

DATA ON GROUNDWATER

Groundwater has been used in Mauritius as from the eighteenth century from large diameter dugwells. Groundwater exploration and exploitation started in the 1960's and since then has been intensively developed.

There are five main aquifers in Mauritius which account for most of the groundwater resources of the country. The annual groundwater recharge has been estimated at 370 million cubic metres. The groundwater utilisation as at October 2010 was of the order of 124 million cubic metres per year. The contribution of groundwater to the potable water supply was about 51 %.

Groundwater exploration

Since the early 1960's to October 2010, 1769 wells were drilled for different purposes. Table 4.1 lists the number of wells drilled in the stated period.

Period	Number
1960 - 1970	152
1971 - 1975	448
1976 - 1980	350
1981 - 1985	178
1986 - 1990	119
1991 - 1995	148
1996 - 1999	131
2000 - 2005	123
2006 - 2010	120
Total	1769

Table 4.1 – Number of wells drilled from 1960 to 2010

The different types and purposes of the 1769 wells are given hereunder in Table 4.2

<u>Diameter</u>	<u>Type of Well</u>	<u>Number drilled</u>	<u>Purpose</u>
Less than 100 mm	Corehole	447	Geology/Groundwater investigation
150 – 200 mm	Small well	505	Irrigation/Hand-pump Scheme
Greater than 200 mm	Borehole	711	Domestic/Industrial
10-12 feet	Dugwell	106	Domestic/Industrial/Irrigation
	TOTAL	<u>1769</u>	

Table 4.2- Types and purposes of existing wells.

Out of the 1322 boreholes/small wells/dugwells, 429 are presently in use for domestic, irrigation and industrial water supply. The Central Water Authority operates 94 groundwater pumping stations.

Groundwater exploitation

Table 4.3 shows the distribution of the CWA pumping stations in the water supply system of the island:

<u>System</u>	<u>No. Of Pumping Stations</u>
MAV Lower	28
MAV Upper	7
Port Louis System	7
DWS - (East)	9
DWS - (South)	10
DWS - (North)	33
TOTAL	<u>94</u>

Table 4.3 – No. of pumping stations in different water supply systems.

The chart below (Fig 4.1) shows the ground water abstraction for domestic use.

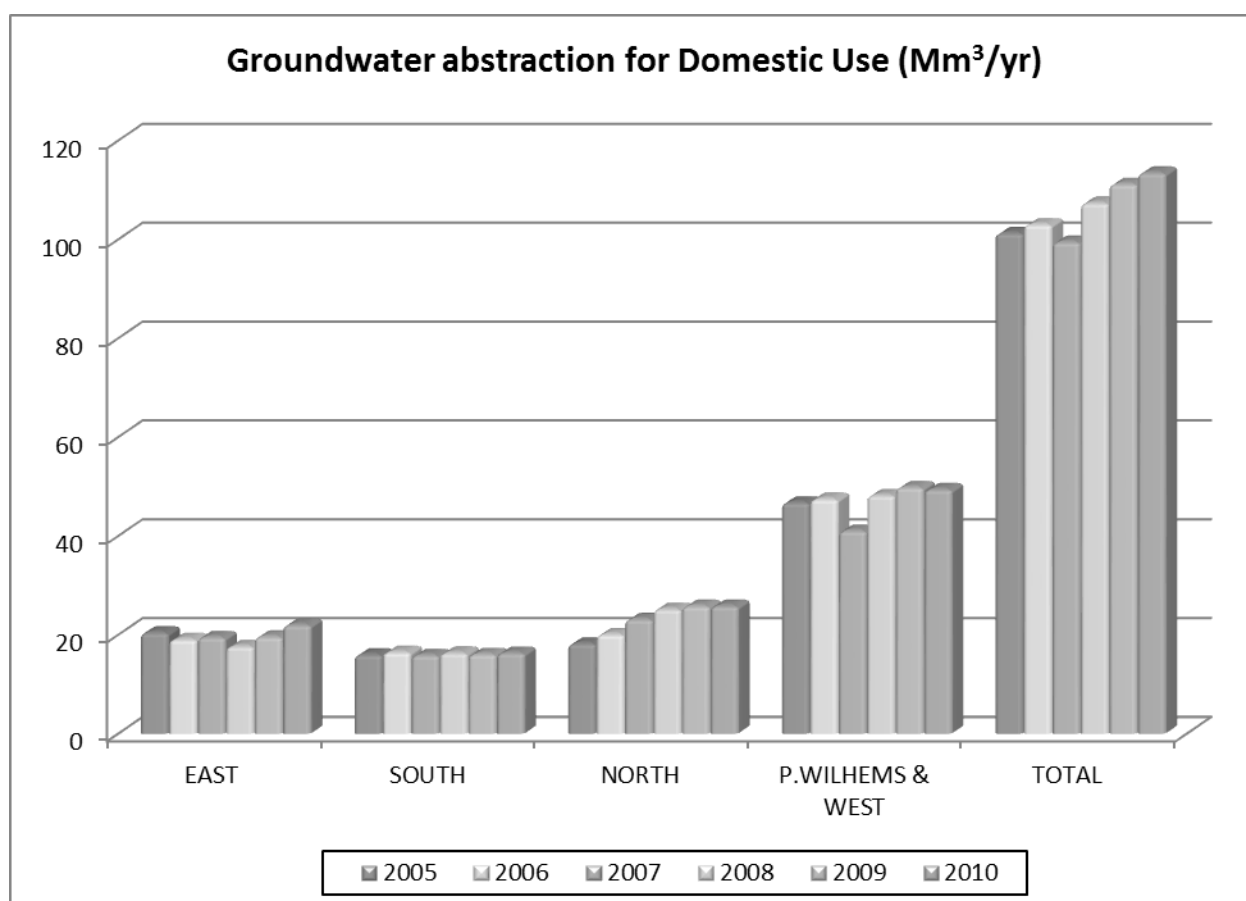


Fig. 4.1 – Groundwater Abstraction

Table 4.4 indicates the estimated volume of 124 Mm³ of groundwater used by different sectors of economy in Mauritius as at October 2010.

Ground water utilisation	Volume (Mm ³)	No. of Boreholes
Municipal (Domestic, Tourism)	113	133
Industrial	5	139
Agricultural	6	157
TOTAL	124	429

Table 4.4- Groundwater Utilisation

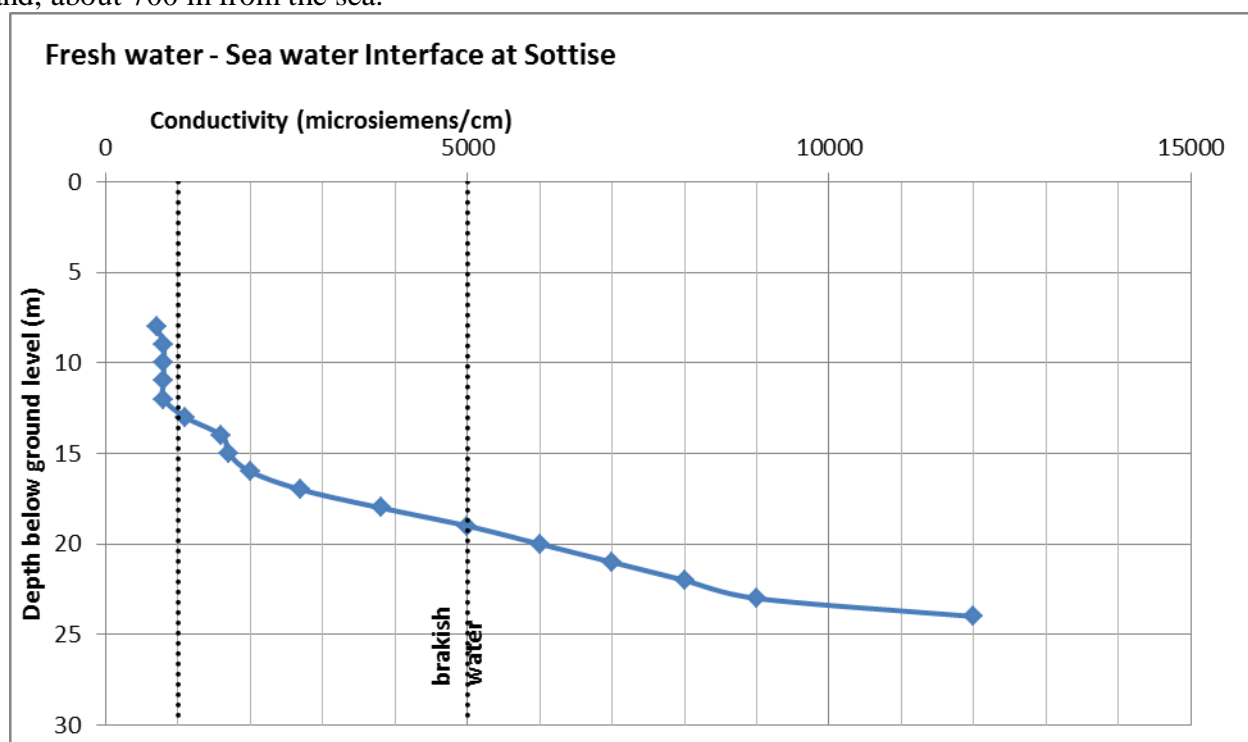
During the period Nov.2005 to Oct.2010 five boreholes were drilled out of which three boreholes were commissioned, increasing the groundwater production by some 11,470 m³/day as shown in Table 4.5.

No.	Location	Code	Tested Yield m ³ /hr	Area Supplied	Remarks
1	Le Bosquet	998	150	MAV	
2	Camp Auguste	1066	48	MAV	
3	Plaisance	1095	280	South	

Table 4.5 – Boreholes commissioned during period 2005 to 2010

Fresh water-Sea water Interface

To monitor coastal aquifers, conductivity and salinity profiles are observed in 29 locations in the coastal regions. Below is a graph showing fresh water – sea water interface at Sottise, in the Northern part of the island, about 700 m from the sea.



	Conductivity range (μ mhos/cm)
Fresh water	< 1000
Brakish water	1000 - 5000
Sea water	> 5000

Fig. 4.2 Fresh water – Sea Water interface at Sottise

Data Loggers

Thirteen boreholes in Mauritius are equipped with data loggers (Fig. 4.3). A data logger is an electronic device that measures water level, temperature and conductivity by means of a pressure-measuring cell. This cell measures the hydrostatic pressure of the water column via a capacitive pressure diaphragm and converts this measured value into an electrical signal. The data logger is integrated in a probe that stores the measuring values in pre-set intervals and is connected to a standard logistic unit via a connecting cable. The data are stored in the internal memory of the probe. Data are downloaded via the logistic unit using a Hydram Unit and then transferred into the database of the computer.

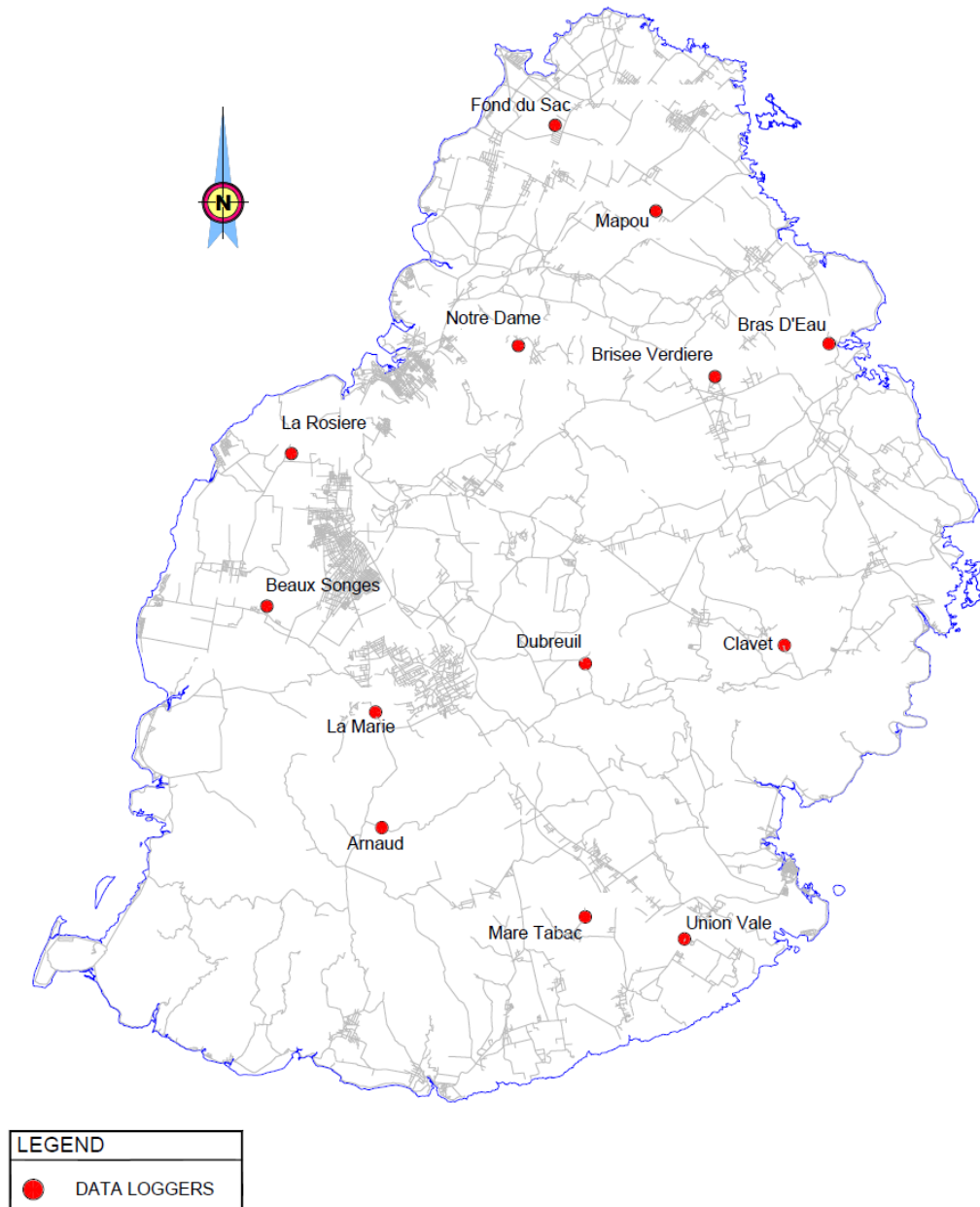
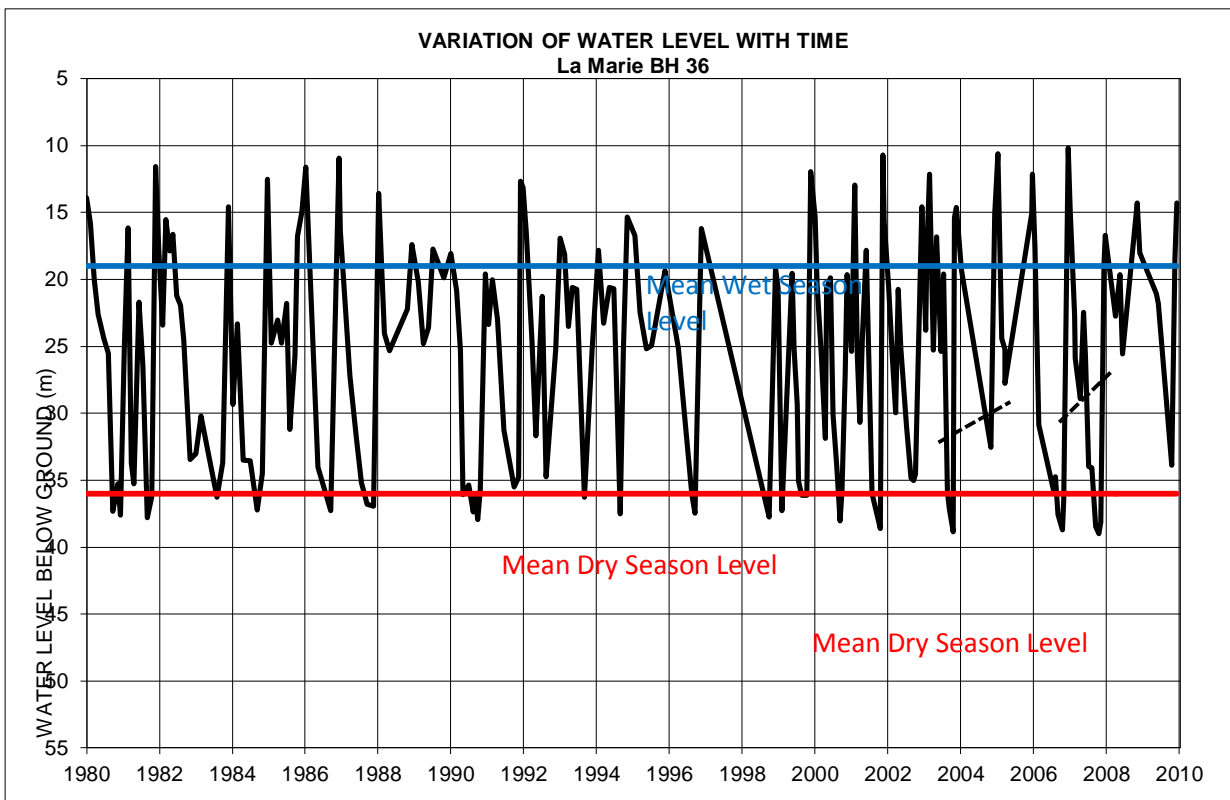
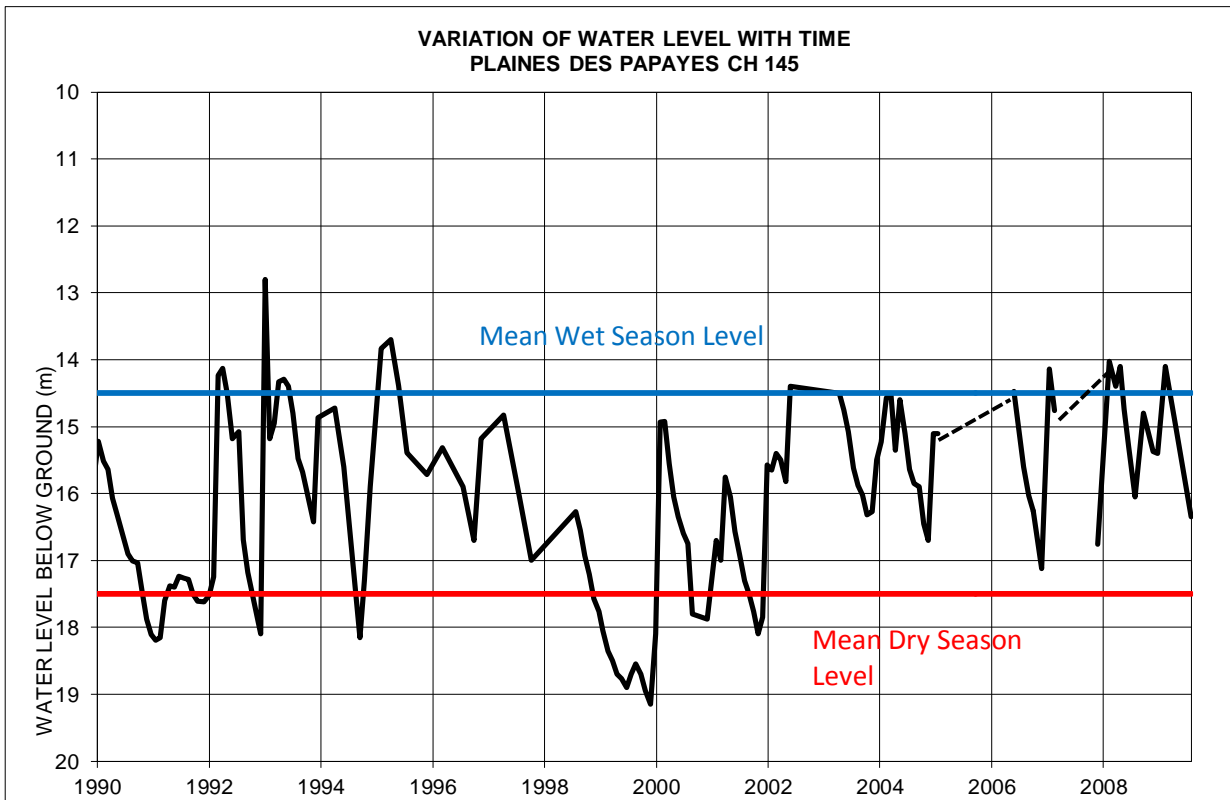


Fig. 4.3 Location of Data Loggers in Mauritius

Piezometric Level Variation

Groundwater levels (piezometric levels) are observed at 300 locations. The piezometric level variation for 4 observation wells is illustrated in Fig. 4.4 below. Tables 4.6 and 4.7 indicate the well characteristics, variation in piezometric levels and their uses



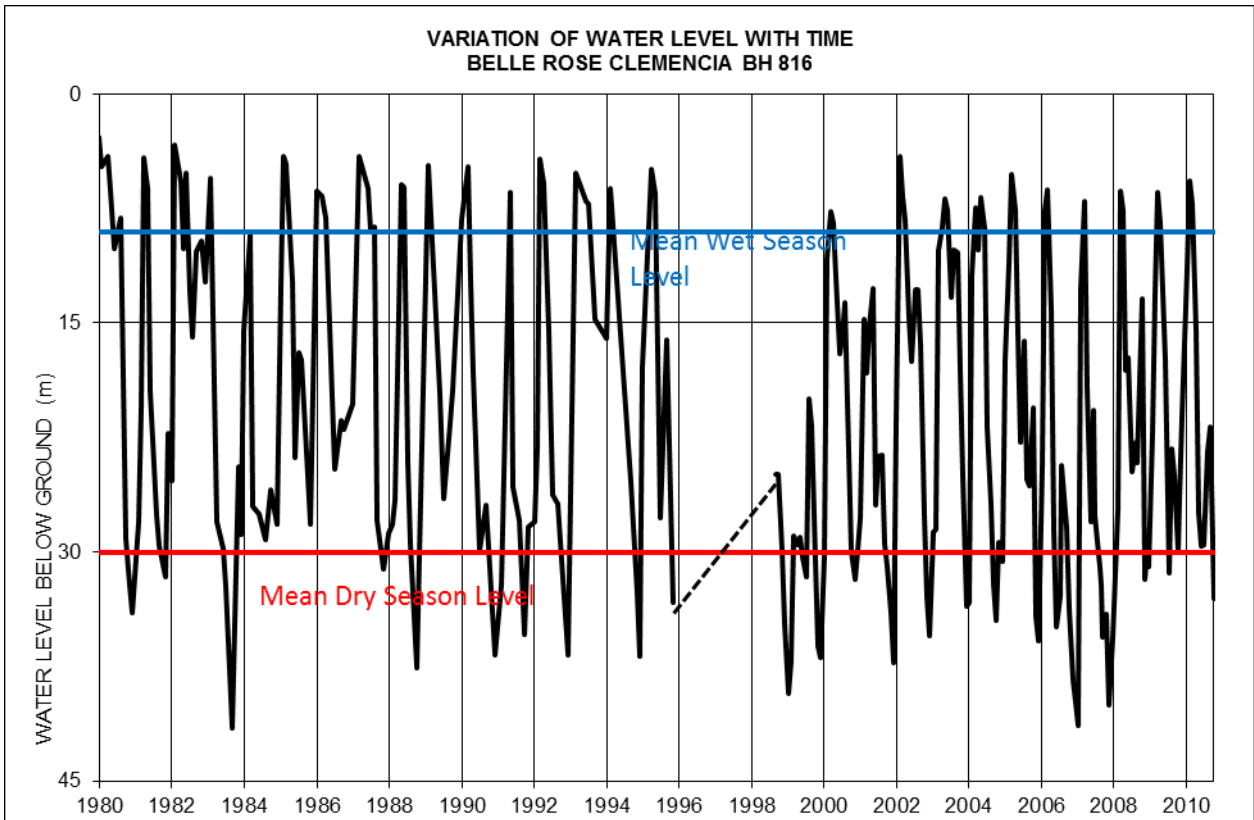
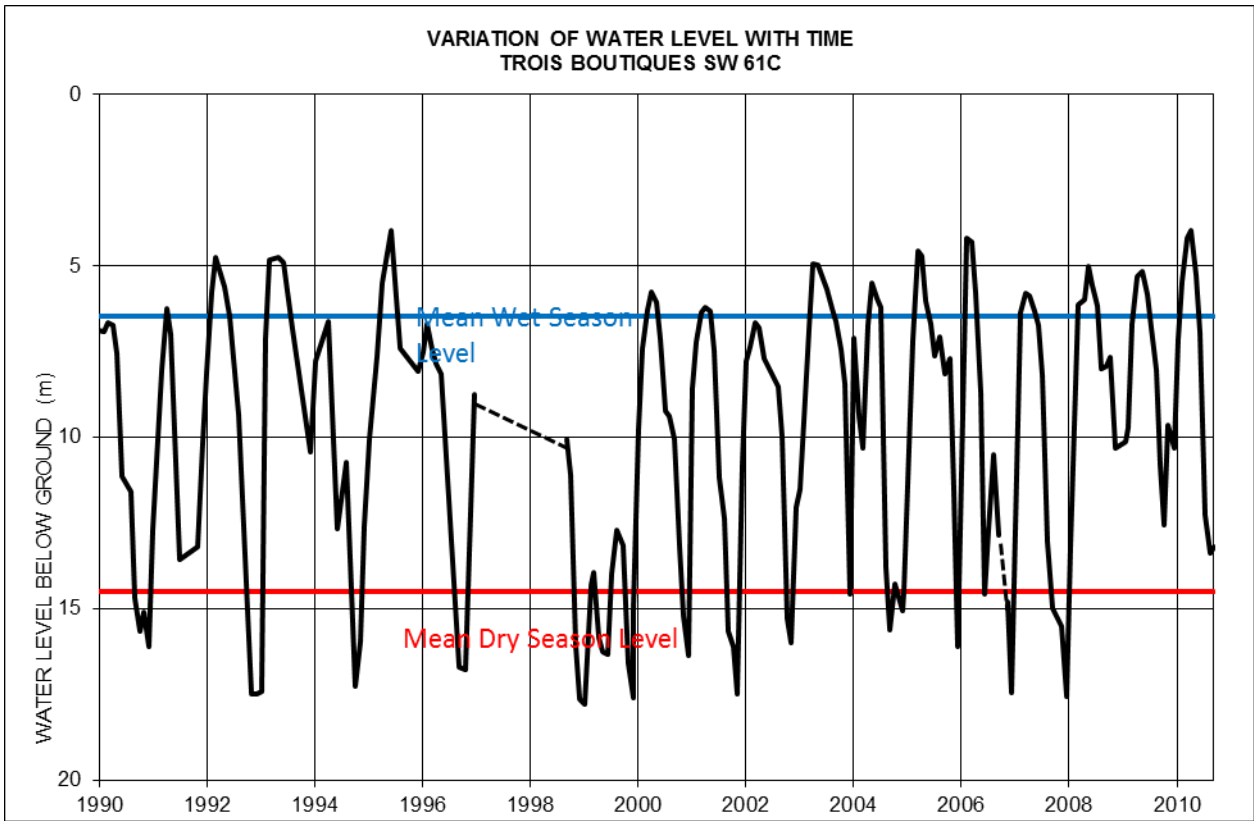


Fig. 4.4 Piezometric Level Variation

Fig 4.5 depicts the mean groundwater level contour map which is prepared using the various piezometric levels collected throughout the island.

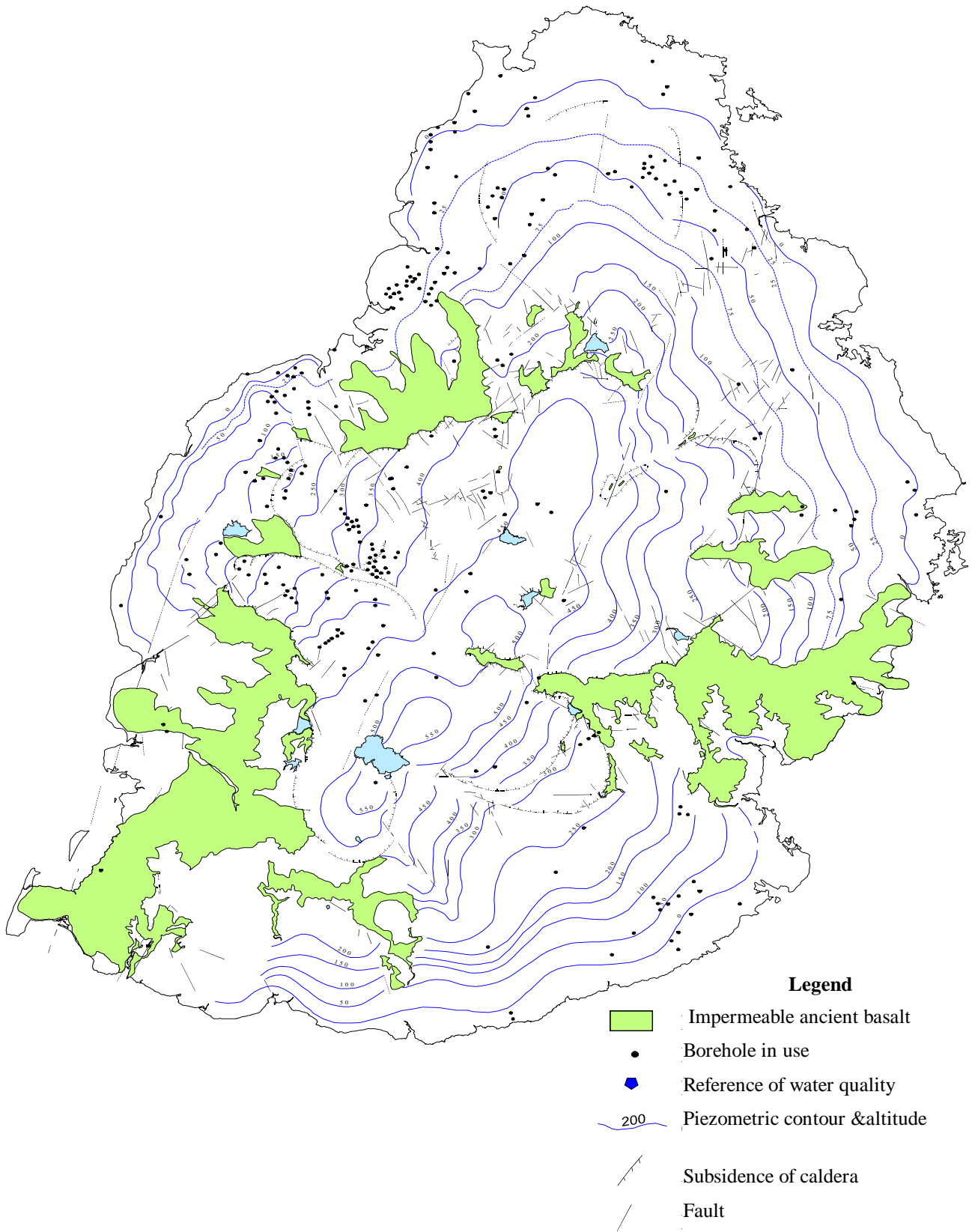


Fig. 4.5 – Groundwater level contour map