

**SKCMasakhizwe Engineers (Pty) Ltd**  
**South Division**



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Offices at Pretoria, Nelspruit,  
Aliwal North, Durban, Paarl,  
Malmesbury and Maputo

B-BBEE LEVEL TWO CONTRIBUTOR

Your ref.:

Our ref.: W1594/3.5-01

07/06/2014

**Attention: Mr N Hanekom**

Eco Impact  
P.O. Box 70  
DARLING  
7435

Sir,

**PORTION 4 OF THE FARM NIEUWEPOST EAST 706, MALMESBURY - NEW COMPOSTING FACILITY: ENGINEER'S REPORT**

**1. SOIL INVESTIGATION**

A soil investigation was carried out on 28 March 2014. The purpose of the investigation was to determine the suitability of the in-situ material for use as an impervious layer in the construction of the proposed composting facility.

Three trial holes were excavated to a depth of approximately 1500mm. The excavated profile revealed a sandy layer of approximately 300-700mm depth and a yellow brown to white clayey material for the remainder of the hole. No seepage water was encountered in the holes.

An existing dam, to collect runoff from the site, is situated in the south western corner of the property. This is the lowest point of the site. The dam is excavated to a depth of approximately 1.2m below natural ground level. (33°26'22" S, 18°33'23" E) Inspection of the excavated sides revealed similar clayey material for the full height of the excavation below the sandy layer. A sample of the clay material was taken from each trial pit. Laboratory testing on the material revealed an average permeability of 3.49E-07 cm/s, indicating that the clay material is impervious. The site with the underlying clay layer can therefore be rendered to be impervious to water penetration. The impermeable material can also be used as a liner for the proposed irrigation dam.

Copies of the test results for the above mentioned test holes are attached in Annexure A of this report.

**2. STORM WATER RUNOFF**

The composting facility will only be used during the summer months. During the winter, the storm water runoff will be harvested and pumped to an irrigation dam. This water will be re-used during the composting process in the summer months.

The site will be shaped to form stormwater drainage channels which flow into a settling dam. From here, the water overflows into a pump sump from where water will be pumped to an irrigation dam which will be situated on the highest point of the site.



SKCMasakhizwe Engineers (Pty) Ltd Reg No 2000/001951/07  
G Chantler Pr Eng, MPJ Loubser Pr Eng, IJG de Bruyn Pr Eng, CJ Phiri  
Manager South Division: MPJ Loubser Pr Eng



The volume of the irrigation dam is 5 175m<sup>3</sup> and was calculated based an annual rainfall of 460mm.  
The layout plan of the facility is attached in Annexure B of this report.

We trust that you will find the above in order.

Yours Faithfully



**MPJ LOUBSER PrEng**  
SKCM Engineers

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**Annexure A: Test Results**

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# GEO SCIENCE

LABORATORIES (PTY) LTD

BRADFORD CLOSE, AIRPORT INDUSTRIAL, P.O. BOX 288 PAROW 7469  
TELEPHONE: (021) 934 1114 FAX: (021) 934 8161

## LABORATORY TEST RESULTS

CLIENT : Matrocast  
PROJECT NAME : Malmesbury

admin only  
JOB NO : 140408  
SAMPLE NO : 23274

### COMPACTION MOULD PERMEAMETER

POSITION : J52845  
SOIL DESCRIPTION : grey clayey sand  
PERMEANT USED : TAP WATER

SAMPLE DATA		
MOD (100%)	kg/m <sup>3</sup>	2084
MOD (100%) moisture content	%	6.20
Percent of MOD specified	%	95.00
Dry density of soil required	kg/m <sup>3</sup>	1979.80
Moisture content of sample	%	6.20
Length of sample	mm	125.00
Diameter of sample	mm	150.00
Area of sample	mm <sup>2</sup>	17671.46
Volume of sample	mm <sup>3</sup>	2208932.33
Mass of dry soil required	g	4373.24
Mass of wet soil required	g	4644.39

ACTUAL DATA		
Mould Number		P3
Mass of Mould	g	4371
Mass of Mould and wet soil	g	9015.39
Mass of wet soil	g	4644.39
moisture content	%	6.20
Bulk Density	kg/m <sup>3</sup>	2102.65
Dry Density	kg/m <sup>3</sup>	1979.80
Percentage MOD	%	95.00

Standpipe dia	mm	3.75
Standpipe area	mm <sup>2</sup>	11.04

Test	Start Test			End Test			Comments
	Height	Time		Height	Time		
	mm	min	sec	mm	min	sec	
1	2200			2150	7	46	
2	2200			2150	8	51	
3	2200			2150	10	56	
4							

CALCULATIONS FOR FALLING HEAD		
Log H1/H2	Elapsed	COEFFICIENT OF PERMEABILITY
	Time	
mm	sec	m/s
0.0100	466.00	3.85E-09
0.0100	531.00	3.38E-09
0.0100	656.00	2.73E-09
0.0000	0.00	0.00E+00

Number of tests = 3

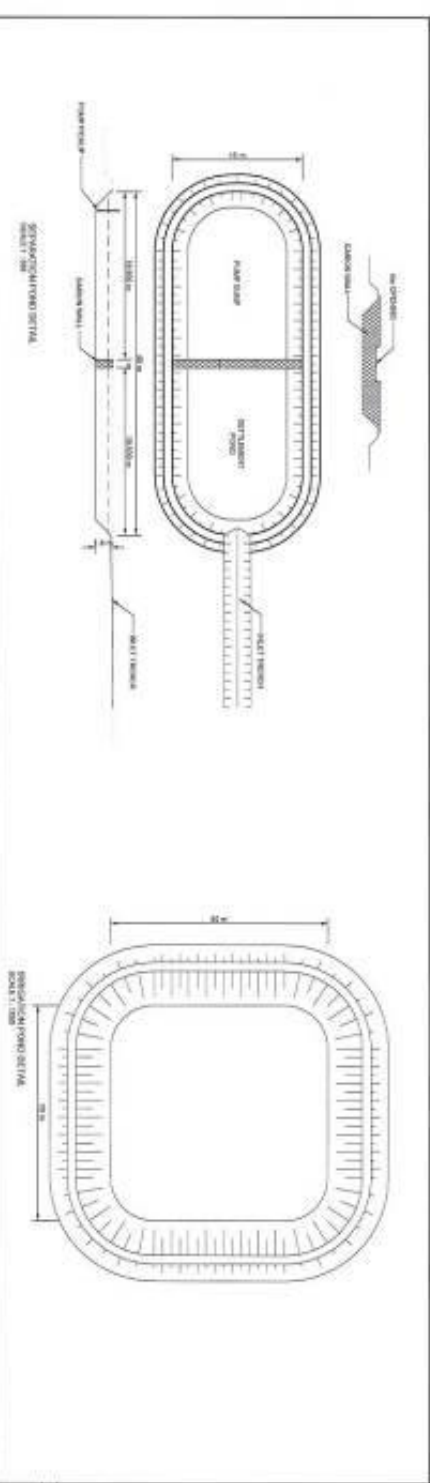
AVERAGE =	2.49E-09	m/s
AVERAGE =	2.49E-07	cm/s

Notes :

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**Annexure A: Drawing**

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DATE: \_\_\_\_\_

BY: \_\_\_\_\_

REVISIONS:

NO.	DESCRIPTION	DATE

**EFT COMPOSTING**

PROPOSED COMPOSTING FACILITY ON PORTION 4 FARM NIJEWEST EAST 706 MALMESBURY ROAD

LANDLIFT



**SKKCM**  
 SKEKKEKATSHWU ENGINEERS  
 101/102/103/104/105/106/107/108/109/110/111/112/113/114/115/116/117/118/119/120/121/122/123/124/125/126/127/128/129/130/131/132/133/134/135/136/137/138/139/140/141/142/143/144/145/146/147/148/149/150/151/152/153/154/155/156/157/158/159/160/161/162/163/164/165/166/167/168/169/170/171/172/173/174/175/176/177/178/179/180/181/182/183/184/185/186/187/188/189/190/191/192/193/194/195/196/197/198/199/200/201/202/203/204/205/206/207/208/209/210/211/212/213/214/215/216/217/218/219/220/221/222/223/224/225/226/227/228/229/230/231/232/233/234/235/236/237/238/239/240/241/242/243/244/245/246/247/248/249/250/251/252/253/254/255/256/257/258/259/260/261/262/263/264/265/266/267/268/269/270/271/272/273/274/275/276/277/278/279/280/281/282/283/284/285/286/287/288/289/290/291/292/293/294/295/296/297/298/299/300/301/302/303/304/305/306/307/308/309/310/311/312/313/314/315/316/317/318/319/320/321/322/323/324/325/326/327/328/329/330/331/332/333/334/335/336/337/338/339/340/341/342/343/344/345/346/347/348/349/350/351/352/353/354/355/356/357/358/359/360/361/362/363/364/365/366/367/368/369/370/371/372/373/374/375/376/377/378/379/380/381/382/383/384/385/386/387/388/389/390/391/392/393/394/395/396/397/398/399/400/401/402/403/404/405/406/407/408/409/410/411/412/413/414/415/416/417/418/419/420/421/422/423/424/425/426/427/428/429/430/431/432/433/434/435/436/437/438/439/440/441/442/443/444/445/446/447/448/449/450/451/452/453/454/455/456/457/458/459/460/461/462/463/464/465/466/467/468/469/470/471/472/473/474/475/476/477/478/479/480/481/482/483/484/485/486/487/488/489/490/491/492/493/494/495/496/497/498/499/500/501/502/503/504/505/506/507/508/509/510/511/512/513/514/515/516/517/518/519/520/521/522/523/524/525/526/527/528/529/530/531/532/533/534/535/536/537/538/539/540/541/542/543/544/545/546/547/548/549/550/551/552/553/554/555/556/557/558/559/560/561/562/563/564/565/566/567/568/569/570/571/572/573/574/575/576/577/578/579/580/581/582/583/584/585/586/587/588/589/590/591/592/593/594/595/596/597/598/599/600/601/602/603/604/605/606/607/608/609/610/611/612/613/614/615/616/617/618/619/620/621/622/623/624/625/626/627/628/629/630/631/632/633/634/635/636/637/638/639/640/641/642/643/644/645/646/647/648/649/650/651/652/653/654/655/656/657/658/659/660/661/662/663/664/665/666/667/668/669/670/671/672/673/674/675/676/677/678/679/680/681/682/683/684/685/686/687/688/689/690/691/692/693/694/695/696/697/698/699/700/701/702/703/704/705/706/707/708/709/710/711/712/713/714/715/716/717/718/719/720/721/722/723/724/725/726/727/728/729/730/731/732/733/734/735/736/737/738/739/740/741/742/743/744/745/746/747/748/749/750/751/752/753/754/755/756/757/758/759/760/761/762/763/764/765/766/767/768/769/770/771/772/773/774/775/776/777/778/779/780/781/782/783/784/785/786/787/788/789/790/791/792/793/794/795/796/797/798/799/800/801/802/803/804/805/806/807/808/809/810/811/812/813/814/815/816/817/818/819/820/821/822/823/824/825/826/827/828/829/830/831/832/833/834/835/836/837/838/839/840/841/842/843/844/845/846/847/848/849/850/851/852/853/854/855/856/857/858/859/860/861/862/863/864/865/866/867/868/869/870/871/872/873/874/875/876/877/878/879/880/881/882/883/884/885/886/887/888/889/890/891/892/893/894/895/896/897/898/899/900/901/902/903/904/905/906/907/908/909/910/911/912/913/914/915/916/917/918/919/920/921/922/923/924/925/926/927/928/929/930/931/932/933/934/935/936/937/938/939/940/941/942/943/944/945/946/947/948/949/950/951/952/953/954/955/956/957/958/959/960/961/962/963/964/965/966/967/968/969/970/971/972/973/974/975/976/977/978/979/980/981/982/983/984/985/986/987/988/989/990/991/992/993/994/995/996/997/998/999/1000

PROJECT NO: W1594 - 101

DATE: JUNE 2018

SCALE: 1:500

PROJECT: NIJEWEST EAST