CLIMATIC WATER BALANCE

It is a simple calculation that assists in deciding whether leachate management is required or not. It therefore provides a conservative means of determining whether or not significant leachate generation will occur. The Climatic Water Balance (B) is calculated using only the two climatic components of the full water balance, namely Rainfall (R) and Evaporation (E).

The Climatic Water Balance is defined by: B = R – E

Where:
B is the Climatic Water Balance in mm of water
R is the rainfall in mm of water
E is the evaporation from a soil surface in mm of water.

This is calculated for the wet season of the wettest year on record. The data used is the precipitation and S-pan evaporation obtained from the latest edition of the Department of Water and Sanitation's evaporation and precipitation records.

The most representative / closest weather station was **G2E006 - Elsenberg**.
Latitude: -33.85008
Longitude: 18.83271
Rainfall data period: 1959 - 1997
Evaporation data period: 1957 - 1997

The total of the wettest 6 months for this specific area is calculated from May to October.

Source:
http://www.dwa.gov.za/Hydrology/Verified/HyDataSets.aspx?Station=G2E006&SiteDesc=MET

The factor of 0,88 is used to convert S-pan evaporation to soil evaporation.

Year	Rainfall - R	Evaporation - S Pan	0.88 Factor Applied	Climatic Water Balance (B)
1977	718.7	372.5	327.8	390.9
1974	705.9	330.6	290.928	414.972
1996	659.6	362.6	319.088	340.512
1975	641	388.8	342.144	298.856
1962	634.5	380.3	334.664	299.836
1987	610.5	424.9	373.912	236.588
1976	587.5	384.1	338.008	249.492
1991	580.3	387.3	340.824	239.476
1968	570.7	345.3	303.864	266.836
1983	541.6	389.2	342.496	199.104

B has been consistently calculated as positive and the site therefore falls within an area that may have at least a seasonal water surplus under extreme conditions. According to statistics sites with a climatic balance as depicted above would be classified as B^+ and there will be a possibility that significant

leachate may be generated seasonally. As a result leachate management may be required.

The calculation is conservative as it ignores run-off and thus assumes that all precipitation will infiltrate. The calculation also ignores the moisture storage capacity of the waste body or the cover.

It must also be noted that the proposed activity is for the composting of organic waste through the method of turned windrows. A stormwater management plan and cut off drains to manage runoff on the proposed development area is included in Appendix K2 of the BAR. Based on the specific site factors, including the physical geomorphological features and topography as well as the management of runoff on site it is not expected that significant leachate will be generated through the operations conducted at the facility.