Simlab (EDMS) BEPERK (PTY) LIMITED GEOTEGNIESE DIENSTE GEOTECHNICAL SERVICES HANDEL DRYWEND AS TRADING AS Kimatlab

REG. No. 1987/004282/07 SAASIL/SAACEL No. 208

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CLIENT : **Southern Geotechnical Engineering**
P.O. Box 1687
Brooklyn Square
0075

DATE : 2009-08-13
REFERENCE : SLN139
DOCUMENT No.: 09/0875-09/0879
ORDER No.:
NUMBER OF PAGES : 2

ATTENTION : Pieter Oosthuizen
PROJECT : Lerato Park Phase 2

TEST REPORT

SAMPLE RECEIVED :	Client
SAMPLE TESTED :	2009/07/01
SAMPLE TESTED BY :	S.TELEKELO
SAMPLE REPORTED BY :	F.FONTERNEL
SAMPLE METHOD :	BY CLIENT
DATE SAMPLED :	UNKNOWN
LOCATION SAMPLED :	Lerato Park Phase 2
SAMPLE No. :	09/0875-09/0879
CLIENT REFERENCE :	Lerato Park Phase 2
TEST METHODS :	TMH1:A1,A2,A3,A5,A7 & A8

REMARKS : SAMPLES BROUGHT IN BY CLIENT

NOTE : REPORT CONTINUES ON NEXT PAGE
SEE ATTACHED TABLE

(Technician / Technologist)

for : SIMLAB (PTY) LTD.

(Divisional Director)

Results reported relate only to the materials tested

Simlab (EDMS) BEPERK (PTY) LIMITED GEOTEGNIESE DIENSTE GEOTECHNICAL SERVICES HANDEL DRYWEND AS TRADING AS Kimatlab
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***PAGE CONTINUES FROM PAGE 1

DOCUMENT No.: 09/0875-09/0879

CLIENT & PROJECT:		Southern Geotechnical Engineering / Lerato Park Phase 2			
HOLE No. / KM		2 - 18	2 - 20	2 - 21	2 - 23
MATERIAL DEPTH (mm)		0.4	0.6	0.5	0.8
SAMPLE / LAB. No.		09/0875	09/0876	09/0878	09/0879
MATERIAL DESCRIPTION					
IN SITU FIELD MOISTURE (%)		10.4%	9.7%	12.3%	8.0%
AASHTO CLASSIFICATION		A-6	A-6	A-6	A-2-7
UNIFIED SOIL CLASSIFICATION		SC	SC	CL	SC
TRH14/* COLTO CLASSIFICATION					
SIEVE ANALYSIS, PERCENTAGE OF MATERIAL PASSING 0.075MM SIEVE (TMH 1, Method A1 (a), A5 - % PASSING					
SIEVE ANALYSIS	63.0 mm				
	53.0 mm				
	37.5 mm				100
	26.5 mm				98
	19.0 mm				98
	13.2 mm	100	100		97
	4.75 mm	99	97		91
	2.00 mm	98	92	100	82
	0.425 mm	93	73	96	63
	0.075 mm	49	41	59	31
	0.002 mm	7	5	7	6
SOIL MORTAR	COARSE SAND	5	20	4	22
	FINE SAND	45	34	36	40
	MATERIAL <0.075 MM	50	45	60	38
	GRADING MODULUS (GM)	0.61	0.94	0.45	0.61
	Ph / CONDUCTIVITY Sm^{-1}	8.05 / 0.056	8.44 / 0.002	8.02 / 0.0059	8.11 / 0.0067
ATTERBERG LIMITS ANALYSIS (TMH 1, Method A2, A3 & A4)					
ATTERBER LIMITS PASSING SIEVE (mm) >0.425	L.L	35	39	40	41
	P.I. / L.S.	15 / 7.45	15 / 6.89	18 / 9.69	20 / 9.02
POTENTIAL EXPANSIVENESS (mm)					
MAXIMUM DRY DENSITY AND OPTIMUM MOISTURE CONTENT, CALIFORNIA BEARING RATIO ANALYSIS (TMH 1, Method A7 & A8)					
UNCONFINED COMPRESSIVE STRENGTH & INDIRECT TENSILE STRENGTH OF STABILISED MATERIAL (TMH 1, Method A13T, A14 & A16T)					
CBR / UCS / ITS DETERMINATION	MOD AASHTO	MAX DRY DENSITY (kg/m^3)			
		OPT MOISTURE (%)			
		COMP MOISTURE (%)			
		DRY DENSITY (kg/m^3)			
		CBR (%) / *UCS/ITS (Kpa)			
		SWELL (%)			
	NRB	DRY DENSITY (kg/m^3)			
		CBR (%) / *UCS/ITS (Kpa)			
	PROC-TOR	MAX DRY DENSITY (kg/m^3)			
		OPT MOISTURE (%)			
		CBR (%)			
CBR / UCS / ITS	100%				
	98%				
	95%				
	93%				
	90%				

Results reported relate only to the materials tested

Simlab (EDMS) BEPERK (PTY) LIMITED GEOTEGNIESE DIENSTE GEOTECHNICAL SERVICES HANDEL DRYWEND AS TRADING AS Kimatlab

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CLIENT : **Southern Geotechnical Engineering**
P.O. Box 1687
Brooklyn Square
0075

DATE : 2009-08-13
REFERENCE : SLN139
DOCUMENT No.: 09/0880-09/0883
ORDER No.:
NUMBER OF PAGES : 2

ATTENTION : Pieter Oosthuizen
PROJECT : Lerato Park Phase 2

TEST REPORT

SAMPLE RECEIVED :	Client
SAMPLE TESTED :	2009/07/01
SAMPLE TESTED BY :	S.TELEKELO
SAMPLE REPORTED BY :	F.FONTERNEL
SAMPLE METHOD :	BY CLIENT
DATE SAMPLED :	UNKNOWN
LOCATION SAMPLED :	Lerato Park Phase 2
SAMPLE No. :	09/0880-09/0883
CLIENT REFERENCE :	Lerato Park Phase 2
TEST METHODS :	TMH1:A1,A2,A3,A5,A7 & A8

REMARKS : SAMPLES BROUGHT IN BY CLIENT

NOTE : REPORT CONTINUES ON NEXT PAGE
SEE ATTACHED TABLE

(Technician / Technologist)

(Divisional Director)

for : SIMLAB (PTY) LTD.

Simlab (EDMS) BEPERK (PTY) LIMITED GEOTEGNIESE DIENSTE GEOTECHNICAL SERVICES HANDEL DRYWEND AS TRADING AS Kimatlab

REG. No. 1987/004282/07 SAASIL/SAACEL No. 208

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***PAGE CONTINUES FROM PAGE 1

DOCUMENT No.: 09/0880-09/0883

CLIENT & PROJECT:		Southern Geotechnical Engineering / Lerato Park Phase 2			
HOLE No. / KM		2-24	2-27	2-27	2-31
MATERIAL DEPTH (mm)		0.4	0.7	1.1	0.8
SAMPLE / LAB. No.		09/0880	09/0881	09/0882	09/0883
MATERIAL DESCRIPTION					
IN SITU FIELD MOISTURE (%)		9.4%	10.5%	9.8%	11.0%
AASHTO CLASSIFICATION		A-6	A-6	A-7-6	A-6
UNIFIED SOIL CLASSIFICATION		SC	SC	SC	CL
TRH14/* COLTO CLASSIFICATION					
SIEVE ANALYSIS, PERCENTAGE OF MATERIAL PASSING 0.075MM SIEVE (TMH 1, Method A1 (a), A5 - % PASSING					
SIEVE ANALYSIS	63.0 mm				
	53.0 mm				
	37.5 mm				
	26.5 mm				
	19.0 mm	100	100		
	13.2 mm	99	99	100	100
	4.75 mm	87	98	95	99
	2.00 mm	75	92	81	96
	0.425 mm	62	75	60	91
	0.075 mm	36	39	44	61
	0.002 mm	4	5	4	6
SOIL MORTAR	COARSE SAND	18	18	26	6
	FINE SAND	34	39	20	31
	MATERIAL <0.075 MM	48	43	54	63
	GRADING MODULUS (GM)	1.26	0.94	1.16	1.26
	Ph / CONDUCTIVITY Sm^{-1}	7.06 / 0.0079	8.05 / 0.0066	8.09 / 0.0055	8.01 / 0.0051
ATTERBERG LIMITS ANALYSIS (TMH 1, Method A2, A3 & A4)					
ATTERBER LIMITS PASSING SIEVE (mm) >0.425	L.L	34	39	43	35
	P.I. / L.S.	17 / 8.92	29 / 9.58	19 / 9.25	17 / 8.56
POTENTIAL EXPANSIVENESS (mm)					
MAXIMUM DRY DENSITY AND OPTIMUM MOISTURE CONTENT, CALIFORNIA BEARING RATIO ANALYSIS (TMH 1, Method A7 & A8)					
UNCONFINED COMPRESSIVE STRENGTH & INDIRECT TENSILE STRENGTH OF STABILISED MATERIAL (TMH 1, Method A13T, A14 & A16T)					
CBR / UCS / ITS DETERMINATION	MOD AASHTO	MAX DRY DENSITY (kg/m^3)			
		OPT MOISTURE (%)			
		COMP MOISTURE (%)			
		DRY DENSITY (kg/m^3)			
		CBR (%) / *UCS/ITS (Kpa)			
		SWELL (%)			
	NRB	DRY DENSITY (kg/m^3)			
		CBR (%) / *UCS/ITS (Kpa)			
	PROC-TOR	MAX DRY DENSITY (kg/m^3)			
		OPT MOISTURE (%)			
		CBR (%)			
CBR / UCS / ITS	100%				
	98%				
	95%				
	93%				
	90%				

Results reported relate only to the materials tested

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CLIENT : **Southern Geotechnical Engineering**
P.O. Box 1687
Brooklyn Square
0075

DATE : 2009-08-13
REFERENCE : SLN139
DOCUMENT No.: 09/0884-09/0887
ORDER No.:
NUMBER OF PAGES : 2

ATTENTION : Pieter Oosthuizen
PROJECT : Lerato Park Phase 2

TEST REPORT

SAMPLE RECEIVED :	Client
SAMPLE TESTED :	01/07/2009
SAMPLE TESTED BY :	S.TELEKELO
SAMPLE REPORTED BY :	F.FONTERNEL
SAMPLE METHOD :	BY CLIENT
DATE SAMPLED :	UNKNOWN
LOCATION SAMPLED :	Lerato Park Phase 2
SAMPLE No. :	09/0884-09/0887
CLIENT REFERENCE :	Lerato Park Phase 2
TEST METHODS :	TMH1:A1,A2,A3,A5,A7 & A8

REMARKS : SAMPLES BROUGHT IN BY CLIENT

NOTE : REPORT CONTINUES ON NEXT PAGE
SEE ATTACHED TABLE

(Technician / Technologist)

for : SIMLAB (PTY) LTD.

(Divisional Director)

Simlab (EDMS) BEPERK (PTY) LIMITED GEOTEGNIESE DIENSTE GEOTECHNICAL SERVICES
HANDEL DRYWEND AS TRADING AS Kimatlab
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***PAGE CONTINUES FROM PAGE 1

DOCUMENT No.: **09/0884-09/0887**

CLIENT & PROJECT:		Southern Geotechnical Engineering / Lerato Park Phase 2			
HOLE No. / KM		2-36	2-36	2-39	2.43
MATERIAL DEPTH (mm)		0.4	1.0	0.4	0.6
SAMPLE / LAB. No.		09/0884	09/0885	09/0886	09/0887
MATERIAL DESCRIPTION					
IN SITU FIELD MOISTURE (%)		9.9%	10.8%	12.5%	14.0%
AASHTO CLASSIFICATION		A-6	A-2-7	A-6	A-7-6
UNIFIED SOIL CLASSIFICATION		CL	SC	CL	CL
TRH14/* COLTO CLASSIFICATION					
SIEVE ANALYSIS, PERCENTAGE OF MATERIAL PASSING 0.075MM SIEVE (TMH 1, Method A1 (a), A5 - % PASSING					
SIEVE ANALYSIS	63.0 mm				
	53.0 mm				
	37.5 mm				
	26.5 mm				
	19.0 mm		100		
	13.2 mm	100	92	100	100
	4.75 mm	93	83	99	97
	2.00 mm	90	67	97	93
	0.425 mm	82	42	79	82
	0.075 mm	67	29	63	71
	0.002 mm	4	3	4	7
SOIL MORTAR	COARSE SAND	9	37	19	11
	FINE SAND	17	20	16	12
	MATERIAL <0.075 MM	74	43	65	76
	GRADING MODULUS (GM)	0.60	1.62	0.61	0.60
	Ph / CONDUCTIVITY Sm^{-1}	7.96 / 0.0048	8.07 / 0.0038	8.15 / 0.0065	8.13 / 0.0265
ATTERBERG LIMITS ANALYSIS (TMH 1, Method A2, A3 & A4)					
ATTERBER LIMITS PASSING SIEVE (mm) >0.425	L.L	34	48	40	49
	P.I. / L.S.	14 / 7.55	19 / 9.23	18 / 9.97	25 / 12.23
POTENTIAL EXPANSIVENESS (mm)					
MAXIMUM DRY DENSITY AND OPTIMUM MOISTURE CONTENT, CALIFORNIA BEARING RATIO ANALYSIS (TMH 1, Method A7 & A8)					
UNCONFINED COMPRESSIVE STRENGTH & INDIRECT TENSILE STRENGTH OF STABILISED MATERIAL (TMH 1, Method A13T, A14 & A16T)					
CBR / UCS / ITS DETERMINATION	MOD AASHTO	MAX DRY DENSITY (kg/m^3)			
		OPT MOISTURE (%)			
		COMP MOISTURE (%)			
		DRY DENSITY (kg/m^3)			
		CBR (%) / *UCS/ITS (Kpa)			
		SWELL (%)			
	NRB	DRY DENSITY (kg/m^3)			
		CBR (%) / *UCS/ITS (Kpa)			
	PROC-TOR	MAX DRY DENSITY (kg/m^3)			
		OPT MOISTURE (%)			
		CBR (%)			
CBR / UCS / ITS	100%				
	98%				
	95%				
	93%				
	90%				

Results reported relate only to the materials tested
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CLIENT : **Southern Geotechnical Engineering**
P.O. Box 1687
Brooklyn Square
0075

DATE : 2009-08-13
REFERENCE : SLN139
DOCUMENT No.: 09/0888-09/0891
ORDER No.:
NUMBER OF PAGES : 2

ATTENTION : Pieter Oosthuizen
PROJECT : Lerato Park Phase 2

TEST REPORT

SAMPLE RECEIVED :	Client
SAMPLE TESTED :	2009/07/01
SAMPLE TESTED BY :	S.TELEKELO
SAMPLE REPORTED BY :	F.FONTERNEL
SAMPLE METHOD :	BY CLIENT
DATE SAMPLED :	UNKNOWN
LOCATION SAMPLED :	Lerato Park Phase 2
SAMPLE No. :	09/0888-09/0891
CLIENT REFERENCE :	Lerato Park Phase 2
TEST METHODS :	TMH1:A1,A2,A3,A5,A7 & A8

REMARKS : SAMPLES BROUGHT IN BY CLIENT

NOTE : REPORT CONTINUES ON NEXT PAGE
SEE ATTACHED TABLE

(Technician / Technologist)

for : SIMLAB (PTY) LTD.

(Divisional Director)

Simlab (EDMS) BEPERK (PTY) LIMITED GEOTEGNIESE DIENSTE GEOTECHNICAL SERVICES HANDEL DRYWEND AS TRADING AS Kimatlab

REG. No. 1987/004282/07 SAASIL/SAACEL No. 208

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***PAGE CONTINUES FROM PAGE 1

DOCUMENT No.: **09/0888-09/0891**

CLIENT & PROJECT:		Southern Geotechnical Engineering / Lerato Park Phase 2			
HOLE No. / KM		2-44	2-46	2-46	2-47
MATERIAL DEPTH (mm)		0.6	0.5	1.5	0.5
SAMPLE / LAB. No.		09/0888	09/0889	09/0890	09/0891
MATERIAL DESCRIPTION					
IN SITU FIELD MOISTURE (%)		13.5%	14.0%	11.8%	13.2%
AASHTO CLASSIFICATION		A-6	A-7-6	A-7-6	A-7-6
UNIFIED SOIL CLASSIFICATION		CL	SC	SC	SC
TRH14/* COLTO CLASSIFICATION					
SIEVE ANALYSIS, PERCENTAGE OF MATERIAL PASSING 0.075MM SIEVE (TMH 1, Method A1 (a), A5 - % PASSING					
SIEVE ANALYSIS	63.0 mm				
	53.0 mm				
	37.5 mm				
	26.5 mm				
	19.0 mm				
	13.2 mm	100	100	100	100
	4.75 mm	100	99	98	99
	2.00 mm	95	99	92	97
	0.425 mm	90	90	76	90
	0.075 mm	64	44	44	44
	0.002 mm	7	7	4	6
SOIL MORTAR	COARSE SAND	6	9	17	7
	FINE SAND	26	47	35	47
	MATERIAL <0.075 MM	68	44	47	45
	GRADING MODULUS (GM)	0.51	0.68	0.88	0.51
	Ph / CONDUCTIVITY Sm^{-1}	8.04 / 0.0078	8.14 / 0.0093	8.32 / 0.0248	8.09 / 0.007
ATTERBERG LIMITS ANALYSIS (TMH 1, Method A2, A3 & A4)					
ATTERBER LIMITS PASSING SIEVE (mm) >0.425	L.L	40	42	46	44
	P.I. / L.S.	18 / 12.23	20 / 10.77	20 / 10.55	21 / 10.55
POTENTIAL EXPANSIVENESS (mm)					
MAXIMUM DRY DENSITY AND OPTIMUM MOISTURE CONTENT, CALIFORNIA BEARING RATIO ANALYSIS (TMH 1, Method A7 & A8)					
UNCONFINED COMPRESSIVE STRENGTH & INDIRECT TENSILE STRENGTH OF STABILISED MATERIAL (TMH 1, Method A13T, A14 & A16T)					
CBR / UCS / ITS DETERMINATION	MOD AASHTO	MAX DRY DENSITY (kg/m^3)			
		OPT MOISTURE (%)			
		COMP MOISTURE (%)			
		DRY DENSITY (kg/m^3)			
		CBR (%) / *UCS/ITS (Kpa)			
		SWELL (%)			
	NRB	DRY DENSITY (kg/m^3)			
		CBR (%) / *UCS/ITS (Kpa)			
	PROC-TOR	MAX DRY DENSITY (kg/m^3)			
		OPT MOISTURE (%)			
		CBR (%)			
CBR / UCS / ITS	100%				
	98%				
	95%				
	93%				
	90%				

Results reported relate only to the materials tested

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CLIENT : **Southern Geotechnical Engineering**
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Brooklyn Square
0075

DATE : 2009-08-13
REFERENCE : SLN139
DOCUMENT No.: 09/0892 - 0899
ORDER No.:
NUMBER OF PAGES : 2

ATTENTION : Pieter Oosthuizen
PROJECT : Lerato Park Phase 2

TEST REPORT

SAMPLE RECEIVED :	Client
SAMPLE TESTED :	2009/07/01
SAMPLE TESTED BY :	S.TELEKELO
SAMPLE REPORTED BY :	F.FONTERNEL
SAMPLE METHOD :	BY CLIENT
DATE SAMPLED :	UNKNOWN
LOCATION SAMPLED :	Lerato Park Phase 2
SAMPLE No. :	09/0892 - 0899
CLIENT REFERENCE :	Lerato Park Phase 2
TEST METHODS :	TMH1:A1,A2,A3,A5,A7 & A8

REMARKS : SAMPLES BROUGHT IN BY CLIENT

NOTE : REPORT CONTINUES ON NEXT PAGE
SEE ATTACHED TABLE

(Technician / Technologist)

(Divisional Director)

for : SIMLAB (PTY) LTD.

Simlab (EDMS) BEPERK (PTY) LIMITED GEOTEGNIESE DIENSTE GEOTECHNICAL SERVICES HANDEL DRYWEND AS TRADING AS Kimatlab

REG. No. 1987/004282/07 SAASIL/SAACEL No. 208

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***PAGE CONTINUES FROM PAGE 1

DOCUMENT No.: 09/0892 - 0899

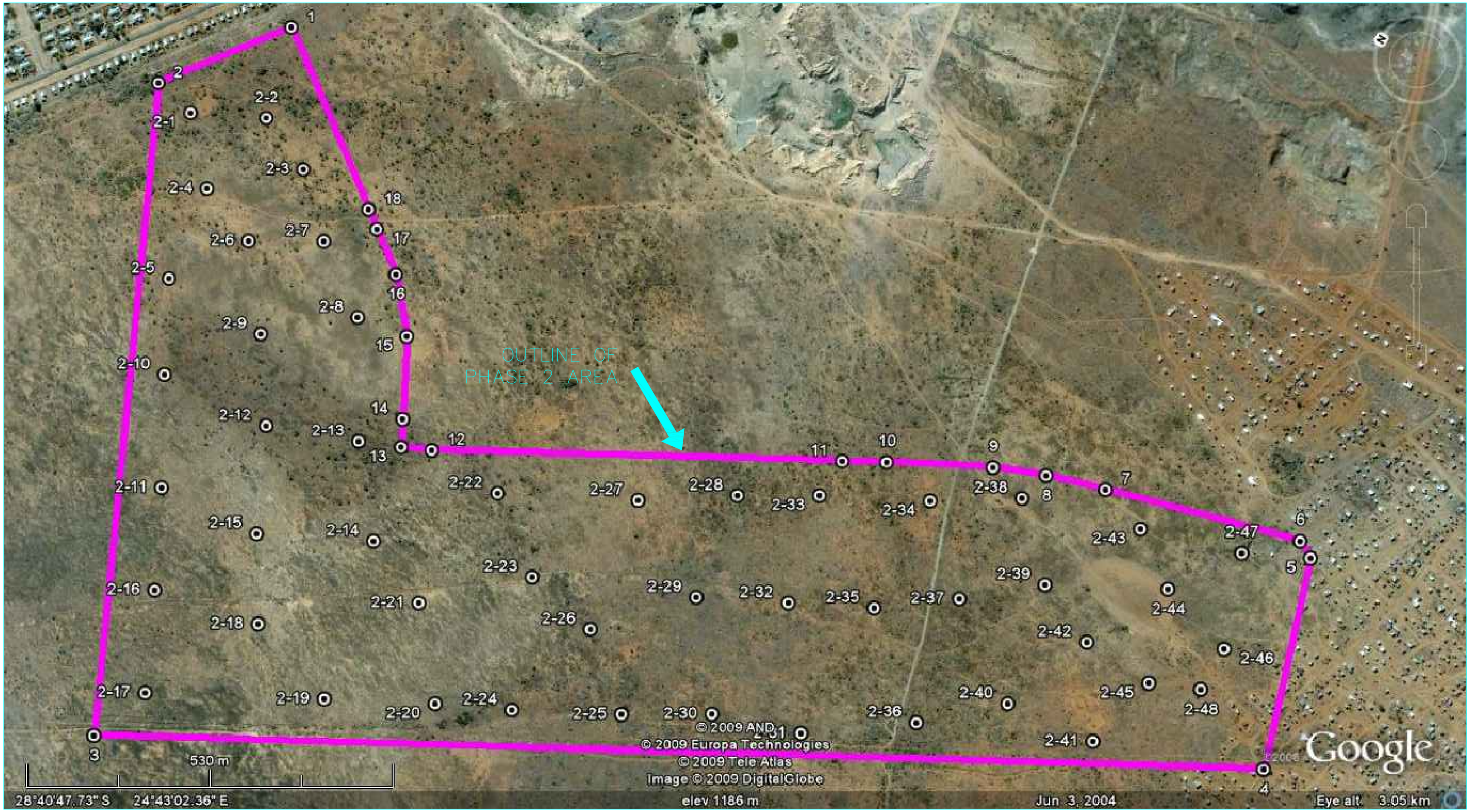
CLIENT & PROJECT:		Southern Geotechnical Engineering / Lerato Park Phase 2			
HOLE No. / KM		2-47	2-11		
MATERIAL DEPTH (mm)		1.2	0.6		
SAMPLE / LAB. No.		09/0892	09/0899		
MATERIAL DESCRIPTION					
IN SITU FIELD MOISTURE (%)		14.1%	9.6%		
AASHTO CLASSIFICATION		A-7-6	A-6		
UNIFIED SOIL CLASSIFICATION		SC	CL		
TRH14/* COLTO CLASSIFICATION					
SIEVE ANALYSIS, PERCENTAGE OF MATERIAL PASSING 0.075MM SIEVE (TMH 1, Method A1 (a), A5 - % PASSING					
SIEVE ANALYSIS	63.0 mm				
	53.0 mm				
	37.5 mm				
	26.5 mm				
	19.0 mm				
	13.2 mm	100	100		
	4.75 mm	96	99		
	2.00 mm	90	98		
	0.425 mm	77	95		
	0.075 mm	49	60		
	0.002 mm	6	9		
SOIL MORTAR	COARSE SAND	15	3		
	FINE SAND	31	36		
	MATERIAL <0.075 MM	54	61		
	GRADING MODULUS (GM)	0.83	0.47		
	Ph / CONDUCTIVITY Sm^{-1}	8.37 / 0.0143	8.27 / 0.0052		
ATTERBERG LIMITS ANALYSIS (TMH 1, Method A2, A3 & A4)					
ATTERBER LIMITS PASSING SIEVE (mm) >0.425	L.L	50	35		
	P.I. / L.S.	23 / 12.03	16 / 8.61		
POTENTIAL EXPANSIVENESS (mm)					
MAXIMUM DRY DENSITY AND OPTIMUM MOISTURE CONTENT, CALIFORNIA BEARING RATIO ANALYSIS (TMH 1, Method A7 & A8)					
UNCONFINED COMPRESSIVE STRENGTH & INDIRECT TENSILE STRENGTH OF STABILISED MATERIAL (TMH 1, Method A13T, A14 & A16T)					
CBR / UCS / ITS DETERMINATION	MOD AASHTO	MAX DRY DENSITY (kg/m^3)			
		OPT MOISTURE (%)			
		COMP MOISTURE (%)			
		DRY DENSITY (kg/m^3)			
		CBR (%) / *UCS/ITS (Kpa)			
		SWELL (%)			
	NRB	DRY DENSITY (kg/m^3)			
		CBR (%) / *UCS/ITS (Kpa)			
	PROC-TOR	MAX DRY DENSITY (kg/m^3)			
		OPT MOISTURE (%)			
		CBR (%)			
CBR / UCS / ITS	100%				
	98%				
	95%				
	93%				
	90%				

Results reported relate only to the materials tested

APPENDIX C
DRAWINGS

Legend:

NORTH



0 100 200 300 400 500

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Rev No:	Date:	Description:

Client:

Project Description:

LERATO PARK PHASE 2
GEOTECHNICAL INVESTIGATION

Drawing Title:

APPROXIMATE TEST PIT POSITIONS

Approved:

SIGNATURE	NAME	DATE

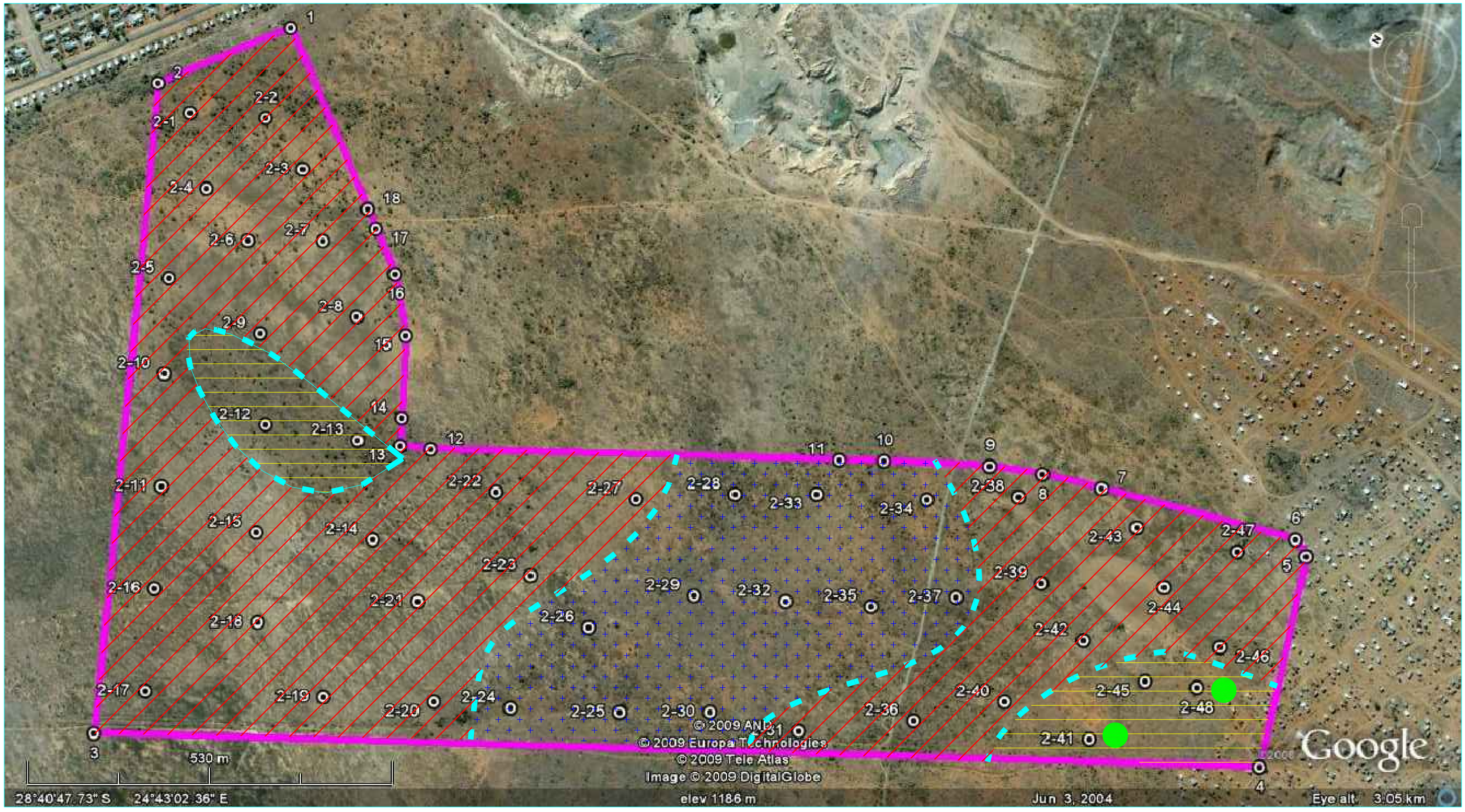
sge
Telephone: (012) 430 2081
Fax: (086) 649 9349
Address: P.O. Box 1687
Brooklyn Square
Pretoria
South Africa
0075
Website: www.sge.co.za

Designed:	Drawn:	Checked:
PHO	PHO	PHO
Scale:	Date:	Approved:
As shown	August 2009	

Drawing Number: 358/04

Revision Number: 0

0 100 200 300 400 500



GENERAL NOTES:
THE EXCAVATION CONDITIONS STATED IN THIS DRAWINGS MUST BE INTERPRETED IN CONJUNCTION WITH THE INFORMATION CONTAINED IN REPORT NUMBER 358/03. DUE TO THE HIGHLY FRACTURED NATURE OF SHALE ROCK UNDERLYING THE SITE AS WELL AS THE BULK EXCAVATION CONDITIONS THAT WILL PREVAIL DURING THE CONSTRUCTION PHASE, DEEPER PENETRATION BY CONVENTIONAL EXCAVATION EQUIPMENT ARE PROBABLE.

INFERRED BOUNDARY:
MUST BE INTERPRETED AS A GRADUAL TRANSITION AND NOT A FIXED LINE

AREAS OF MINOR DOLERITE OUTCROP AND SURFACE BOULDERS

VERY SHALLOW EXCAVATION CONDITIONS:
REFUSAL PROBABLE WITHIN UPPER 1.0m

SHALLOW EXCAVATION CONDITIONS:
REFUSAL PROBABLE BETWEEN 1.0m AND 2.0m DEEP.

DEEPER EXCAVATION CONDITIONS:
REFUSAL PROBABLE DEEPER THAN 2.0m DEEP.

Legend:

NORTH

---	---	---
Rev No:	Date:	Description:

Client:

Project Description:

LERATO PARK PHASE 2
GEOTECHNICAL INVESTIGATION

Drawing Title:

ANTICIPATED
EXCAVATION CONDITIONS

Approved:

SIGNATURE NAME DATE

sge
Telephone: (012) 430 2081
Fax: (086) 649 9349
Address: P.O. Box 1687
Brooklyn Square
Pretoria
South Africa
0075
Website: www.sge.co.za

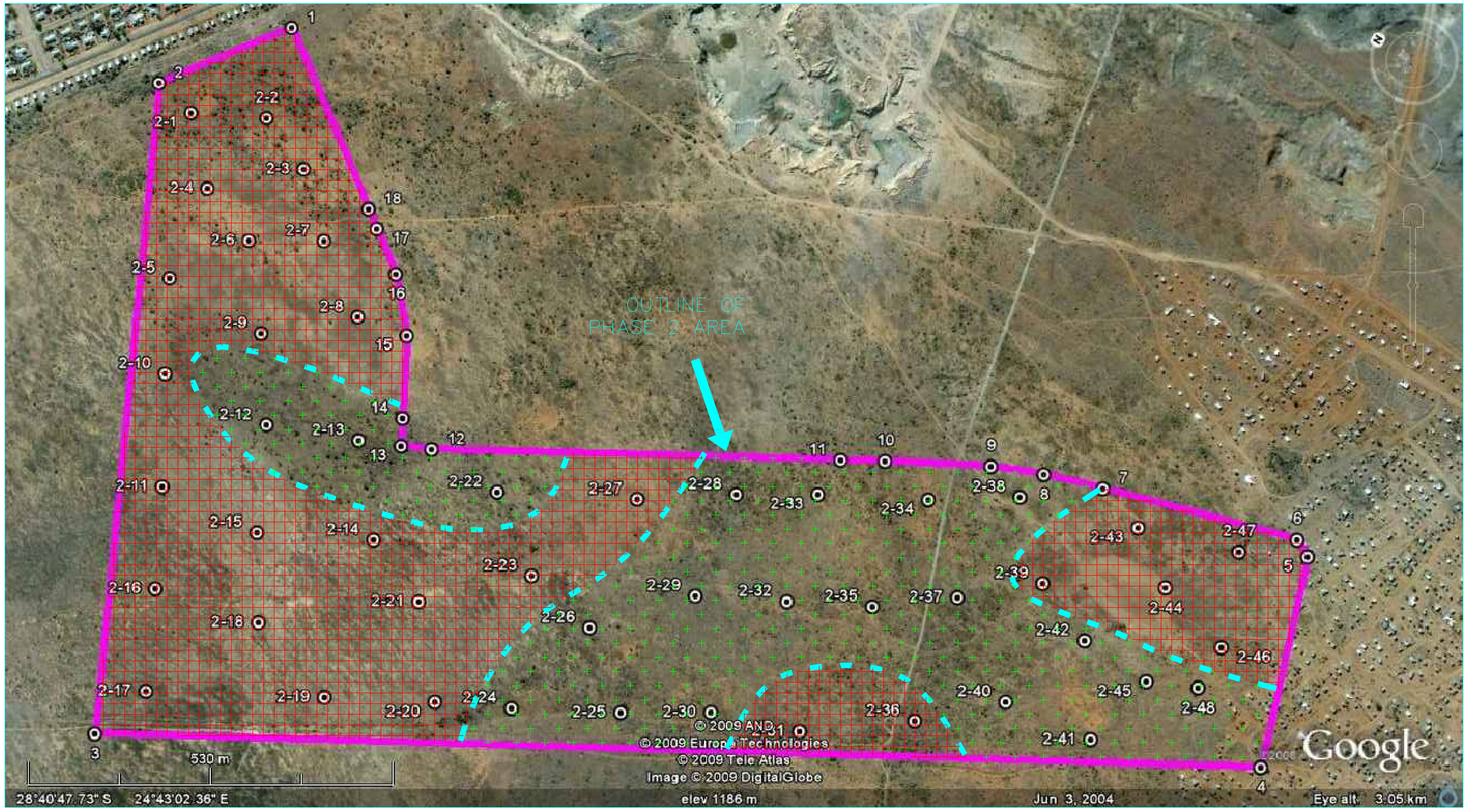
Designed:	Drawn:	Checked:
PHO	PHO	PHO
Scale:	Date:	Approved:
AS SHOWN	August 2009	

Drawing Number: 358/05

Revision Number: 0

Legend:

NORTH



0 100 200 300 400 500

INFERRED GEOLOGICAL ZONE:
MUST BE INTERPRETED AS A GRADUAL TRANSITION AND NOT FIXED LINE

SITE CLASS H1:
EXPANSIVE FOUNDATION CONDITIONS
7.5 TO 15mm SOIL MOVEMENTS

SITE CLASS R:
STABLE FOUNDATION CONDITIONS
NEGLIGIBLE SOIL MOVEMENTS

---	---	---
Rev No:	Date:	Description:

Client:

Project Description:

LERATO PARK PHASE 2
GEOTECHNICAL INVESTIGATION

Drawing Title:

RESIDENTIAL SITE CLASS ZONES

Approved:

SIGNATURE NAME DATE

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Designed:	Drawn:	Checked:
PHO	PHO	PHO
Scale:	Date:	Approved:
As shown	August 2009	

Drawing Number: 358/06

Revision Number: 0

APPENDIX D
PHOTOGRAPHS

LERATO PARK PHASE 2

23 JUNE 2009

LERATO PARK PHASE 2

23 JUNE 2009

LERATO PARK PHASE 2

23 JUNE 2009

LERATO PARK PHASE 2

23 JUNE 2009

LERATO PARK PHASE 2

24 JUNE 2009

LERATO PARK PHASE 2

24 JUNE 2009

LERATO PARK PHASE 2

24 JUNE 2009

LERATO PARK PHASE 2

24 JUNE 2009

LERATO PARK PHASE 2

24 JUNE 2009

LERATO PARK PHASE 2

24 JUNE 2009

LERATO PARK PHASE 2

24 JUNE 2009

LERATO PARK PHASE 2

24 JUNE 2009

Northern Cape Department of Co-operative Governance, Human Settlement and Traditional Affairs

LERATO PARK INTEGRATED HOUSING DEVELOPMENT

CONTRACT 2334-10-05/ID01

INTERNAL CIVIL ENGINEERING SERVICES: PHASE 5

SITE INFORMATION

C4.1 Site Information

C4.1.2 Record of Decision

DEPARTMENT OF TOURISM, ENVIRONMENT AND CONSERVATION

ISEBE LEZOKHENKETHO, INDALO NOLONDOLOZO

LEFAPHA LA BOJANALA, TIKOLOGO LE TSHOMARELO

DEPARTEMENT VAN TOERISME, OMGEWING EN BEWARING

224 Du Toitspan Road
Private Bag X6102
KIMBERLEY
8300

224 Du Toitspan Road
Kgetsenaposo X6102
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224 Du Toitspan Road
Iingxowa yeposi X6102
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Du Toitspenweg 224
Privaatsak X6102
KIMBERLEY
8300

Tel. (053) 807-4800

Fax (053) 831-3630

Enquiries : S.G Mbanjwa
Dipatlisiso :
Imibuzo :
Navrae :

Date : 03 July 2006
Letlha :
Umhla :
Datum :

Reference :
Tshupelo : NNO 25/19
Isalathiso : NC/KIM 39/155/2005
Verwysings :

Sol-Plaatje Local Municipality
Mr. de Bruyn
C/o 3 Lodge Road
Kimberley
8300

Fax 053-832 6518

Dear: Mr. G. de Bruyn

APPLICATION FOR AUTHORIZATION: THE CHANGE OF LAND USE FROM: AGRICULTURAL OR UNDERTERMINED USE TO ANY OTHER LAND USE: UPGRADING OF THE LERATO PARK FROM INFORMAL SETTLEMENT TO FORMAL INTERGRATED SETTLEMENT, SOL-PLAATJE MUNICIPALITY, NORTHERN CAPE PROVINCE.

By virtue of the powers delegated to me in terms of Section 33(1) of the Environment Conservation Act, 1989 (Act No. 73 of 1989), I hereby in terms of Section 22(3) of the Act authorize: ***Application for Authorization: THE CHANGE OF LAND USE FROM: AGRICULTURAL OR UNDERTERMINED USE TO ANY OTHER LAND USE: UPGRADING OF THE LERATO PARK FROM INFORMAL SETTLEMENT TO FORMAL INTERGRATED SETTLEMENT, SOL-PLAATJE MUNICIPALITY, NORTHERN CAPE PROVINCE.*** Schedule *1/2* of Government Notice No. R. 1182: activity 2 (c): a detailed description of the activity is given in the final ***scoping report*** dated (MAY 2006), subject to the conditions listed in the record of decision.

The record of decision including the conditions under which the application is authorized is attached. This authorization is valid for a period of *(3)* years from the date of issue and if the activity is not undertaken within this period the authorization will be invalidated.

An appeal against this authorization or conditions of authorization may be lodged in writing with: **The Member of the Executive Council, Ministry of Tourism, Environment & Conservation, Private Bag X6102, Kimberley 8300, Fax. (053) 8321026**, within 30 calendar days from the date issue of this authorization, setting the grounds of appeal and including all relevant documentation as required by Section 35 of the Environment Conservation Act, 1989 (Act No. 73 of 1989).

Yours Faithfully

Mrs. P. M. N. Mokhali
HOD: DEPARTMENT OF TOURISM, ENVIRONMENT AND CONSERVATION
Date: 06. 07. 04

Permit No 81/2006

A DESTINATION IN HARMONY WITH NATURE

Northern Cape Province
DEPARTMENT OF TOURISM, ENVIRONMENT & CONSERVATION

Porofensi Ya Kapa Bokone
LEFAPHA LA BOJANALA, TIKOLOGO LE SHOMARELO

RECORD OF DECISION

In terms of Section 22(3) of the Environment Conservation Act, 1989 (Act No 73 of 1989) with regard to the undertaking of the activity described below as required by Government Notice No R. 1183 of 5 September 1997

Reference number: NC/KIM39/155/05

Permit number: 81/2006

Project title:	The change of land use from : agricultural or undetermined use to any other land use : Upgrading of Lerato Park from informal to formal integrated settlement				
Brief description of project:	The development will consist of the following: • A full formal integrated settlement				
Project location:	KIMBERLEY, NORTHERN CAPE				
Co-ordinates:	Latitude:	28°	40′	50″	So
	Longitude:	24°	42′	40″	Ea
District Municipality	Frances Baard Local Municipality				
Local authority/municipality:	Sol Plaatje District Municipality				
Name of Property:	Remainder of portion 59 of farm Roodepaan 70				
Farm/Erven Name and Number	As above				
Size of Property:	200 ha				
Closest City/Town:	In Kimberley	Distance (in km)	-		
Project Applicant:	Sol Plaatje Municipality				
Business Reg. No./ID No.	NC091				
Contact person:	MR G de Bruyn				
Postal Address:	C/o 3 Lodge Road, KIMBERLEY				
Telephone:	053 832 6518	Cell:	082 822 8201		
Email:		Fax:	053-832 6518		
Environmental Consultant(s):	B H Erasmus				

				Mr B H Erasmus		
				7 Edgar Davis Str, Kimberley		
				053 832 6518	Cell:	082 822
				–	Fax:	053 832 6518
Site visit	Yes	X	No		Date of site visit	
Persons present: D Moleko, B H Erasmus						

DECISION

After due consideration of the facts presented to the Northern Cape Department of Tourism, Environment & Conservation (hereafter referred to as the Department), authorization is hereby granted in terms of Section 22(3) of the Environment Conservation Act, 1989 (Act No 73 of 1989) ***the proposed upgrade of Lerato Park from informal to integrated formal settlement*** (Schedule 1 of Government Notice No R.1182: *Activity 2(c) A change of undetermined use to any other land use.* The authorization is granted subject to the following condition

CONDITIONS

General conditions:

1. This authorization is granted only in terms of Section 22(3) of the Environment Conservation Act, 1989 (Act No 73 of 1989) and does not exempt the holder thereof from compliance with any other legislation.
2. This authorization refers only to the project as specified and described in the final scoping report dated **MAY 2006.** Any other activity listed under Section 21 of the Environment Conservation Act, 1989 (Act No 73 of 1989) which is not specified above, is not covered by this authorization and a separate application will have to be launched and must therefore comply with the requirements of the Environment Conservation Act, 1989 (Act No 73 of 1989) and Government Notice No. R. 1183 of 5 September 1997 and its amendments.
3. **This authorization is subject to the approval by the relevant local authorities i.e. in terms of any relevant legislation administered by those authorities.**
4. No development may take place on the area of concern without the necessary permits/approvals and/or service agreements, where it is relevant, from or between the following authorities, including:

- National Department of Environmental Affairs & Tourism
- National Department of Agriculture
- Department of Housing & Local Government
- Department of Water Affairs & Forestry.
- Department of Minerals & Energy
- Department of Transport, Roads & Public Works
- McGregor Museum
- South African Heritage Resources Agency
- Civil Aviation Authority, and
- Any other relevant authority whether national, provincial or local

5. The applicant shall within 5 (five) days of receipt of this authorization, provide all interested and affected parties identified during the public consultation process, with copies of this authorization, including all the conditions attached thereto.
6. One week written notice must be given to the Department before commencement with construction activities.
   6.1 Such notice shall make clear reference to the site location details and the reference number given above.
   6.2 The notice must include proof of compliance with the following conditions described herein:
   i.e. conditions: 5 & 14
7. All mitigation measures and recommendations as laid down in the Scoping Report are binding and must be implemented, unless stated differently in this ROD.
8. The Environmental Control Officer must ensure that changes in the project resulting in significant environmental impacts and that differ from what was authorized by the Department, must be submitted to this Department for approval prior to such changes being effected.
9. The applicant must notify this Department, in writing, within 24 hours thereof if conditions of the authorization are not complied with.
10. Non-compliance with, or any deviation from, the conditions set out in this authorization constitutes a failure in compliance with the authorization. Such failure in compliance is regarded as an offence and will be dealt with in terms of Sections 29, 30 and 31 of the Environment Conservation Act, 1989 (Act No. 73 of 1989), as well as any other appropriate legal mechanisms.
11. The Department must be notified of any change of address of the applicant.
12. The Environmental Management Plan (EMP) for construction and management of activities relating to the protection of the natural environment during the construction phase and must be adhered to at all times unless stated differently in this ROD.
13. An Environmental Control Officer (ECO) must be appointed to oversee the implementation of the EMP. The ECO or his representative must visit the site at least once a week for the duration of the construction phase.
14. The conditions of the authorization should be brought to the attention of all persons (employees, sub-consultants, etc) associated with the undertaking of this activity and the applicant should take such measures necessary to bind such persons to these conditions.
15. A copy of the authorization shall be available on site during construction. The applicable conditions of this authorization must form part of all contractors' and sub-contractors' conditions of contract.
16. The applicant must apply the principle of best practicable environmental option for all technologies used/ implemented during construction.
17. Appropriate toilets must be supplied for the entire construction period and must be serviced on a regular basis.
18. All waste including general litter must be removed from site and disposed off at an applicable licensed disposal site. No waste material shall be left on site.
19. No fires are permitted on site.
20. No plants must be removed other than required for the layout of the site. However, if the affected plant(s) is endangered or protected, permission must be sought from Northern Cape Department of Tourism, Environment & Conservation for the removal thereof.
21. All forms of pollution must be prevented, or where it cannot, should be minimized or remedied.

22. Records relating to the compliance/non-compliance with the conditions of the authorization must be kept in good order. Such records must be made available to the Department within 7 (seven) days of receipt of a written request by the Department for such records and also included in the Environmental Audit report.
23. Any complaints regarding the said development must be brought to the attention of the Department within 24 working hours after receiving the complaint. A complaints register must be kept up to date for inspection by the Department.
24. This Department may add to, change and/or amend any of the conditions in this authorization if, in the opinion of the department, the addition, change of amendment is environmentally justified. In event that such impacts exceed its significance as predicted in the independent consultant's environmental scoping report and supporting documentation, the authorization may be withdrawn after proper procedures were followed.
25. In the event of any dispute concerning the significance of a particular impact, the opinion of this department in respect of its significance will prevail.
26. The Department must be notified, within 30 days thereof, of any change of ownership and/or project developer. Conditions imposed in this ROD must be made known to the new owner and/ or developer and are binding on the new owner and/or developer.
27. In the event of sharing the Conditions imposed in this ROD must be made known to the sharing party. All conditions in this ROD are binding on the sharing party. The applicant is responsible to ensure that all these conditions are complied with.
28. National government, provincial government, local authorities or committees appointed in terms of the conditions of this application or any other public authority or organization shall not be held responsible for any damage of losses suffered by the applicant or his successor in title in any instance where construction or operation subsequent to construction be temporarily or permanently stopped for reasons of non-compliance by the applicant with the conditions of approval as set out in this document or any other subsequent document emanating from these conditions of approval.
29. If any condition imposed in terms of this authorization is not being complied with, the authorization may be withdrawn after 30 days written notice to the applicant in terms of Section 22 (4).
30. The applicant shall be responsible for all costs necessary to comply with the above conditions unless otherwise specified.
31. In the event that any archaeological material is found and it is likely that it will be disturbed, the Department must be alerted immediately.
32. The Department must be supplied with an approval from the landowner giving consent for the applicant to proceed with the project, before construction/upgrading takes place.

Special conditions:

1. All mitigation measures and recommendations as laid down in the Scoping Report by **B H ERASMUS dated MAY 2006** are binding and must be implemented, unless stated differently in this ROD.
2. The measures outlined in the Geo-technical report to favorably design the houses to meet the required conditions, specific to Lerato Park must be adhered to
3. The Environmental Management Plan Report as submitted by **B H ERASMUS** on the **23rd MAY 2006** must be implemented to the latter, throughout the pre and post development phases of Lerato Park

KEY FACTORS AFFECTING THE DECISION

The Department's authorization is based upon a review of the final scoping report and appendices dated **MAY 2006**. The Scoping Report findings, given the nature of the projects and the selected sites and study area, concludes that the potential impacts associated with the proposed development are of a nature and extent that can be reduced, limited and eliminated by the introduction of appropriate mitigation measures. The conditions of the ROD and the recommendations made in the final scoping report and appendices dated **MAY 2006** should be sufficient to mitigate and manage the impacts associated with the development.

The legal and procedural requirements have been complied with and the information contained in the Scoping Report and appendices is to the satisfaction of the Department.

PERIOD OF VALIDITY AND RENEWAL OF AUTHORIZATION

This authorization is valid for 3 (three) years from the date of issue and must be renewed 6 (six) months prior to the expiry date. The Department reserves the right to review and amend the conditions of the authorization at any given time.

APPEAL

The applicant must, within 5 calendar days of receipt of this record of decision (ROD) inform all interested and affected parties registered during the EIA process of at least the following:

i. That an authorization has been issued to the applicant to proceed with the construction and operation of the facilities.
ii. That any appeal in terms of the Section 10 (1) of regulation 11 of the environmental assessment regulations (Government Notice No R. 1183 of 5 September 1997) against the issuing of the authorization must be lodged with the MEC for Tourism, Environment & Conservation within 30 (thirty) days from the date on which the ROD has been issued to the applicant and at the address stipulated in the authorization.
iii. Include the date on which the ROD was issued to the applicant in terms of regulation 10 (1) and the date by which the appeals must reach the MEC.
iv. Indicate where copies of the authorization and ROD can be viewed/obtained

Yours Faithfully

Mrs. P. M. N. Mokhali: HOD
Department of Tourism, Environment and Conservation

Date: 06. 07. 04

Northern Cape Department of Co-operative Governance, Human Settlement and Traditional Affairs

LERATO PARK INTEGRATED HOUSING DEVELOPMENT

CONTRACT 2334-10-05/ID01

INTERNAL CIVIL ENGINEERING SERVICES: PHASE 5

SITE INFORMATION

C4.1 Site Information

C4.1.3 Environmental Management Plan

Office.

SOL PLAATJE MUNICIPALITY

Upgrading of the Lerato Park informal settlement, Kimberley

Environmental Management Plan

May 2006

Compiled by Hennie Erasmus
Environmental consultant

TABLE OF CONTENTS

SECTION EIGHT: GENERAL PROCEDURES FOR ALL CONSTRUCTION ACTIVITIES

Section One

Introduction

1.1 BACKGROUND

The EMP contains the specifications of the various contractors' contents to which they will have to adhere to during the site works.

1.2 TERMS OF REFERENCE

The terms of reference for this EMP were to document guidelines, which would govern the construction and operational phase of the proposed development.

The ecological knowledge and managerial skills of the proposed Environmental Control Officer will be utilised to achieve results for the project that satisfies the requests of the Interested and Affected Parties, with the ecological damage being limited to an absolute minimum.

1.3 ENVIRONMENTAL CONSULTANT

This EMP was compiled by Hennie Erasmus (Environmental Consultant).

Further independent reports will be attached as they become available eg. Water, sewage, electricity, waste removal, etc. A geo-technical report has already been done. The environmental consultant did not recommend any other specialist reports on the environment because of the extreme degradation of the ecology of the area for the proposed development.

1.4 PRESENTATION OF THE EMP

The purpose of an EMP is to specify procedures to mitigate the potential negative impacts of all work on the physical, biological and social environments on and around the site. The EMP is structured as follows:

SECTION	DESCRIPTION
Section One	Explains the background and terms of reference for the EMP
Section Two	Provides a summary of the development proposals
Section Three	Explains the contractual obligations with regard to the EMP
Section Four	Provides overall guidance on addressing environmental impacts within the scope of environmental legislation and recommendations contained in the EIA, where applicable

Section Five	Identifies the responsibility and authority of the various organisations involved in the project
Section Six	Describes the method of communicating the EMP to the Contractors
Section Seven	Describes the procedures for controlling activities in site to minimise adverse effects on the environment
Section Eight	Specifies the procedures for monitoring and recording compliance with the EMP, and implementing and recording corrective actions
Section Nine	Specifies the procedure for reviewing compliance with the EMP and for making changes to the EMP during the construction period.

Section Two

The Proposed development

2.1 SITE CONTEXT

Figure 1 indicates the site of the planned development in Lerato Park, Kimberley.

2.2 COMPONENTS OF THE DEVELOPMENT

The layout of the development is indicated in Figure 2. Houses are planned in clusters around a central island in the centre.

The different components of the development are:

Approximately 3850 houses
One Primary school per 1000 residential units
One secondary school per 3000 residential units.
Road construction
Storm water drainage
Required number of churches through community participation
Clinic
Police station
Shopping centre(s)

2.3 INFRASTRUCTURE

There are presently 1 800 informal shacks in the area, most of them closer to the Barkley Road area than towards Roodepan. The planning is that the northern section be formalised first so as not to disrupt the present informal settlement and then move the inhabitants to the formal settlement. Thereafter the present informal settlement area will be formalised.

Municipal services for water supply, storm water drainage, electricity, sewage and refuse removal will have to be put in place.

2.4 THE CONSTRUCTION PHASE

The construction phase will last approximately three years.

2.5 OPERATIONAL PHASE

The operational phase will last indefinitely as this will be a formalised suburb of Kimberley.

2.6 DECOMMISSIONING PHASE

Not applicable.

Section Three

Commitment to the EMP

The Environmental Management Plan (EMP) defines and specifies procedures, which the contractors must follow for the purpose of eliminating or reducing adverse environmental impacts for the construction works in the site and the surrounding area.

The EMP must be included with the tender documents to ensure that the costs of implementing the EMP are included into the contract costs and also to insure that contractors are aware of their environmental responsibilities prior to commencing work. Other implementing agents and/or contractors already on site must be handed the EMP for implementation.

The EMP thus forms part of the contract. Failure by any of the contractors' or sub-contractors' employees to implement the EMP, will be considered cause for the Project Manager and Implementing agent/Environmental Control Officer (ECO) to recommend that offending employees be removed from site, penalties be instated or that the damage be repaired at the cost of the contractors. The Project Manager/Implementing agent may also order the removal of equipment that is causing continual environmental damage (e.g. leaking oil or diesel).

The Project Manager/Implementing agent may order the contractors to suspend part or all of the works if they fail to comply with the specifications set out in the EMP and the method statements supplied by the contractors and sub-contractors. The suspension will be enforced until such time as the offending party(ies) procedure or equipment is corrected. No extension of time will be granted on the contract period for such delays and costs will be borne by the contractors.

In case of contractors/sub-contractors that did not receive the EMP as part of their tender procedures, the same procedure of environmental awareness training must be supplied during induction training by the ECO and the same principles will apply to a tenderer that received the EMP with the time of tender.

Copies of the EMP will be available at the Sol Plaatje Municipality and Hennie Erasmus (Environmental Consultant), and with the Project Manager/Implementing agent on site. All senior personnel on the contract will be required to familiarise themselves with the content of the EMP and to ensure that their employees act in such a way that the environment is protected according to its provisions.

Section Four
Environmental Policy

4.1 INTRODUCTION

The environmental policy establishes the overall sense of direction for the project and is formulated to guide the EMP. The policy is guided by an assessment of the potential environmental impacts of the activities to be conducted and environmental legislation. This section outlines key pieces of relevant environmental legislation and provides the environmental policy statement for the project.

4.2 ENVIRONMENTAL LEGISLATION

Atmospheric Pollution Prevention Act No. 45 of 1965
Environment Conservation Act No. 73 of 1989
Hazardous Substances Act No. 15 of 1973
National Environmental Management Act No. 107 of 1998
National Monuments Act No. 28 of 1969
National Water Act No. 36 of 1998
Northern Cape Nature Conservation Ordinance 19 of 1974
National Act on Forests, No. 84 of 1998

4.3 SOL PLAATJE MUNICIPALITY'S ENVIRONMENTAL POLICY

The following environmental policy statements have been prepared for the construction works associated with the Lerato Park upgrading. All personnel working in this project commit themselves to:

- Adhering to the requirements of the Environmental Management Plan for the project;
- Managing their activities so as to minimise the nuisance and disruption to the humans in the area;
- Managing their activities so as to minimise the risk of pollution of the air, soil, groundwater and surface water;
- Adhering to environmental legislation relevant to the location and nature of the work being conducted; and
- Documenting compliance with the Environmental Management Plan to ensure it's accountable and transparent implementation.
- Attend induction training in environmental awareness in general.
- Report any archaeological findings to the Project Manager and/or the ECO.

Section Five

Project Team and Organisational Structure

5.1 THE PROJECT TEAM

The following consultants have been appointed for the project:

FUNCTION	CONSULTANT
Geo-technical survey	Simlab (Pty) Ltd.
Implementing agent	Sol Plaatje Municipality
Environmental Impact Assessment	B.H. Erasmus
Environmental Management Plan	B.H. Erasmus
Project management	Jubilee Survey
Town Planning	C. van der Westhuizen + MVD Kalahari (Town Planning)
Engineering Planning	G. Combrinck
Project manager	Koplan Consultants CC.
Surveyor	C. Fraenkel

5.2 ORGANISATIONAL STRUCTURE

An organisational structure is presented in Figure 3. The structure illustrates the lines of communication and responsibility during the construction works.

1. Project manager - IMPLEMENTING/SUPERVISION AND IMPLEMENTING AGENT

The Project Manager/Implementing agent will have overall responsibility for ensuring that the provisions of the EMP are implemented. They will be assisted in this task by the Environmental Control Officer (ECO).

II. ENVIRONMENTAL CONTROL OFFICER (ECO)

The ECO will report to Sol Plaatje Municipality or to an agent appointed by the Municipality that will be responsible for the implementation of the EMP, and dealing with any matters that cannot be resolved between the ECO and Project Manager/Implementing agent.

The ECO's duties will include:

- Obtaining, examining and approving method statements supplied by individual contractors or sub-contractors;
- Attendance of site meetings if deemed necessary by the ECO or Sol Plaatje Municipality or its appointed agent.
- Advising the Project Manager/Implementing agent and contractors on environmental issues within the defined work areas;
- Assisting in finding environmentally acceptable solutions to development and construction problems;
- Inspecting the site at a frequency determined by the stage of the project to establish compliance with environmental provisions;
- Reviewing the site logbook with regard to records of site activities that may pertain to the environment;
- Recommending corrective action to the Project Manager/Implementing agent where construction activities are not in compliance with the EMP
- Keeping diligent records of communication with the Project Manger/Implementing agent and the Sol Plaatje Municipality or its agent, and
- Run induction courses on environmental awareness for contractors' staff and supervisors appointed by Sol Plaatje Municipality.
- Supply help, advice and/or negotiate around issues pertaining to environmental issues on the project.
- Liaise with registered Interested and Affected Parties during especially the construction phase of the project. After the construction phase their negotiations should revert to the developer and concessionaire if applicable.

Section Six

Environmental Awareness Meeting

The National Environmental Management Act, 107 of 1998 states that any costs incurred to remedy environmental damage must be borne by the person responsible for that damage. It is therefore imperative that the Contractor reads through and understands the requirements of this document and any proceeding documents pertaining to environmental requirements (where applicable) before construction commences.

The National Environmental Act, 107 of 1998 states that everyone is required to take reasonable measures to ensure that they do not pollute the environment. Reasonable measures include informing and educating employees about the environmental risks of their work and training them to operate in an environmentally acceptable manner. In terms of this:

- The contractors must meet with the ECO to discuss the environmental requirements;
- The contractors, in conjunction with the ECO, must meet with the construction workers to explain the environmental requirements of the Environmental Management Plan;
- Environmental awareness posters will be provided, and the Contractors must ensure that these are displayed at the construction camp and site to visually depict the environmental "do's and don'ts". The posters will use pictures to convey the intended message and any explanatory text will be in Afrikaans and English;
- A register must be kept of all employees attending the environmental awareness meeting/s

Section Seven

Required procedures for Construction

7.1 ESTABLISHMENT OF ACCESS ROADS

Some additional roads will be constructed as access roads to the area as no roads presently exist. These roads must be constructed where roads are intended as per layout plan.

7.2 SITE ESTABLISHMENT

I. LOCATION OF CONTRACTORS' CAMP

The contractors' camp is classified as the demarcated area where the contractor will establish offices, workshops, living quarters (where applicable), storage facilities and forms a discrete part of the construction site.

The contractors' camp and site areas must be defined using stakes and gum poles, and activities must be confined within this area. Extension or movement of the construction camp must be agreed by the ECO. In choosing a site for the camp:

- Choose as level an area as possible;
- Keep away from watercourses; and
- If possible, the camp must be located within the construction site area.

If possible, the construction camp and site must only have one access route, which should be maintained in an adequate condition so as to minimise dust and erosion. Where possible, existing roads and tracks must be used, and upgraded to cope with the heavy construction plant.

The Project Manager/Implementing agent and ECO must recommend and approve the location of any contractor's camp prior to its establishment.

II. SITE FACILITIES REQUIRED

The contractors must provide, maintain and remove such hoarding screens, and other materials required to effectively uphold and protect the works, materials and property from damage, whether by the employer or other owners, and secure the safety and freedom from injury to all persons on site.

III. STORAGE FACILITY AND WORKING AREA

A lockable, mobile structure must be erected on a bunded surface (concrete slab) for storing materials, equipment, chemicals, etc.

IV. SITE ENCAMPMENT

The contractors are not permitted to erect a temporary construction camp for the housing of labourers adjacent to, or on the site of the works.

The only contracting staff permitted to remain on site after hours and on weekends will be those formally employed by the contractors to provide security and watching services, unless work continues over weekends. A facility will be provided for this purpose and strictly controlled to prevent abuse.

TEMPORARY OFFICES

The contractors must provide, erect, maintain and remove on completion of the contract, ample temporary offices and sheds for the proper storage of perishable materials and for the use of workmen.

VI. SANITARY FACILITIES

An adequate number of self-contained chemical toilets must be established on site, which must be easily accessible to construction workers. The contractors must supply toilet paper at all toilets, and will be responsible for its maintenance and servicing.

Contractors must ensure that no spillage occurs when chemical toilets are cleaned, and that the contents are properly stored and removed off-site. A contingency plan for spills from toilets must be supplied by the contractors and approved by the Project Manager/Implementing agent and ECO.

Toilets must be placed outside areas susceptible to standing or flowing water, and siting must be done in consultation with the Project Manager/Implementing agent and ECO.

Performing ablutions outside toilet is strictly prohibited.

7.3 DEMOLITION OF EXISTING STRUCTURES

Existing structures (shacks) will be removed by their residents on moving to their allocated permanent houses.

7.4 SITE CLEARING

I. CLEARING OF VEGETATION

No prescription in connection with vegetation clearing can be issued as almost all of the natural vegetation has already been removed. No protected or endangered species occur on site.

II. SOIL STRIPPING

Where applicable, soil will be removed where excavations will be made for foundations. This soil may be used in landscaping, building or discarded.

7.5 CUT AND FILL BULK EARTHWORKS

I. SOIL HANDLING

The handling of wet soil where the clay content is 15% must be avoided, as this causes compaction. Similarly, the repeated handling of soil must also be avoided, as this may result in the loss of soil structure.

In order to avoid spillage and loss through wind, trucks must not be overloaded when transporting soils to and from the site.

II. SOIL STOCKPILE MANAGEMENT

The contractor responsible for stockpiling (where applicable) must remove the topsoil during site clearance for re-use in the final landscaping of the site. The Project manager/Implementing agent and ECO must identify a suitable site for stockpiling that is:

- Removed from the working area;
- In a sheltered position so that the soil will not be exposed to the effects of erosion;
- Removed from drainage lines to minimize the risk of being washed away;
- Removed from areas of indigenous vegetation; and
- Removed from the base of a bank so that run-off from the top of the bank does not cause ponding of water along the stockpile.

Stockpiles must be neat, must not exceed 3 m in height, and must be convex at the top to promote run-off. For stockpiling of less than one month, temporary erosion measures must be implemented by means of a secured cover of hessian.

III. POTENTIAL DISCOVERY OF SITES WITH ARCHAEOLOGICAL SIGNIFICANCE

Any archaeological or historical sites uncovered during construction must be reported to SAHRA and/or the Archaeology Department of the McGregor Museum, Kimberley immediately. No site of archaeological or historical significance may be moved without a permit from SAHRA.

Any permitted removal of archaeological or historical matter must be done under the strict supervision of a qualified archaeologist or historian.

IV. DRILLING AND BLASTING

If blasting is required, it is the sole responsibility of the Contractors to obtain a blasting permit and abide by all the conditions of the Explosive Act and the Inspector of Explosives.

Blasting will only be permitted at such times as agreed by the Project Manager/Implementing agent and ECO, in consultation with the Contractor, and must preferably occur at the same time each day.

Charge sizes must be set so as to ensure that no damage is caused to surrounding areas. The contractors must allow for good vibration monitoring equipment on site at all times during blasting operation and record keeping during blasting operations is of vital importance.

During overcast and cloudy days, the ECO must advise whether or not blasting can take place.

1. PRE-BLASTING NOTIFICATION SURVEYS

Before doing any blasting, the relevant occupants/owners of surrounding land must be notified, and any concerns addressed. This may be done through a community meeting, distribution of leaflets and/or placing notifications in the local media. Buildings within the potential damaging zone of the blast must be surveyed preferably with the owner present, and any cracks or latent defects pointed out and recorded either using photographs or video.

7.6 ESTABLISHMENT OF INFRA STRUCTURAL SERVICES

I. TRENCHING RECORDS

Any trenching required for the provision of services to the site must be done in an environmentally sensitive manner. Service routes must be agreed by the ECO using the following criteria:

- Trenching will be kept to a minimum through the use of single trenches for different services.
- The planning and selection of trench routes will be undertaken in liaison with the ECO and cognisance must be given to minimize the potential for soil erosion, disturbance of indigenous vegetation, the pit-trapping of mammals, reptiles, amphibians, insects, etc.
- Trench routes with permitted working areas will be clearly defined and marked beforehand with clear indicators.
- The stripping and separation of topsoil will occur where the ECO recommends and considers that there is a clearly defined topsoil layer, and it would be a worthwhile exercise. Soil will be excavated and used for re-filling trenches using the rollover method, i.e. soil from the first trench section will be stockpiled on the main stockpile site. Thereafter, soil excavated from subsequent trench lengths will be used to backfill the trench behind it once the services have been laid. The final trench length will be re-filled using the soil stockpiled from the first length.
- Trench lengths must be kept as short as practically possible.
- Trenches must be re-filled to flush with (or slightly higher to allow for settlement) the surrounding land surface to minimize erosion. Excess soil will be stockpiled in an appropriate manner.
- Under direction from the ECO, immediately after re-filling, trenches and disturbed working areas must be planted with a suitable plant species and watered where practicable.
- Trenches must be sensitive to possible visual impact, especially if overhead services are required.

7.7 BUILDING ACTIVITIES

I. CONCRETE MIXING

Mixing should be confirmed to an impervious and contained area, and excess waste concrete should be disposed of at a licensed landfill site.

II. CONSTRUCTION OF BUILDINGS

Construction materials must be sourced from a sustainable resource.

7.8 ROAD WORKS AND PARKING AREAS

I. CREATION OF PLATFORMS

Platforms must be stabilised, and the area inspected and repaired regularly. Platforms must be stabilised (using a chemical stabilizer where applicable) to minimise erosion, and the area must be monitored once every two weeks to check whether another application is necessary.

7.9 SITE CLEAN-UP AND REHABILITATION

The contractor(s) must ensure that all structures, equipment, materials and facilities used for construction activities are removed upon completion of the project. The contractors must clear and clean the construction site to the satisfaction of the Project Manager/Implementing agent and ECO upon completion of the project.

Landscaping will comprise mainly grassed areas and indigenous trees and shrubs. The ECO must approve a plant species list prior to the commencement of landscaping activities.

Section Eight

General Procedures for all Construction Activities

8.1 METHOD STATEMENTS

The ECO must provide a proforma for method statements, for which the contractors must provide written statements for discussion between themselves, the ECO and the Project manager/Implementing agent.

Method statements must provide details of procedures, materials to be used, timing and sketches of the proposed work method or design (where applicable). Work will not commence until the method statement has been approved by the ECO, and failure to submit these will result that the ECO recommend to the Project Manager/Implementing agent that part or all of the works be suspended until such time as the method statement has been received and approved.

At the end of each week, the contractors must brief the ECO on work that will be undertaken during the following week.

8.2 DUST CONTROL

Excavation, handling and transport of erodible materials must be avoided under high wind conditions or when a visible dust plain is present. During high wind conditions, the ECO will evaluate the situation and make a decision on whether dust-damping measures are required, or whether working should cease altogether until the wind speed drops to an acceptable level.

Soil stockpiles must be located in sheltered areas where they are not exposed to the erosive effects of the wind. In addition, vehicle speeds must not exceed 40 km/h along dust roads or 20 km/h when traversing unconsolidated and non-vegetated areas.

Appropriate dust suppression measures must be used when dust generation is unavoidable, e.g. dampening with water, particularly during prolonged periods of dry weather. Such measures will also include the use of temporary stabilising measures (e.g. chemical soil binders).

8.3 NOISE CONTROL

Working hours must conform to local By-laws. Any departure from these should be done in consultation with the local authorities. In this case the I & AP's may make certain suggestions that will have to be negotiated with them.

In general, noise levels from construction activities must not increase ambient noise levels by more than 7 dB. Noise impacts can possibly be reduced by implementing the following recommendations:

- Contractors will mot be allowed to use sound amplification equipment on-site, unless in emergency situations;

- All equipment must be regularly and systematically checked, maintained and repaired (especially exhaust systems) as poorly maintained vehicles can generate disturbing and unnecessary noise; and

- Construction workers must be made aware of not creating unnecessary noise such as hooting and shouting.

The ECO must ensure that he/she is kept fully informed of any complaints received regarding noise levels from neighbouring properties.

8.4 FUEL AND HAZARDOUS MATERIAL STORAGE

I. INVENTORY OF SUBSTANCES

The contractors must identify fuels and hazardous substances to be stored on the site, and must be ensure that they know the effects of these substances on their staff and the environment. A copy of the fuels and hazardous substance inventory must be supplied to the ECO.

II. GENERAL PRECAUTIONS

Contractors must ensure that the quantities of fuel and chemicals on site are appropriate to the requirements, and are stored and handled so as to minimise the risk of spillage.

All fuels, oils and chemicals must be confined to specific and secured areas, approved by the ECO. These materials must be stored in an area with concrete or other impervious base, which is adequately bunded. The volume of the bund must be one and the half times the volume of the stored chemicals, and any generators used on the site must also be placed on a bunded surface.

Polluted storm water run-off from the concrete storage area(s) shall be collected, stored (if necessary) and disposed of at an approved waste site. Contaminated soil must also be removed, stored in a skip and disposed of at an approved dumpsite.

III. FUELS

All liquid fuels (e.g. diesel, petrol) stored in tanks or drums must have a brickwork bund wall around the tanks, which will prevent the escape of the materials, should a spill or leak occur. The volume of the bund

must be 1,5 times the volume of the storage tanks. A tank used regularly for re-fuelling vehicles must be located within the bunded area while not in use.

Liquid fuel stores must be located on an area of existing hardstanding, which will provide a barrier to the underlying ground in the event of spills. The tank(s) must be located in an area, which is easily accessible to vehicles. Re-fuelling of vehicles must only take place at these areas, unless otherwise agreed with the ECO.

The Contractors will be responsible for ensuring that any party delivering fuels or chemicals to the site are aware of the appropriate storage/drop-off locations.

IV. EQUIPMENT/MACHINERY

The contractors must stand any equipment that may leak on watertight drip trays to catch any pollutants. The drip trays must be of a size that the equipment can be placed inside it.

Drip trays must be cleaned regularly, and should not be allowed to overflow. Materials collected in these drip trays must be collected and disposed of off-site at an approved waste disposal site.

8.5 REFUSE AND DISPOSAL

Contractors must supply refuse bins and ensure that their employees deposit all refuse in bins, and these must be emptied on a regular basis to prevent overflowing. Refuse bins must be watertight, wind-proof and scavenger-proof, and must be placed at regular intervals throughout the site. The Project Manager/Implementing agent and ECO must approve the design of the bins. Refuse collected from the site must be stored in an appropriate closed and weatherproof container, and removed on a regular basis as agreed with the Project Manager/Implementing agent and ECO.

Where feasible, refuse must be separated into suitable categories and re-cycled. Construction debris such as scrap metal must be disposed of in a skip container, and disposed of at an approved dumpsite. Refuse may not be burnt or buried on the site, or in the vicinity.

Contractors must identify a permitted refuse disposal site for various categories of waste and provide documentary proof to the Project Manager/Implementing agent of the type and volume of waste disposed there.

The contractors must supply workers to clean up on a daily basis, and general cleanliness of the site must form part of the site inspections undertaken by the ECO.

8.6 DEMARCATION OF EATING AREAS

Eating areas will be restricted to the site offices and contractors' camp. If employees are to eat elsewhere on the site, the contractors must, in consultation with the ECO, designate places for eating in working areas, and must provide adequate refuse bins at all these places, which must be cleaned on a daily basis.

The Project Manager/Implementing agent will regulate the establishment of informal food stalls.

8.7 PROVISION OF WATER

The Contractors will be responsible for providing construction water, water required for dust control, drinking and washing water. They are also responsible for providing washing facilities for all staff.

Wastewater from washing facilities must be discharged into a sewage system, or removed from the site by the contractors or other means, should the existing services be unavailable.

8.8 ELECTRICAL POWER

The contractors must make their own arrangements for electrical power requirements until such time that electricity is available on site.

8.9 STORM WATER CONTROL

The contractors must take reasonable measures to prevent erosion from resulting from a diversion, restriction or increase in the flow of storm water caused by the presence of their own works, operations and activities, all to the satisfaction of the ECO.

Any storm water collected in bunded areas containing oils, fuels, chemicals or other potentially polluting substances must be pumped out of the bund, collected in a suitable container and removed from the site for appropriate disposal.

8.10 DISCHARGE OF SURFACE WATER

Berms and existing storm water drainage systems must be used to prevent surface run-off from entering the excavations.

8.11 CLEANLINESS OF PUBLIC ROADS

The contractors must ensure that construction vehicles are not overloaded, and as a result do not spill or drop construction/demolition (sand, cement, debris, etc.) onto public roads. Contractors must provide a wash system for

cleaning the wheels of vehicles moving off-site, and must ensure that this is implemented as required.

8.12 TRAFFIC CONTROL AND SAFETY

Traffic control and safety must be done in accordance with the South African Traffic Safety Manual with the relevant signs, flag-men, barriers, etc. being approved at the various accesses. Traffic control must be done in co-operation with local traffic officials.

8.13 EMERGENCY PROCEDURES

I. FIRE EMERGENCY PROCEDURES

The contractors must identify the authorities responsible for fighting fires in the area, and must liaise with them regarding procedures in the event of a fire. Contractors must also ensure that all necessary telephone numbers, etc. are posted at conspicuous and relevant locations in the event of an emergency.

The contractors must advise the relevant authority of a fire as soon as one starts and must not wait until it can no longer be controlled.

Contractors must ensure that their staff is aware of the procedure to be followed in the event of a fire, and fire-fighting equipment must be ready and easily available at all times.

The contractors are liable for the costs incurred for organisations called out to extinguish any fires started by their own activities or any of their site staff, as well as for any costs incurred to re-instate burnt areas as deemed necessary by the ECO and authorities.

II. FIRST AID

The contractors must provide and maintain a suitable first aid kit on the site, and will ensure that a qualified person in first-aid is present during working hours, in accordance with the Occupational Health and Safety Act. They will also ensure that their staff know and can carry out the procedures for dealing with accidents, and must clearly define the emergency procedures to be followed for obtaining medical treatment and assistance to in the event of serious injury.

III. SPILLS OF FUELS AND HAZARDOUS SUBSTANCES

The contractors must keep the necessary materials and equipment on site to deal with ground spills of any hazardous materials present. They have to set up a procedure for dealing with spills, which must be approved by the ECO and Project Manager/Implementing agent, and

must include a provision to notify the Project Manager/Implementing agent of any spills.

The clean up of spills and any damage caused by a spill must be for the contractors' accounts.

IV. EMERGENCY ADVISORY PROCEDURE

The contractors must ensure that there is an emergency advisory procedure on site before commencing any operations that may endanger the lives of their staff, the Project Manager/Implementing agent staff and the ECO, or cause damage to the environment.

Contractors must also ensure that their staff, the Project Manager/ Implementing agent and the ECO are familiar with all emergency procedures to be followed. It must be ensured that lists of all emergency numbers/contact people are regularly updated, and that numbers and names are at relevant locations at all times.

8.14 FIRE PRECAUTIONS

I. COOKING/HEATING

No open fires or naked flames for heating or cooking will be allowed on the site. If the necessity arises that construction workers want to make fires for cooking and/or heating purposes, designated areas will be permitted in consultation with the ECO.

Cookers and heaters must be to the satisfaction of the ECO.

II. SMOKING

Smoking will be permitted on the site at the site at the discretion of the Project Manager/Implementing agent, and the contractors must ensure that all personnel are aware of the risk and the need to extinguish cigarettes before disposal.

III. WELDING/CUTTING

Wherever work involves welding, gas cutting or cutting of metal, fire-fighting equipment must be immediately available.

IV. FIRE-FIGHTING EQUIPMENT

The contractors must appoint a member of their staff to be responsible for the installation and inspection of fire extinguishers. The ECO must receive copies of the inspection reports.

A map must clearly be drawn up to indicate the locations of fire extinguishers, and they must be clearly visible.

The contractors must also supply site offices, kitchen areas, workshop areas, stores of fuel and hazardous materials, and any other areas identified by the ECO with fire extinguishers.

8.15 SECURITY

I. SECURITY CARDS

Employees must perform to the company requirements in respect of wearing and/or displaying security cards.

II. WEAPONS AND DANGEROUS ARTICLES

No employees will be allowed to carry or bring onto the premises, any dangerous or lethal weapon, article or substance without specific instructions or prior permission to do so.

III. SAFETY ON SITE

PROTECTIVE CLOTHING

HARD HATS

The following personnel are required to wear hard hats:

- All personnel entering the site;
- All persons within 10 m of any situation where any form of lifting or hoisting equipment is being used; and
- Any personnel working in any other situation where the possibility of head injuries is present.

PROTECTIVE GLOVES

Protective gloves are to be worn by all persons engaging in the following:

- Handling of heavy materials;
- Carrying out maintenance activities within a crusher; and
- Persons engaged in welding or gas cutting activities.

SAFETY FOOTWEAR

- All persons entering the site or workshop area must wear approved safety shoes or safety boots.

SAFETY GOGGLES

The following persons must wear safety goggles at all times:

- Persons operating equipment under dusty conditions;
- Persons engaged in cutting or welding activities; and
- Persons engaged in grinding activities.

HEARING PROTECTION

The following persons are required to wear ear protection:

- All persons engaged in rock drilling activities (>85 decibels).
- All crushing operators; and
- Any person entering into high noise areas (>85 decibels).

SAFETY BELTS

- Safety harnesses must be worn when carrying out work 2 m above ground level, unless it is being carried out from a safe and protected work platform; and
- All heavy equipment operators must make use of safety seatbelts, where provided.

8.16 EMPLOYMENT

Preference should be given to employing local contractors. Contractors are to give preference to employing local unskilled labourers.

8.17 ON-GOING PUBLIC PARTICIPATION

Sol Plaatje Municipality and/or its appointed agent will ensure that Interested and Affected parties are kept constantly informed of the development by the means of regular correspondence and/or communication.

Section Nine

Procedures for Monitoring, Records and Corrective Action

9.1 MONITORING

It is important that monitoring is undertaken so that:

- Compliance with EMP specifications can be demonstrated; and
- Problems or issues of non-conformance can be identified and appropriate corrective action taken to minimize the impact.

Monitoring will comprise:

- Visual checks of the site activities by Project Manager/Implementing agent on a daily basis;
- Visual checks of the site activities by the ECO. It is anticipated that the ECO will visit the site once or twice a week for the first four weeks of the site works, and once a week for the remainder of the construction period. Where a particular aspect requires more detailed monitoring, more frequent visits will be made; and
- Review of records and documentation (e.g. waste transfer documentation) to reconcile these with the log of daily site activities.

9.2 RECORDS

The following records will be maintained during the project to enable demonstration of compliance with the EMP specifications:

Project Manager/Implementing agent-LOG OF DAILY ACTIVITIES

The Project Manager/Implementing agent must maintain a daily log of activities. It is recommended that the log be completed using additional headings as follows:

- Waste - obtain from the Contractor documentary proof of type, volume, waste disposal site and Transport Contractor.
- Fuels and chemicals - list deliveries, spills; and
- Other environmental issues, e.g. adverse weather (wind), spills and water supply run-off from excavations.

II. ENVIRONMENTAL CONTROL OFFICER (ECO) - ENVIRONMENTAL ISSUES

An ECO will be appointed to assist the Project Manager/Implementing agent with implementation of the EMP. Sol Plaatje Municipality and/or its agent will undertake the overall auditing of the implementation of the EMP. The ECO will maintain records of:

- Issues arising on site;
- Minutes of meetings attended;
- Method statements received and approved;
- Cases of non-conformance with the EMP;
- Corrective action; and
- All communications with the Project Manager/Implementing agent and the Sol Plaatje Municipality.

Observations made during the site visits will be recorded and photographs taken to demonstrate both compliance and non-compliance with the specifications in the EMP.

9.3 NON-CONFORMANCE AND CORRECTIVE ACTION

Issues of non-conformance noted by the ECO will be communicated to the Project Manager/Implementing agent, who will be responsible for ensuring that the relevant parties are informed of the non-conformance and that appropriate corrective action is taken. The ECO will advise on the appropriate corrective actions where necessary.

Environmental issues will be addressed at regular site meetings between the ECO and the Project Manager/Implementing agent. The ECO will present verbal reports from their logbooks of any environmental concerns or issues that have arisen, and corrective actions that have been taken. Outstanding corrective actions will be discussed and agreed at these meetings. Issues relating to complaints or comments received from the public will also be discussed at these meetings.

Minutes of the meetings will be prepared by the Project Manager/Implementing agent and copied to all attendees before the next meeting. The frequency of the site meetings will be agreed by the ECO, Project Manager/Implementing agent, the Contractors and other relevant parties prior to the commencement of the project.

Section Ten

Internal Review

Internal review of the EMP will take place on an on-going basis by the ECO. Based on observations during site inspections and issues raised at the site meetings, the ECO shall determine whether any procedures require modification in order to improve the efficiency of the EMP. Any changes or adjustments to the EMP shall be registered in the records of the ECO. Therefore, adjustment and update of the original EMP document is not required when these *ad hoc* changes are made. The ECO's records shall be available to the relevant authority, Department of Environmental Affairs, throughout the process and copies will be provided on request.

At the conclusion of the project an Environmental Construction Report will be compiled and submitted to the client. The report will be compiled by the local ECO in collaboration with Sol Plaatje Municipality and/or its agent. It will outline the implementation of the EMP, and highlight any problems and issues that arose during the construction period.

LIST OF FIGURES

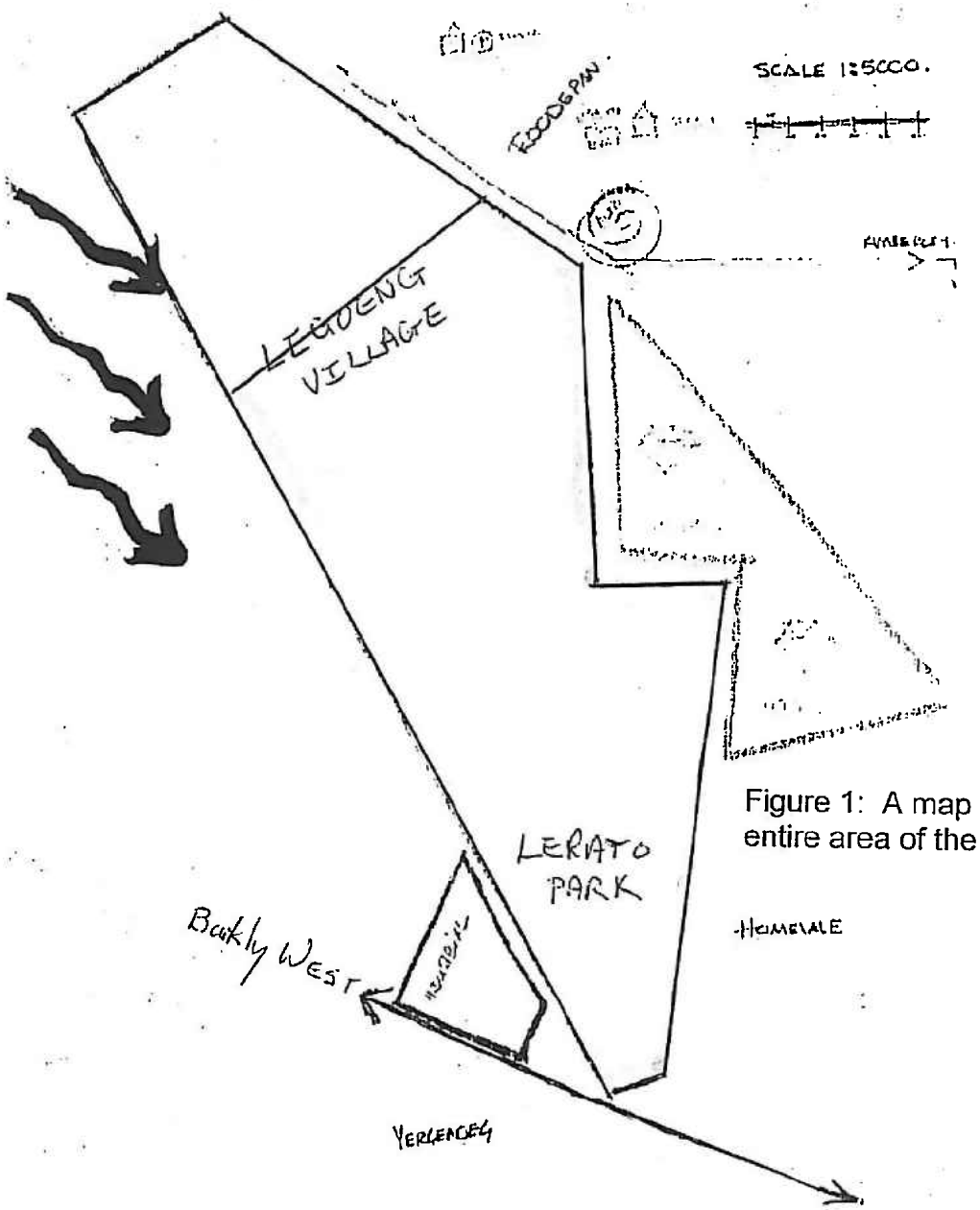

Figure 1: A map showing the locality of the present informal Lerato Park and the entire area of the upgraded Lerato Park.

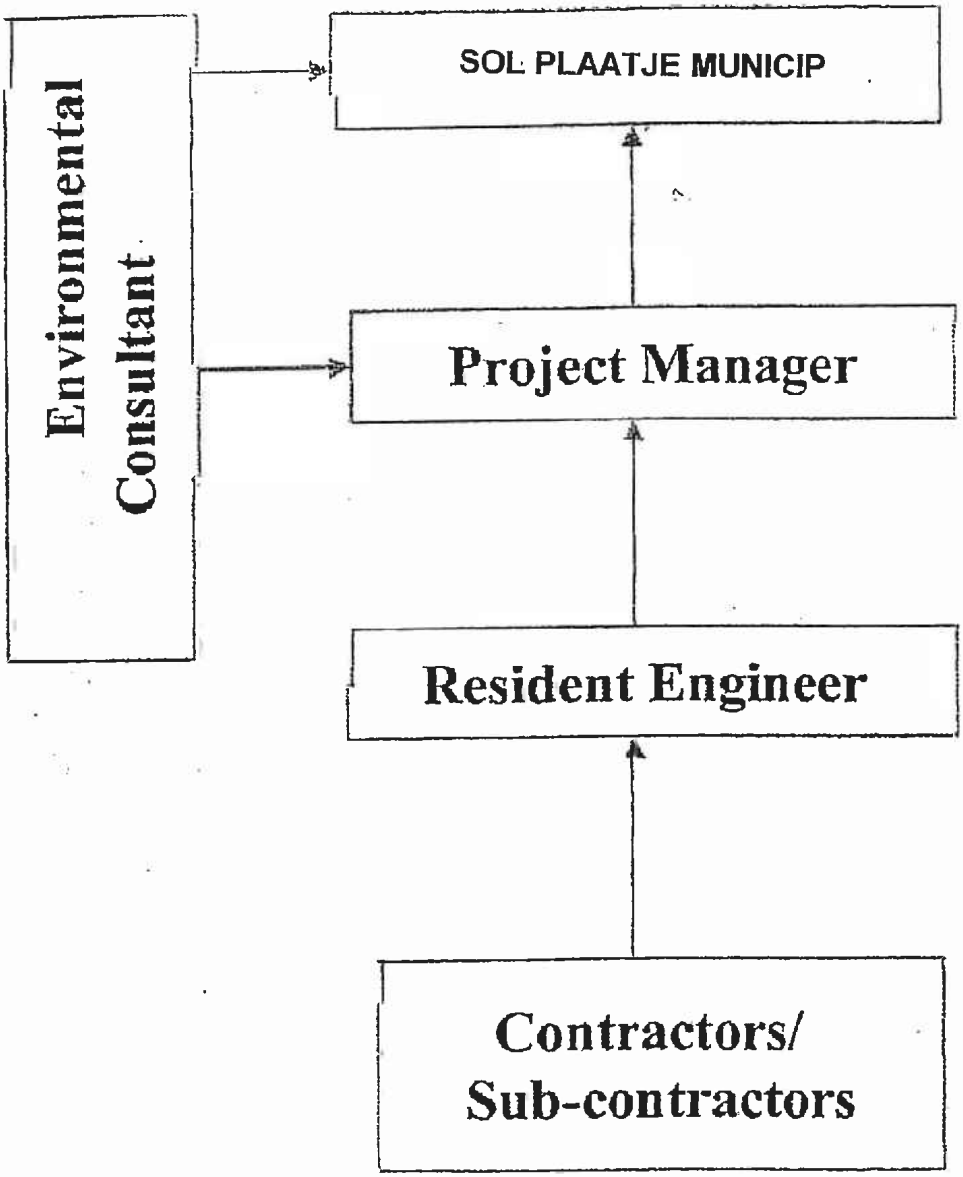

Figure 3: Organogram showing the chain of command in accordance with the EMP.