

6. Hydrology

6.1 Climate and Temperature

Climatic conditions vary significantly from the north and west (Drakensberg mountain range) to east (Indian Ocean) across the Usutu to Mhlathuze WMA.

The mean annual temperature ranges between 12 and 14 °C in the west to 20 and 22 °C at the coast, with an average annual temperature for the whole WMA of 16 to 18 °C. Maximum daily temperatures are experienced in Summer in December to February and minimum daily temperatures in Winter in June and July.

Table 7 below summarises temperature information for these months.

MONTH	MEAN DAILY TEMPERATURES	AVERAGE (°C)	INLAND	COAST
			RANGE (°C)	RANGE (°C)
January	Mean temperature	21,9	16 – 26	24 to >26
	Maximum temperature	27,5	20 – 28	28 – 32
	Minimum temperature	16,4	10 – 20	>20
	Diurnal range	11,1	12 – 13	<10
July	Mean temperature	13,3	6 – 16	14 to >16
	Maximum temperature	20,7	14 – 24	22 to >24
	Minimum temperature	6	-2 to 8	8 to >10
	Diurnal range	14,7	16 – 17	13 - 14

Table 7 : Temperature Data

Snowfalls on the Drakensberg mountains between April and September have a significant influence on the climate of the WMA. Frost occurs in May to September inland. There is zero frost at the coast. The average number of heavy frost days per annum range from 1 to 30 days for the inland areas to nil for the eastern coastal area.

6.2 Rainfall

Rainfall is strongly seasonal in this WMA with in excess of 80 % of rain occurring as thunderstorms during the period October to March. The peak rainfall months are December to February in the inland areas and November to March at the coast. Mean annual precipitation (MAP) ranges from in excess of 1200 mm in the west, to 400 mm to 600 mm around the Jozini area, increasing to over 1200 mm at the coast. The overall MAP is about 840 mm.

Annual variability of rainfall is indicated by the historic coefficient of variation of the rainfall record, which ranges from (20 % to 25 %) in the west to greater than 35% in the Jozini area, reducing to less than 20 % at the coast.

Figure 14 on page 50 shows the rainfall distribution within the WMA.

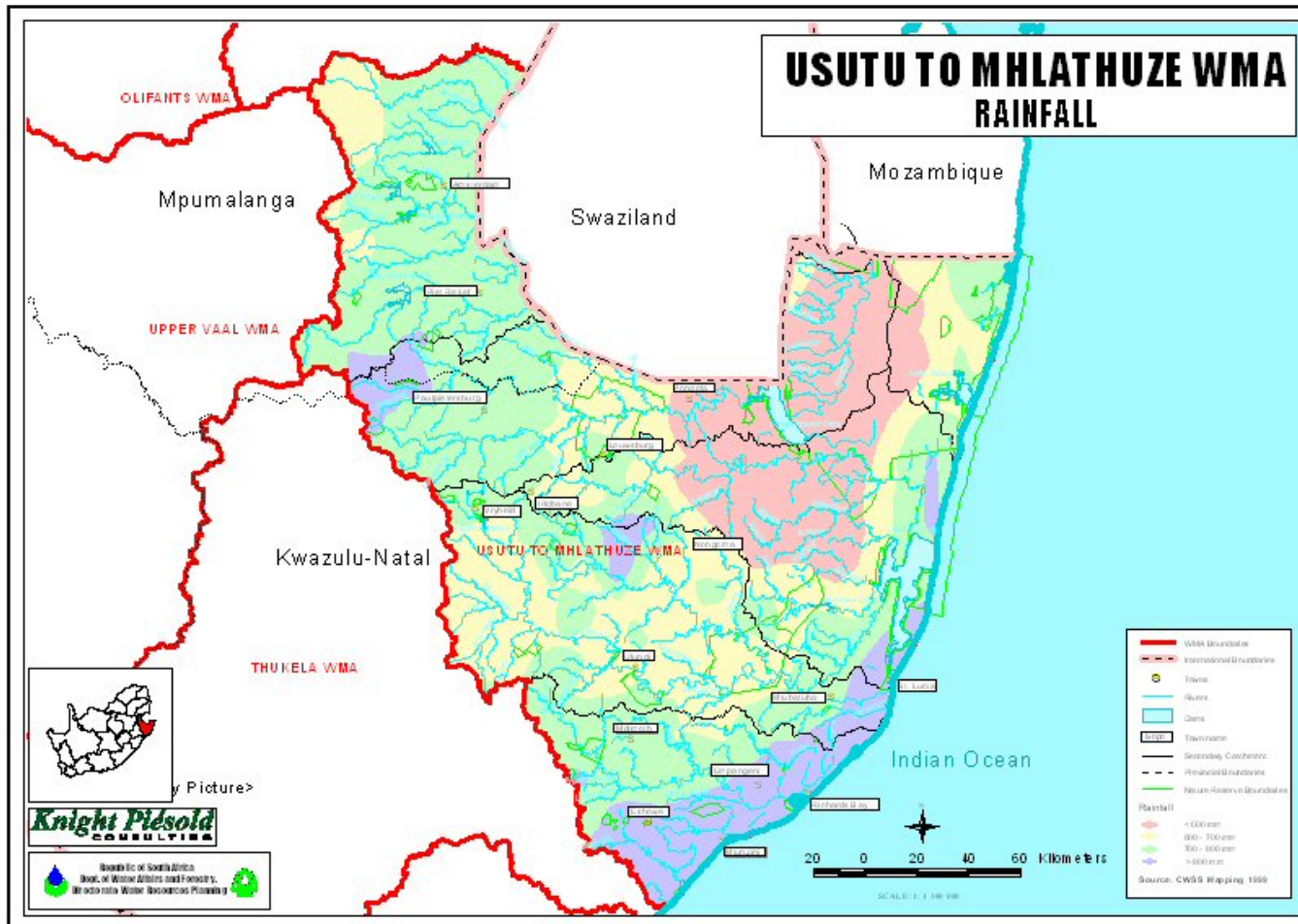


Figure 14 on page 52 shows the rainfall distribution within the WMA. (click on image for larger view)

6.3 Runoff

Mean annual runoff (MAR) figures are in excess of 250 mm in the West (20 % of MAP), to less than 50 mm (10 % of MAP) in the central areas, to in excess of 100 mm at the coast (8 % of MAP). The northeastern coastal areas incorporating Kosi Bay and Lake Sibayi, are endoreic areas, contributing minimal nett runoff. The overall MAR is 112 mm (13 % of MAP).

Figure 15 on page 52 shows the distribution of runoff within the WMA.

6.4 Evaporation

In accordance with the rainfall pattern, the relative humidity is higher in summer than in winter, with a daily mean peak for February (ranging from 68 % in the inland areas to greater than 72% for the coast) and a daily mean low in July ranging from 60 % in the inland areas to greater than 68 % at the coast.

Potential mean annual gross evaporation (as measured by 'A' pan) ranges from 1600mm to 1800 mm in the west to 1800 mm to 2000 mm at the coast. The highest mean monthly 'A' pan evaporation is in December (200 mm to 240 mm) and the lowest mean monthly evaporation is in June (80 mm to 110 mm).

Figure 16 on page 53 shows the evaporation distribution within the WMA.



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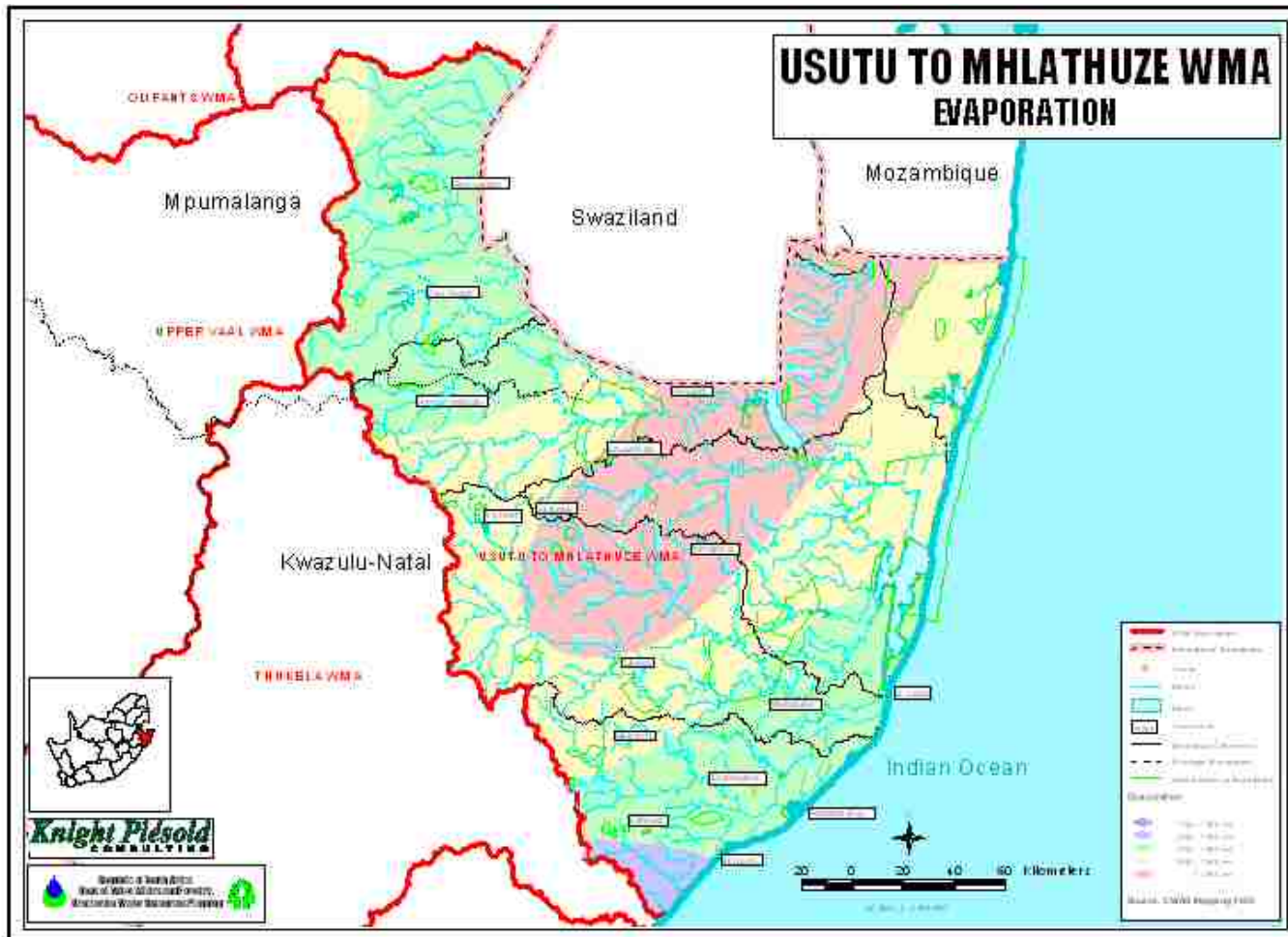


Figure 16 on page 53 shows the evaporation distribution within the WMA. (click on image for larger view)

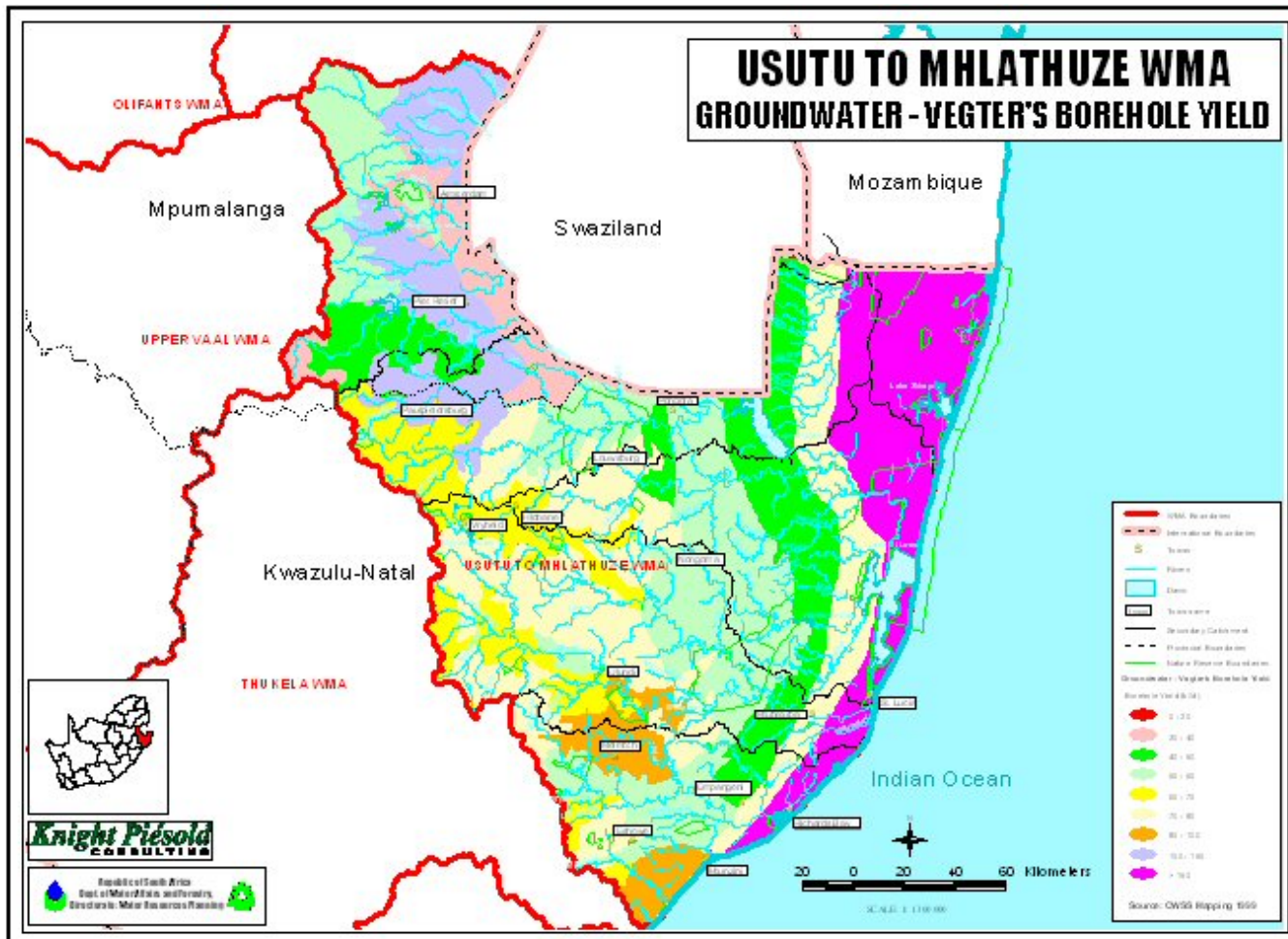


Figure 17 : Groundwater potential in the WMA (click on image for larger view)