flooded	A6Nylsvley4	Flooded
A6Nylsvley5	Flooded	A6Nylsvley6	Flooded	A6Nylsvley5	Flooded
A6Zwartwater 2	New	A6Nylsvley3	Flooded	A6Zwartwater 2	New
A6Marnitz	New	A6Nylsvley4	Flooded	A6Marnitz	New
A6Rykdom	New	A6Nylsvley5	Flooded	A6Rykdom	New
Summary					
Number of stations	**Rise/fall (m)**	**Number of stations**	**Rise/fall (m)**	**Number of stations**	**Rise/fall (m)**
Stations no data 6		Stations no data 7		Stations no data 10	
Stations declining 38	-1.38	Stations declining 11	-0.25	Stations declining 24	-0.71
Stations rising 1		Stations rising 27	1.61	Stations rising 11	1.39
Total stations used 45	-1.27	Total stations used 45	1.07	Total stations used 45	-0.05
Number of stations	**%**	**Number of stations**	**%**	**Number of stations**	**%**
With data 39	86.67%	With data 38	84.44%	With data 35	77.78%
Declining 38	97.44%	Declining 11	28.95%	Declining 24	68.57%
Rising 1	2.56%	Rising 27	71.05%	Rising 11	31.43%

TABLE 3 CONTINUE

Drainage: A7	Water level differences in m				
February 2012 to November 2012	Rise/fall (m)	November 2012 to February 2013	Rise/fall (m)	Februray 2012 to February 2013	Rise/fall (m)
A7Beaule	-3.90	A7Papkuil	-1.28	A7Papkuil	-4.53
A7Papkuil	-3.26	A7Ledig	-0.48	A7Legkraal	-2.95
A7Legkraal	-2.60	A7Legkraal	-0.35	A7Beaule	-2.95
A7Westenburg	-1.92	A7Pelgrimshoop 2	-0.21	A7Langjan	-1.12
A7Mara	-1.74	A7Ga-Matamanyane	-0.11	A7Ledig	-0.85
A7Langjan	-1.69	A7Palmietgat	0.00	A7Dikgomong	-0.82
A7Klein Bolayi	-1.51	A7Bandolierkop	0.01	A7Ga-Matamanyane	-0.80
A7Sekiding 2	-1.12	A7Doornbult 2	0.06	A7Westenburg	-0.74
A7Sterkloop farm	-1.12	A7Dikgomong	0.08	A7Seshego	-0.74
A7Zandrivierspoort 2	-1.09	A7Buysdorp	0.08	A7Sterkloop farm	-0.64
A7Seshego	-1.07	A7Doornpruit	0.09	A7Geyser	-0.57
A7Ga-Phashsa	-1.00	A7Geyser	0.10	A7Pelgrimshoop 2	-0.37
A7Boordepot	-0.98	A7Kalkgat	0.21	A7Doornpruit	-0.36
A7Sebayeng	-0.93	A7Tweefontein	0.22	A7Bandolierkop	-0.27
A7Antonvilla	-0.91	A7Makibelo	0.24	A7Ga-Phashsa	-0.24
A7Dikgomong	-0.90	A7Matjieskraal2	0.24	A7Sebayeng	-0.23
A7Greefswald	-0.76	A7Sterkloop Pump	0.25	A7Tweefontein	-0.16
A7Matjieskraal	-0.70	A7Ga-Manhlodi	0.26	A7Sterkloop Pump	-0.11
A7Ga-Matamanyane	-0.69	A7Mopane	0.27	A7Kalkgat	-0.11
A7Waterland	-0.68	A7Doornkraal	0.32	A7Zandrivierspoort 2	-0.07
A7Geyser	-0.67	A7Seshego	0.32	A7Waterland	-0.07
A7Boomzien	-0.52	A7Doornkraal 2	0.36	A7Matjieskraal2	-0.07
A7Doornpruit	-0.45	A7Uniepark	0.37	A7Boomzien	-0.04
A7Eistleben	-0.39	A7Sterkloop farm	0.48	A7Doornbult 2	-0.03
A7Tweefontein	-0.38	A7Boomzien	0.48	A7Matjieskraal	0.03
A7Ledig	-0.37	A7Langjan	0.57	A7Doornkraal 2	0.03
A7Sterkloop Pump	-0.37	A7Waterland	0.60	A7Ga-Manhlodi	0.05
A7Doornkraal 2	-0.33	A7Sebayeng	0.70	A7Boordepot	0.08
A7Kalkgat	-0.32	A7Matjieskraal	0.72	A7Doornkraal	0.10

TABLE 4

Drainage: A7		Water level differences in m			
February 2012 to November 2012	**Rise/fall (m)**	**November 2012 to February 2013**	**Rise/fall (m)**	**Februray 2012 to February 2013**	**Rise/fall (m)**
A7Matjieskraal2	-0.32	A7Ga-Phashsa	0.76	A7Uniepark	0.11
A7Bandolierkop	-0.28	A7Beaule	0.95	A7Buysdorp	0.19
A7Uniepark	-0.26	A7Zandrivierspoort 2	1.01	A7Mopane	0.32
A7Venetia Road	-0.24	A7Boordepot	1.05	A7Palmietgat	0.56
A7Zandrivierspoort 3	-0.23	A7Zandrivierspoort 3	1.09	A7Zandrivierspoort 3	0.87
A7Ga-Manhlodi	-0.22	A7Westenburg	1.18	A7Eistleben	0.90
A7Doornkraal	-0.22	A7Eistleben	1.29	A7Sekiding 2	1.20
A7Pelgrimshoop 2	-0.16	A7Roodewal	1.44	A7Roodewal	1.48
A7Doornbult 2	-0.09	A7Sandbrak	1.82	A7Venetia Road	2.29
A7Roodewal	0.05	A7Sekiding 2	2.32	A7Greefswald	2.71
A7Mopane	0.05	A7Venetia Road	2.54	A7Sandbrak	2.93
A7Buysdorp	0.11	A7Greefswald	3.46	A7Mara	2.99
A7Palmietgat	0.56	A7Mara	4.73	A7Klein Bolayi	6.88
A7Waterpoort	0.88	A7Klein Bolayi	8.39	A7Waterpoort	9.93
A7Sandbrak	1.12	A7Waterpoort	9.05	A7Antonvilla	
A7Makibelo		A7Antonvilla		A7Makibelo	
Summary					
Number of stations	**Rise/fall (m)**	**Number of stations**	**Rise/fall (m)**	**Number of stations**	**Rise/fall (m)**
Stations no data 1		Stations no data 1		Stations no data 2	
Stations declining 38	-0.90	Stations declining 6	-0.4	Stations declining 24	-1.00
Stations rising 6	0.46	Stations rising 38	1.27	Stations rising 19	1.77
Total stations used 45	-0.80	Total stations used 45	0.67	Total stations used 45	0.12
Number of stations	**%**	**Number of stations**	**%**	**Number of stations**	**%**
With data 44	97.78%	With data 44	97.78%	With data 43	95.56%
Declining 38	86.36%	Declining 6	13.64%	Declining 24	55.81%
Rising 6	13.64%	Rising 38	86.36%	Rising 19	44.19%

TABLE 4 CONTINUE

Drainage: A8		Water level differences in m			
February 2012 to November 2012	**Rise/fall (m)**	**November 2012 to February 2013**	**Rise/fall (m)**	**Februray 2012 to February 2013**	**Rise/fall (m)**
A8Aintree	-1.32	A8Mabvete	-0.20	A8Mabvete	-0.45
A8Mandala	-1.23	A8Tshipise	0.29	A8Aintree	-0.09
A8Scrutton	-1.13	A8Fondwe	0.76	A8Mandala	0.25
A8Mudimeli	-1.04	A8Maangani	1.16	A8Tshipise	0.25
A8Mavhode	-0.89	A8Aintree	1.23	A8Fondwe	0.39
A8Vrouwensbrom	-0.57	A8Mandala	1.48	A8Mudimeli	0.52
A8Fondwe	-0.36	A8Mudimeli	1.56	A8Maangani	0.99
A8Mabvete	-0.24	A8Scrutton	2.31	A8Scrutton	1.18
A8Maangani	-0.16	A8Vrouwensbrom	6.59	A8Vrouwensbrom	6.02
A8Tshipise	-0.03	A8Mavhode		A8Mavhode	
Summary					
Number of stations	**Rise/fall (m)**	**Number of stations**	**Rise/fall (m)**	**Number of stations**	**Rise/fall (m)**
Stations no data 0		Stations no data 1		Stations no data 1	
Stations declining 10	-0.70	Stations declining 1		Stations declining 2	
Stations rising 0		Stations rising 8	1.92	Stations rising 7	1.37
Total stations used 10	-0.70	Total stations used 10	1.68	Total stations used 10	1.01
Number of stations	**%**	**Number of stations**	**%**	**Number of stations**	**%**
With data 10	100.00%	With data 9	90.00%	With data 9	90.00%
Declining 10	100.00%	Declining 1	11.11%	Declining 2	22.22%
Rising 0	0.00%	Rising 8	88.89%	Rising 7	77.78%

TABLE 5

Drainage: A9		Water level differences in m			
February 2012 to November 2012	**Rise/fall (m)**	**November 2012 to February 2013**	**Rise/fall (m)**	**Februray 2012 to February 2013**	**Rise/fall (m)**
A9Tshidzivhe	-7.96	A9Gondeni	-0.19	A9Gondeni	-1.11
A9Levhuvhu	-3.10	A9bandolierkop 2	0.06	A9Mailaskop	-0.48
A9Vhurivhuri	-1.38	A9Tshirunzini	0.25	A9bandolierkop 2	-0.31
A9Elim	-1.35	A9Makhavini	0.54	A9Tshirunzini	-0.22
A9Guyuni west	-1.24	A9Mailaskop	0.63	A9Tshilamusi2	-0.03
A9Phaphazela	-1.11	A9Tshilamusi2	0.64	A9Makhavini	0.18
A9Mailaskop	-1.10	A9Tshilamusi1	0.89	A9Tshilamusi1	0.23
A9Gondeni	-0.93	A9Mhinga	1.33	A9Levhuvhu	0.36
A9Tshilamusi1	-0.66	A9Tshivongweni	1.72	A9Mhinga	0.91
A9Tshilamusi2	-0.66	A9Phaphazela	2.16	A9Phaphazela	1.05
A9Tshirunzini	-0.47	A9Elim	2.67	A9Elim	1.33
A9Mhinga	-0.42	A9Levhuvhu	3.46	A9Tshidzivhe	2.45
A9bandolierkop 2	-0.37	A9Tshidzivhe	10.41	A9Tshivongweni	3.35
A9Tshikondeni	-0.36	A9Vhurivhuri	11.65	A9Vhurivhuri	10.27
A9Makhavini	-0.36	A9Pafuri gate	17.62	A9Tswera	22.63
A9Bileni	-0.33	A9Tswera	22.96	A9Tshikuya1	
A9Tswera	-0.33	A9Tshikuya1		A9Tshikuya2	
A9Tshikuya2	-0.32	A9Tshikuya2		A9Bileni	
A9Tshikuya1	-0.24	A9Bileni		A9Guyuni west	
A9Tshivongweni	1.63	A9Guyuni west		A9Tshikondeni	
A9Pafuri gate		A9Tshikondeni		A9Pafuri gate	
Summary					
Number of stations	**Rise/fall (m)**	**Number of stations**	**Rise/fall (m)**	**Number of stations**	**Rise/fall (m)**
Stations no data 1		Stations no data 5		Stations no data 6	
Stations declining 19	-1.20	Stations declining 1		Stations declining 5	-0.42
Stations rising 1		Stations rising 15	5.10	Stations rising 10	4.23
Total stations used 21	-1.05	Total stations used 21	4.80	Total stations used 21	2.71
Number of stations	**%**	**Number of stations**	**%**	**Number of stations**	**%**
With data 20	95.24%	With data 16	76.19%	With data 15	71.43%
Declining	95.00%	Declining	6.25%	Declining	33.33%
Rising	5.00%	Rising	93.75%	Rising	66.67%

TABLE 6

Drainage: B3		Water level differences in m			
February 2012 to November 2012	Rise/fall (m)	November 2012 to February 2013	Rise/fall (m)	Februray 2012 to February 2013	Rise/fall (m)
B3Settlers 2	-1.28	B3Settlers	-0.77	B3Settlers 2	-1.56
B3DeKuil 2	-0.34	B3Settlers 2	-0.29	B3DeKuil 2	-0.19
B3Tuinplaas	-0.30	B3Tuinplaas	0.13	B3Tuinplaas	-0.17
B3Settlers	6.12	B3DeKuil 2	0.14	B3Settlers	5.34
Summary					
Number of stations	Rise/fall (m)	Number of stations	Rise/fall (m)	Number of stations	Rise/fall (m)
Stations no data 0		Stations no data 0		Stations no data 0	
Stations declining 3	-0.63	Stations declining 2		Stations declining 3	-0.64
Stations rising 1		Stations rising 2		Stations rising 1	
Total stations used 4	1.05	Total stations used 4	-0.20	Total stations used 4	0.85
Number of stations	%	Number of stations	%	Number of stations	%
With data 4	100.00%	With data 4	100.00%	With data 4	100.00%
Declining 3	75.00%	Declining 2	50.00%	Declining 3	75.00%
Rising 1	25.00%	Rising 2	50.00%	Rising 1	25.00%

TABLE 7

Drainage: B5		Water level differences in m			
February 2012 to November 2012	**Rise/fall (m)**	**November 2012 to February 2013**	**Rise/fall (m)**	**Februray 2012 to February 2013**	**Rise/fall (m)**
B5Portugal	-11.37	B5Doelen 2	-0.26	B5Modderfontein	-3.97
B5Modderfontein	-3.89	B5Modderfontein	-0.08	B5Maololo	-1.37
B5Byzonderheid 2	-1.98	B5Mmatsekele	-0.05	B5Doelen 2	-1.23
B5Nebo	-1.84	B5Wildebeestpan 2	-0.03	B5Mmatsekele	-1.22
B5Maololo	-1.74	B5Elandskraal	0.26	B5Byzonderheid 2	-0.72
B5Mmatsekele	-1.17	B5Chuene	0.26	B5Marulaneng	-0.51
B5Marulaneng	-1.06	B5Maololo	0.38	B5Elandskraal	-0.08
B5Dilhlopaneng	-0.99	B5Marulaneng	0.56	B5Portugal	-0.03
B5Doelen 2	-0.97	B5Dilhlopaneng	1.09	B5Wildebeestpan 2	0.09
B5Elandskraal	-0.34	B5Byzonderheid 2	1.26	B5Chuene	0.10
B5Chuene	-0.16	B5Nebo	2.61	B5Dilhlopaneng	0.10
B5Wildebeestpan 2	0.12	B5Portugal	11.35	B5Nebo	0.77
Summary					
Number of stations	**Rise/fall (m)**	**Number of stations**	**Rise/fall (m)**	**Number of stations**	**Rise/fall (m)**
Stations no data 0		Stations no data 0		Stations no data 0	
Stations declining 11	-1.40	Stations declining 4	-0.1	Stations declining 8	-1.14
Stations rising 1		Stations rising 8	0.92	Stations rising 4	0.53
Total stations used 12	-2.12	Total stations used 12	1.44	Total stations used 12	-0.67
Number of stations	**%**	**Number of stations**	**%**	**Number of stations**	**%**
With data 12	100.00%	With data 12	100.00%	With data 12	100.00%
Declining 1	91.67%	Declining 8	33.33%	Declining 8	66.67%
Rising 12	8.33%	Rising 12	66.67%	Rising 4	33.33%

TABLE 8

Drainage: B7		Water level differences in m			
February 2012 to November 2012	Rise/fall (m)	November 2012 to February 2013	Rise/fall (m)	Februray 2012 to February 2013	Rise/fall (m)
B7Rubbervale	-2.16	B7Tshebeng	0.01	B7TheWillows2	-1.15
B7Penge	-1.93	B7Veekraal	0.34	B7Tshebeng	-0.60
B7TheWillows2	-1.79	B7TheWillows2	0.65	B7Julesburg2	-0.57
B7Julesburg2	-1.31	B7Mica	0.66	B7Bismarck2	-0.10
B7Namakgale	-0.93	B7Julesburg2	0.74	B7Namakgale	-0.02
B7Bismarck2	-0.90	B7Bismarck2	0.80	B7Veekraal	0.09
B7Tshebeng	-0.61	B7Namakgale	0.91	B7Rubbervale	0.29
B7Wolkberg	-0.39	B7Wolkberg	1.25	B7Wolkberg	0.86
B7Veekraal	-0.25	B7Rubbervale	2.44	B7Penge	3.36
B7Mica	5.30	B7Penge	5.29	B7Mica	5.96
Summary					
Number of stations	Rise/fall (m)	Number of stations	Rise/fall (m)	Number of stations	Rise/fall (m)
Stations no data 0		Stations no data 0		Stations no data 0	
Stations declining 9	-1.14	Stations declining 0		Stations declining 5	-0.48
Stations rising 1		Stations rising 10		Stations rising 5	2.11
Total stations used 10	-0.50	Total stations used 10	1.31	Total stations used 10	0.81
Number of stations	%	Number of stations	%	Number of stations	%
With data 10	100.00%	With data 1000.00%	100.00%	With data 10	100.00%
Declining	90.00%	Declining	0.00%	Declining	50.00%
Rising	10.00%	Rising	100.00%	Rising	50.00%

TABLE 9

Drainage: B8		Water level differences in m			
February 2012 to November 2012	**Rise/fall (m)**	**November 2012 to February 2013**	**Rise/fall (m)**	**Februray 2012 to February 2013**	**Rise/fall (m)**
B8Lwamondokop	-2.05	B8Nghalalume	-0.04	B8Nghalalume	-0.63
B8Femane	-0.90	B8Vuheli	0.07	B8Sikhunyane	-0.56
B8Sikhunyane	-0.87	B8Sekgopo	0.13	B8Vuheli	-0.48
B8Mphagani	-0.87	B8Middel Letaba	0.13	B8Middel Letaba	-0.35
B8Letsitele	-0.82	B8Sikhunyane	0.32	B8Sekgopo	-0.31
B8Tzaneen	-0.65	B8Tzaneen	0.60	B8Tzaneen	-0.05
B8Nghalalume	-0.59	B8Chavani	0.82	B8Haenertsburg	0.44
B8Vuheli	-0.54	B8Haenertsburg	0.87	B8Chavani	0.76
B8Middel Letaba	-0.48	B8Nyagelani	1.26	B8Nyagelani	0.86
B8Sekgopo	-0.43	B8Letsitele	1.72	B8Letsitele	0.90
B8Haenertsburg	-0.42	B8Mphagani	3.33	B8Mphagani	2.46
B8Nyagelani	-0.40	B8Femane	5.42	B8Femane	4.52
B8muumoni	-0.30	B8Lwamondokop	6.86	B8Lwamondokop	4.81
B8Chavani	-0.06	B8Mbaula		B8Mbaula	
B8Mbaula		B8Mamitwa		B8Mamitwa	
B8Mamitwa		B8muumoni		B8muumoni	
Summary					
Number of stations	**Rise/fall (m)**	**Number of stations**	**Rise/fall (m)**	**Number of stations**	**Rise/fall (m)**
Stations no data 2		Stations no data 3		Stations no data 3	
Stations declining 14	-0.67	Stations declining 1		Stations declining 6	-0.39
Stations rising 0		Stations rising 12	1.79	Stations rising 7	2.10
Total stations used 16	-0.67	Total stations used 16	1.65	Total stations used 16	0.95
Number of stations	**%**	**Number of stations**	**%**	**Number of stations**	**%**
With data 14	87.50%	With data 13	81.25%	With data 13	81.25%
Declining 14	100.00%	Declining 1	7.69%	Declining 6	46.15%
Rising 0	0.00%	Rising 12	92.31%	Rising 7	53.85%

TABLE 10

Drainage: B9		Water level differences in m			
February 2012 to November 2012	**Rise/fall (m)**	**November 2012 to February 2013**	**Rise/fall (m)**	**Februray 2012 to February 2013**	**Rise/fall (m)**
B9Mukhomi	-1.60	B9Halahala	0.03	B9Maphophe 2	-1.12
B9Maphophe 2	-1.32	B9Maphophe 2	0.20	B9Halahala	-0.51
B9Greenfarm	-0.72	B9Greenfarm	0.59	B9Greenfarm	-0.12
B9Halahala	-0.54	B9Mukhomi	2.48	B9Mukhomi	0.88
Summary					
Number of stations	**Rise/fall (m)**	**Number of stations**	**Rise/fall (m)**	**Number of stations**	**Rise/fall (m)**
Stations no data 0		Stations no data 0		Stations no data 0	
Stations declining 4	-1.04	Stations declining 0		Stations declining 3	-0.58
Stations rising 0		Stations rising 4	0.80	Stations rising 1	
Total stations used 4	-1.04	Total stations used 4	0.83	Total stations used 4	-0.22
Number of stations	**%**	**Number of stations**	**%**	**Number of stations**	**%**
With data 4	100.00%	With data 4	100.00%	With data 4	100.00%
Declining 4	100.00%	Declining 0	0.00%	Declining 3	75.00%
Rising 0	0.00%	Rising 4	100.00%	Rising 1	25.00%

TABLE 11