ANNEXURE 'I'

GEOTECHNICAL REPORT

REPORT
ON
THE ENGINEERING GEOLOGICAL INVESTIGATION
OF
THE PROPOSED NEW TOWNSHIP
ERMELO EXTENSION 47
SITUATED
ON
THE REMAINDER
OF
PORTION 89
OF
THE FARM NOOITGEDACHT 268 IT
FOR
TOWNSHIP ESTABLISHMENT

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Client

STYLESTAR INVESTMENTS (PTY) LTD

REPORT ON THE ENGINEERING GEOLOGICAL INVESTIGATION OF THE PROPOSED NEW TOWNSHIP ERMELO EXTENSION 47 SITUATED ON THE REMAINDER OF PORTION 89 OF THE FARM NOOITGEDACHT 268 IT FOR TOWNSHIP ESTABLISHMENT

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1. INTRODUCTION

Louis Kruger Geotechnics CC was appointed to do a Phase 2 engineering geological investigation for of the proposed new township Ermelo Extension 47 situated on the Remainder of Portion 89 of the Farm Nooitgedacht 268 IT for Township Establishment. The investigation was undertaken according to the normal requirements for township proclamation to assess the suitability of the site development (SANS 634: Geotechnical Investigations For Township Development, SANS 633: Profiling, and Percussion and Core Borehole Logging In Southern Africa for Engineering Purposes, Home Building Manual Part 1 & 2", National Home Builders Registration Council, 1999) and Guidelines for Urban Engineering Geological Investigations 1997). The following aspects are addressed in this report:

- Geology and Soil profile
- Geohydrology
- Foundation conditions
- Construction material

2. TERMS OF REFERENCE

The appointment was to do an engineering geological investigation of the proposed new township Ermelo Extension 47 is situated on the Remainder of Portion 89 of the Farm Nooitgedacht 268 IT for township establishment. The following aspects were to be addressed:

- The geotechnical characteristics of the site
- Geotechnical constraints
- Founding conditions
- NHBRC Zoning

The locality of the site is shown on Figure 1.

3. AVAILABLE INFORMATION

The following information was available:

- 1 : 250 000 Geological Map, East Rand 2626
- 1 : 50 000 Topographical Map
- Contour plan
- Locality plan
- Colour aerial photographs
- "Report on the Geotechnical Investigation carried out for: Proposed Ermelo Show Grounds Security Village on the Remainder of Portion 89 of Nooitgedacht 268 IT", Johann van der Merwe (Pty) Ltd, June 2005

4. LOCALITY

The proposed site is situated on Portion 89 of the Farm Nooitgedacht 268 IT, on the Ermelo Show grounds on the southern part of Ermelo. It is bounded by Voortrekker Road in the north, by Nederland Road in the east, by Juliana Avenue in the south and by existing commercial- and residential developments in the west. The locality of the site is shown on Figure 1.

5. TOPOGRAPHY AND DRAINAGE

The available information shows that the site slopes at an average of 5% towards the south-west. The natural ground level has been largely disturbed by the construction of terraces and platforms. Since the topography was disturbed extensively, it is extremely difficult to provide a general slope for the site. It should be noted that the south western corner of the site is approximately 20 meters lower than the undisturbed eastern part of the site Surface water drains by means of sheet wash to the south-west

6. METHOD OF INVESTIGATION

Ten test pits were dug on the site and the soil profiles were described according to the standard method proposed by Jennings, Brink and Williams (1973). In addition to the test pits, twenty Penetrometer (DPSH) tests were done. Disturbed samples of the most prominent soil horizons were taken and submitted to a soils laboratory for foundation indicator tests. Since collapse potential tests were done by J van der Merwe in 2005, no undisturbed samples were taken.

7. GEOLOGY AND SOIL PROFILE

According to the 1:250 000 scale geological map the site is underlain by sandstones and mudrocks of the Vryheid Formation, Ecca Group, Karoo. This was confirmed during the investigation, sandstone bedrock was encountered in eight of the test pits. The test pit positions are shown on Figure 2 and the soil profiles are included as Appendix A. The following materials were encountered on the site:

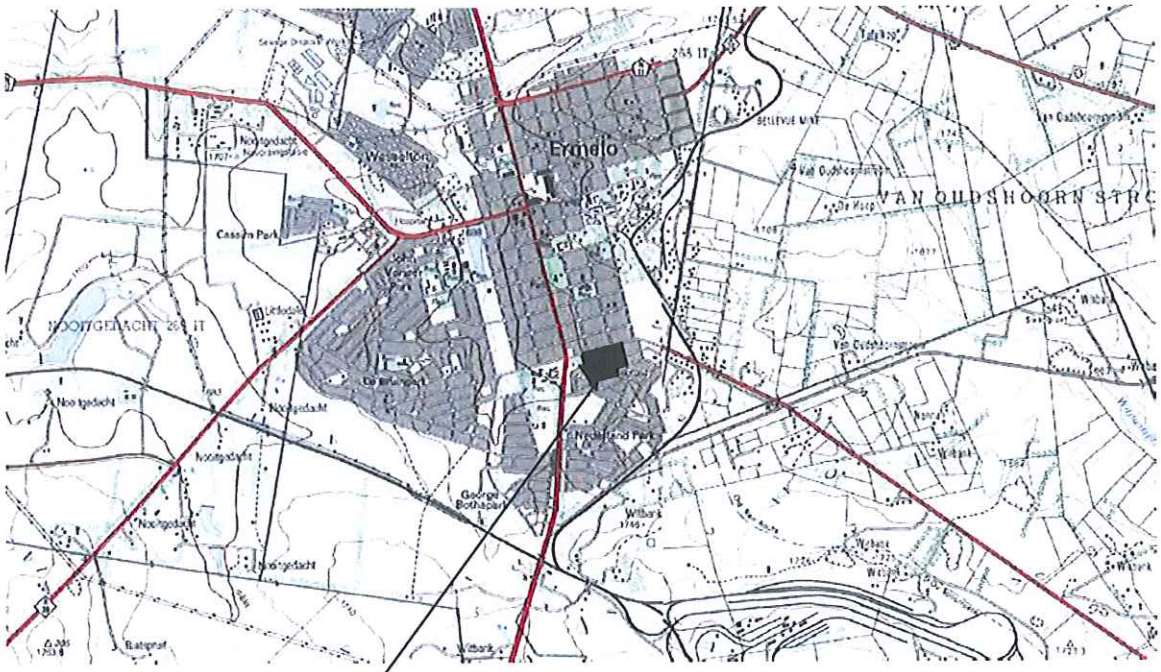
7.1 Fill

Four types of fill were encountered on the site:

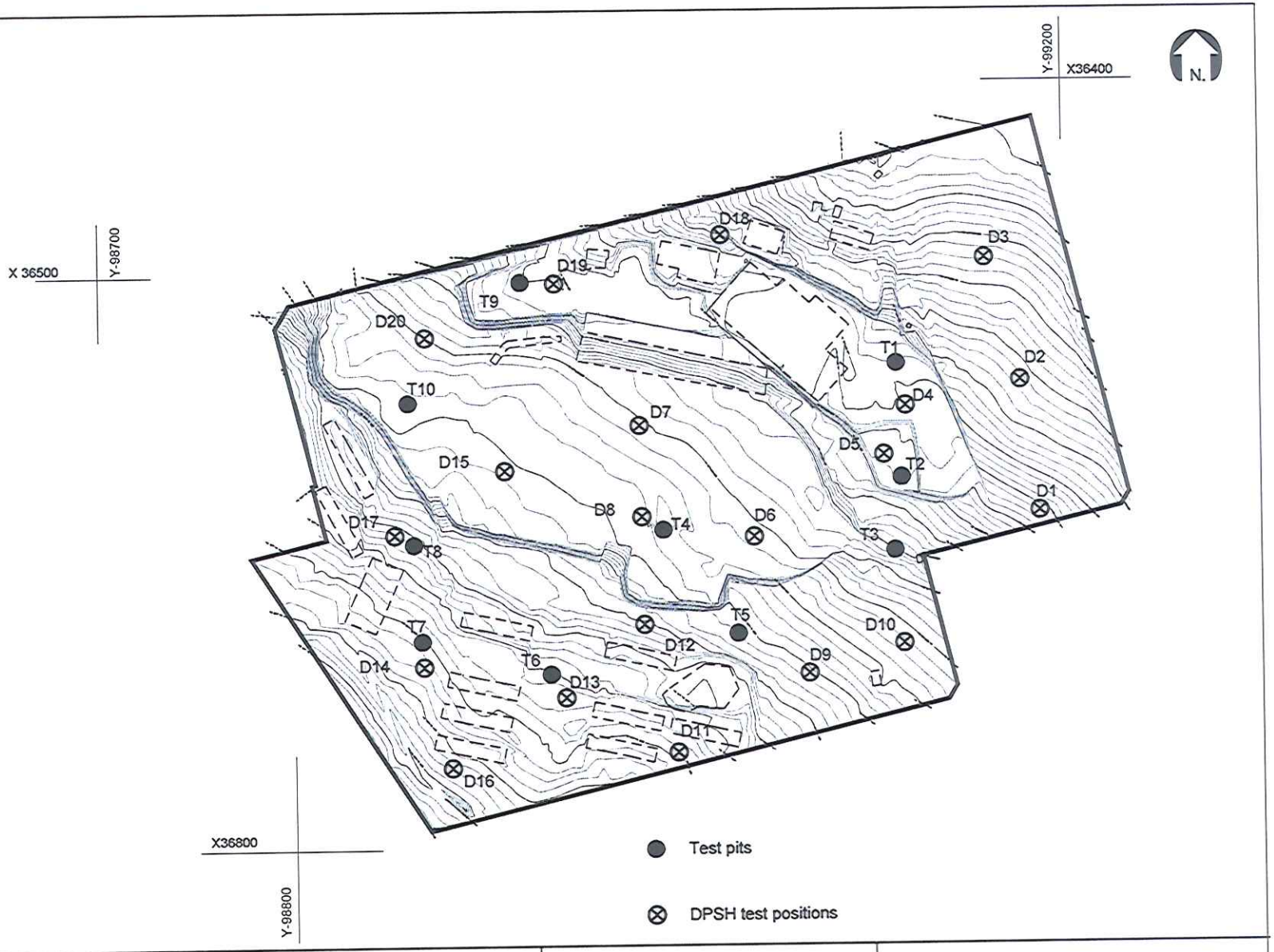
- *Type 1:* Fill, consisting of brown sandy gravel was encountered in test pit 1 from surface up to a depth of 0,9 meters.
- *Type 2:* Fill, consisting of dark brown silty sand and plant roots was encountered in test pits 2 and 3 from surface up to an average depth of 1,0 meters.
- *Type 3:* Fill, consisting of red brown to brown silty sand with abundant bricks was encountered in test pits 4 and 10 from surface up to the maximum reach of the back actor.
- *Type 4:* Fill, consisting of brown silty sand with plant roots was encountered in test pits 5, 6 and 7 from surface up to an average depth of 0,7 meters. .

7.2 Colluvium

Slightly moist, brown, soft, shattered, gravelly silty sand with ferricrete nodules and with plant roots was encountered in test pits 5, 6, 7, 8 and 9 from an average depth of 0,4 meters up to an average depth of 1,1 meters. This material predominantly occurs on the eastern and southern part of the site.



LOCALITY	FIGURE 1 NTS



TOPOGRAPHY and TEST PIT POSITIONS	SCALE 1 : 3 000	FIGURE 2

7.3 Quartzite

Slightly moist, cream, very soft rock sandstone was encountered in eight test pits from an average depth of 1,0 meters up to an average depth of 1,7 meters. Soft rock quartzite was encountered in these test pits at an average depth of 1,7 meters.

8. GEOHYDROLOGY

The investigation shows that a perched water table can be expected during and after periods of high rainfall. This is confirmed by the high moisture content in several test pits and the presence of the pedogenic material.

9. LABORATORY TEST RESULTS

9.1 Indicator test results

The laboratory test results are attached as Appendix B and are summarized in the following table:

MATERIAL	TP	DEPTH (m)	PI	% Clay	% Silt	% Sand	% Gravel
Fill	1	0.3	NP	1	13	59	27
Fill	2	0.6	9	12	25	60	3
Fill	3	0.2	5	12	24	63	1
Fill	4	0.5	4	8	24	65	3
Fill	5	0.3	8	10	26	61	3
Fill	6	0.3	8	12	20	67	1
Colluvium	5	0.6	14	7	30	52	10
Colluvium	9	0.4	13	9	30	55	6

The predominantly sandy and silty nature of the materials encountered on the site is clearly reflected by the laboratory test results. The difference between the colluvium and the fill is shown by the higher silt- and gravel content of the colluvium. The laboratory test results furthermore clearly reflect the variation in the composition of the materials.

9.2 Potential expansiveness

The potential expansiveness of the materials encountered on the site was calculated according to the method proposed by Van der Merwe (1964). The following material characteristics are considered when applying this method:

- Plasticity index
- Clay fraction (< 0,002 mm)
- Thickness of expansive material
- Thickness of non - expansive material

Assuming the laboratory test results typify the material encountered on the site, the application of the method of Van der Merwe shows that the materials encountered on the site classify as "Low" and are therefore considered non-expansive.

9.3 Collapse potential

The results of the collapse potential tests (J van der Merwe (2005)) that were done on the colluvium are as follows:

Dry density (kg/m^3)	1559	1733
Moisture content (%)	7.0	8.4
Collapse potential (%)	4.61	1.39
Classification*	"Moderate Trouble"	"Moderate Trouble"

* Jennings and Knight (1975)

The dry density of the colluvium falls within- and above the norm of 1 500 - 1 600 kg/m^3, in which a collapse potential is expected for a sandy material with a clay component. According to Jennings and Knight (1975), "Moderate Trouble" is expected due to the collapse settlement of the colluvium.

9.4 Compaction tests

The results of the compaction tests (J van der Merwe (2005)) that were done on the colluvium are as follows:

PI	GM	CBR	THR14 Classification
3	0.73	5	G10
4	0.72	8	G9
4	0.85	14	G9

10. DPSH RESULTS

The DPSH positions are shown on Figure 2; the results are attached as Appendix C and are summarized in the following table:

No	Refusal (m)	No	Refusal (m)
DPSH 1	3.3	DPSH 11	2.4
DPSH 2	2.4	DPSH 12	2.7
DPSH 3	2.4	DPSH 13	3.3
DPSH 4	1.5	DPSH 14	3.6
DPSH 5	3.3	DPSH 15	4.8
DPSH 6	2.1	DPSH 16	2.1
DPSH 7	1.5	DPSH 17	3.3
DPSH 8	2.4	DPSH 18	3.6
DPSH 9	2.4	DPSH 19	2.1
DPSH 10	2.7	DPSH 20	1.5

Based on the test results the refusal depth of the DPSH test could reflect the depth to medium hard rock sandstone. DPSH testing should not be used as a definitive test for the depth to bedrock due to the fact that refusal can take place on boulders, which could have been the case in some of the DPSH tests done in the fill area.

The overall consistency deducted from the DPSH results up to a depth of 1,1 meters is firm to stiff (average Cu 46 kPa), from an average depth of 1,1 meters up to an average depth of 1,9 meters the consistency increases to very stiff (average Cu 129 kPa). From an average depth of 1,9 meters up to an average depth of 2,4 meters the consistence exceeds the criteria for very stiff material (average Cu 213 kPa). Refusal, that could indicate the presence of medium hard rock sandstone, occurred at an average depth of 1,4 meters.

11. ENGINEERING GEOLOGICAL ZONING

Due to the presence of extensive cut and fill areas the soil profile is highly variable. Therefore it is extremely difficult to base engineering geological zoning on typical soil profiles. Based on the soil profile and the test pit- and DPSH results the site was divided into three engineering geological zones:

- Zone 1: Fill.
- Zone 2: Colluvium underlain by sandstone bedrock.

- Zone 3: Fill and colluvium underlain by sandstone bedrock.

The zoning is shown on Figure 3. *The boundaries between the different zones are based on field observations, aerial photographic interpretation and the interpolation of information between test pits. Therefore a conservative approach to the use of the engineering geological boundaries is recommended.*

12. GEOTECHNICAL CONSIDERATIONS

The following geotechnical considerations, which could influence the proposed development, were identified:

12.1 Founding of structures

12.1.1 Engineering Geological Zone 1: Fill

- The consistency and composition of the fill vary considerably and concrete fragments and blocks are present, therefore it is not considered suitable founding material for unadapted structures. If unadapted structures are founded on this material, and the moisture content should increase, unacceptable differential, vertical movements could occur, with resultant cracking.

- The sandstone bedrock is considered suitable for the founding of structures

12.1.2 Engineering Geological Zone 2: Colluvium underlain by sandstone bedrock

- The composition and consistency of the colluvium varies, according to Jennings and Knight (1975) "Moderate Trouble" can be expected due to the collapse settlement. Therefore it is not considered suitable founding material. If unadapted structures are founded on this material and the moisture content should change, unacceptable differential, vertical movements could occur, with resultant cracking of structures.

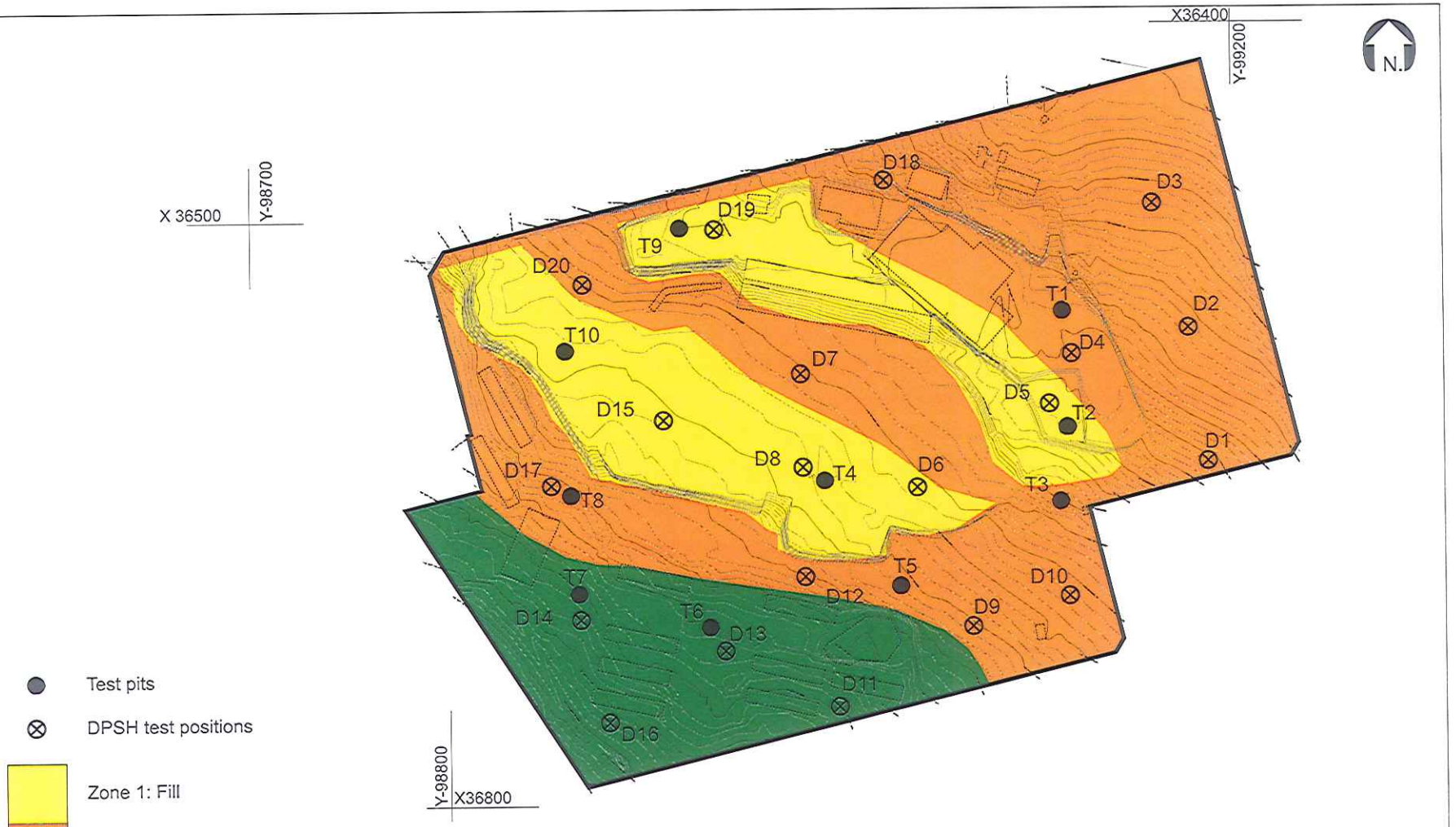
- The sandstone bedrock is considered suitable for the founding of structures

12.1.3 Engineering Geological Zone 3: Fill and colluvium underlain by sandstone bedrock

- The consistency and composition of the fill vary considerably and concrete fragments and blocks are present, therefore it is not considered suitable founding material for unadapted structures. If unadapted structures are founded on this material, and the moisture content should increase, unacceptable differential, vertical movements could occur, with resultant cracking.

- The composition and consistency of the colluvium varies, according to Jennings and Knight (1975) "Moderate Trouble" can be expected due to the collapse settlement. Therefore it is not considered suitable founding material. If unadapted structures are founded on this material and the moisture content should change, unacceptable differential, vertical movements could occur, with resultant cracking of structures.

- The sandstone bedrock is considered suitable for the founding of structures



The zoning is based on the interpolation of information. Therefore a conservative approach to the use of boundaries of the zones is recommended.

ENGINEERING GEOLOGICAL ZONING	SCALE 1 : 3 000	FIGURE 3

12.2 Excavatability

The average refusal depth in the different engineering geological zones is as follows:

- Zone 1: The average refusal of the DPSH and back actor is 3,0 meters and 2,3 meters respectively
- Zone 2: The average refusal of the DPSH and back actor is 2,9 meters and 1,7 meters respectively
- Zone 3: The average refusal of the DPSH and back actor is 2,5 meters and 1,7 meters respectively

12.3 Construction material

The fill classifies as A-4 and the colluvium classifies as A-6. The results of the compaction tests (J van der Merwe (2005)) that were done on the colluvium shows that the colluvium classifies as G9 and G10 (THR14) The Plasticity Index and Grading Modulus of the materials were used to assess the suitability of the materials as construction material (TRH 14). It should be noted that due to variations in the composition, the classification varies as well.

12.4 Groundwater

A shallow perched water table, which could cause the flooding of excavations, is expected to be present on parts of the site during and after periods of high rainfall. This is confirmed by the high moisture content in several test pits and the presence of the pedogenic material.

12.5 Stability of excavations

Instability occurred in the sidewalls of the test pits.

13. GEOTECHNICAL CLASSIFICATION

The site was classified according to the Geotechnical Classification for Urban Development (after Partridge, Wood and Brink 1993). The criteria for the classification are shown in the following table:

GEOTECHNICAL CLASSIFICATION FOR URBAN DEVELOPMENT (after Partridge, Wood and Brink 1993)

	CONSTRAINT	MOST FAVOURABLE (1)	INTERMEDIATE (2)	LEAST FAVOURABLE (3)
A	Collapsible soil	Any collapsible horizon or consecutive horizons totalling a depth of less than 750 mm in thickness	Any collapsible horizon or consecutive horizons totalling a depth of more than 750 mm in thickness	A least favourable situation for this constraint does not occur
B	Seepage	Permanent or perched water table more than 1,5 meters below surface	Permanent or perched water table less than 1,5 meters below surface	Swamps or marshes
C	Active soil	Low soil heave predicted	Moderate soil heave predicted	High soil heave predicted
D	Highly compressible soil	Low soil compressibility expected	Moderate soil compressibility expected	High soil compressibility expected
E	Erodibility of soil	Low	Intermediate	High
F	Difficulty of excavation to 1,5 m depth	Scattered or occasional boulders less than 10% of the total volume	Rock or hardpan pedocretes between 10 and 40% of the total volume	Rock or hardpan pedocretes more than 40% of total volume
G	Undermined ground	Undermining at a depth greater than 100 m below surface (except where total extraction mining has not occurred)	Old undermined areas to a depth of 100 m below surface where stope closure has ceased	Mining within less than 100 m of surface or where total extraction mining has taken place
H	Instability in areas of soluble rock	Possibly unstable	Probably unstable	Known sinkholes and dolines
I	Steep slopes	Between 2 and 6 degrees (all regions)	Slopes between 6 and 18 degrees and less 2 degrees (Natal and Western Cape) Slopes between 6 and 12 degrees and less 2 degrees	More than 18 degrees (Natal and western Cape) More than 12 degrees (all other regions)

	CONSTRAINT	MOST FAVOURABLE (1)	INTERMEDIATE (2)	LEAST FAVOURABLE (3)
			(all other regions)	
J	Areas of unstable natural slopes	Low risk	Intermediate risk	High risk (especially in areas subject to seismic activity)
K	Areas subject to seismic activity	10% probability of an event less than 100 cm/s^2 within 50 years	Mining induced seismic activity more than 100 cm/s^2	Natural seismic activity more than 100 cm/s^2
L	Areas subject to flooding	A "most favourable" situation for this constraint does not occur	Areas adjacent to a known drainage channel or floodplain with slope less than 1%	Areas within a known drainage channel or floodplain

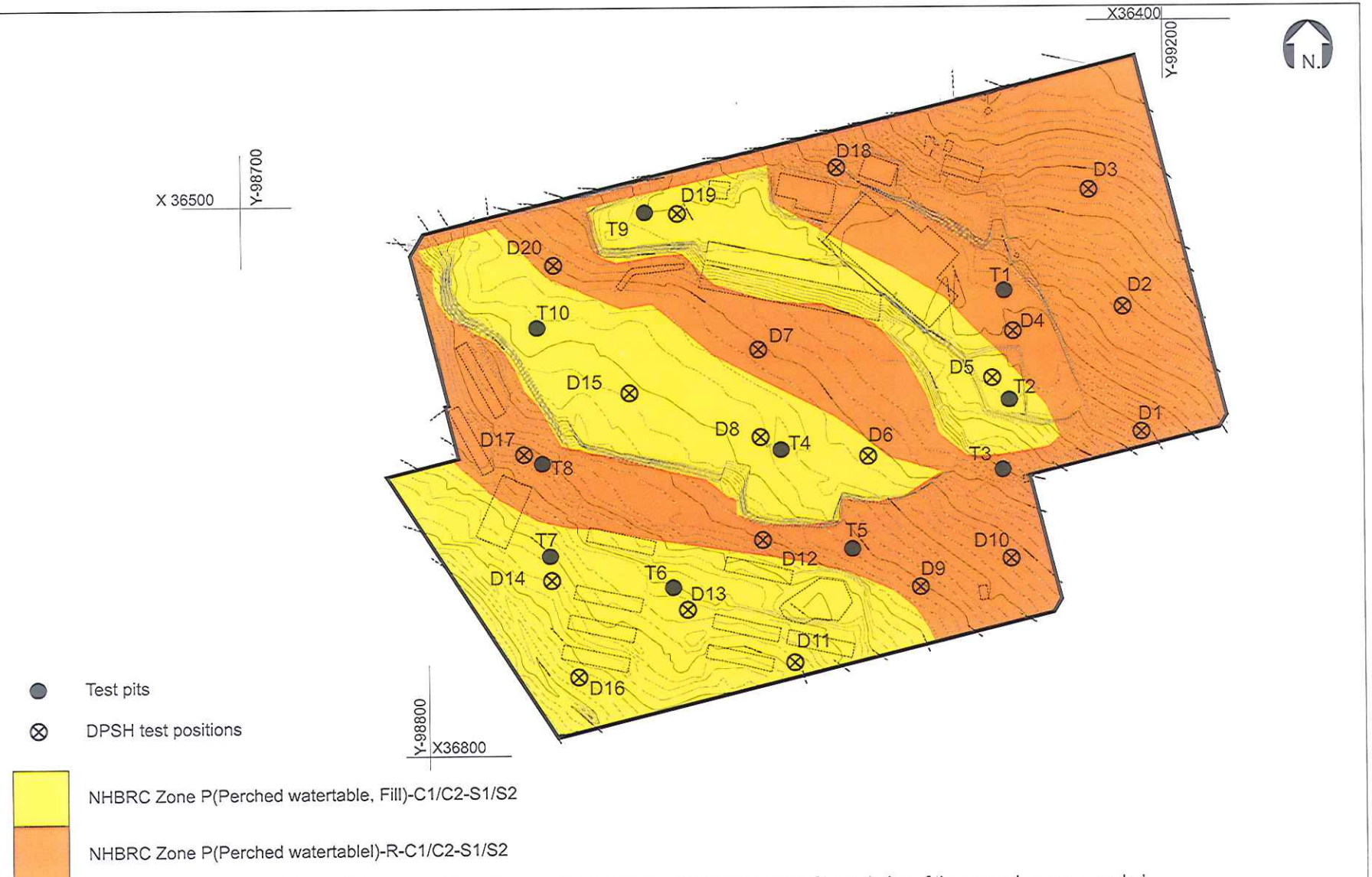
Based on the above, the site is classified as follows:

- Engineering Geological Zone 1: 2A 1/2B 1C 2D 2E 2/3F1I
- Engineering Geological Zone 2: 2A 1/2B 1C 2D 2E 2/3F1I
- Engineering Geological Zone 3: 2A 1/2B 1C 2D 2E 2/3F1I

14. NHBRC ZONING

ZONE	NHBRC ZONE	MOTIVATION
1 and 3 Geotechnical classification: 2A 1/2B 1C 2D 2E 2/3F1I (see table)	P(Perched water table, Fill)-C1/C2-S1/S2	The colluvium is potentially collapsible and according to Jennings and Knight (1975) "Trouble" can be expected due to the collapse settlement. Due to the consistency and the variation in the composition of the fill collapse / settlement is expected if structures are founded on this material. The average thickness of the potentially collapsible / compressible material is 1,6 meters with a minimum thickness of 0,6 meters and a maximum thickness of 3,3 meters. Therefore this part of the site is zoned as C1/C2-S1/S2. The presence of the shallow perched water table is accommodated by adding a zoning of P(Perched water table) and the fill is accommodated with a zoning of P(Fill)
2 Geotechnical classification: 2A 1/2B 1C 2D 2E 2/3F1I (see table)	P(Perched water table)-R-C1/C2-S1/S2	The colluvium is potentially collapsible and according to Jennings and Knight (1975) "Trouble" can be expected due to the collapse settlement. Due to the consistency and the variation in the composition of the fill collapse / settlement is expected if structures are founded on this material. The average thickness of the potentially collapsible / compressible material is 1,6 meters with a minimum thickness of 0,6 meters and a maximum thickness of 3,3 meters. Therefore this part of the site is zoned as C1/C2-S1/S2. and the presence of shallow bedrock is accommodated by adding a zoning of R.

It is important to note that since the investigation was done for township establishment the zoning is based on the profiling of test pits and the interpolation of information between test pits, therefore it is possible that variations from the expected conditions can occur. The zoning is shown on Figure 4.



The zoning is based on the interpolation of information. Therefore a conservative approach to the use of boundaries of the zones is recommended.

NHBRC ZONING	SCALE 1 : 3 000	FIGURE 4

15. CONCLUSIONS AND RECOMMENDATIONS

It is important to note that the recommendations are based on the profiling of test pits and the interpolation of information. It is therefore possible that variations from the expected conditions can occur.

15.1 Foundations

Although foundation recommendations are normally based on the shallow founding conditions, the following critical factors should be noted:

- The site slopes steeply, the height difference between the western and eastern boundary is in the order of 20 meters
- The proposed development consists of a shopping mall.

Due to the slope of the site, it is envisaged that level platforms for the structures will be created by way of a balanced cut to fill operation. This was confirmed during the first project meeting. This means that on the cut end of the platform, excavations may have proceeded to the sandstone bedrock, depending on the depth of cut and the thickness of the transported material and fill at the cut end. When the building platform is constructed, the soil profile should be investigated to establish the approximate thickness of the various horizons within the platform area. The following guidelines should be followed:

In cut sections:

Should the cut extend up to the sandstone bedrock, structures should be founded on the bedrock. Loose material at founding level has to be removed or must be compacted. If the cut extends to the bedrock level, the following alternatives apply:

If sandstone bedrock is encountered at shallow depth in the cut:

- *Modified normal:*
  Found structures on the bedrock on normal, reinforced footings, structures should be provided with reinforcement in the masonry and with articulation joints at all external and internal doors and openings.

If the depth to sandstone bedrock becomes too deep to found economically, the following alternatives should be implemented.

- *Stiffened strip footings, stiffened or cellular raft:*
  Found structures on stiffened strip footings or a stiffened or cellular raft with lightly reinforced masonry. The bearing pressure should not exceed 50 kPa and floor slabs should be reinforced.

- *Compaction of insitu soil below footings:*
  Remove unsuitable material up to a depth and width of 1,5 times the foundation width, below normal founding depth. The loose material in the bottom of excavations should be compacted, and the excavations backfilled with suitable material, compacted in 150 mm layers to at least 93% of Mod AASHTO density at -1% to +2% of optimum moisture content. Structures can be founded on normal reinforced strip footings on the backfill and should be provided with vertical movement joints, light reinforcement in the masonry and floor slabs should be provided with fabric reinforcement.

- *Soil raft:*
  Remove the collapsible material to 1,0 meters beyond the perimeter of the structure to at least a depth of 1,5 times the width of the widest foundation. The loose material in the bottom of excavations should be compacted, and the excavations backfilled with suitable material, compacted in 150 mm layers to at least 93% of Mod AASHTO density at -1% to +2% of optimum moisture content. Structures can be founded on

normal reinforced strip footings on the backfill and should be provided with vertical movement joints and light reinforcement in the masonry.

- *Piled or pier foundations:*
  Found structures on piled or pier foundations with reinforced ground beams or solid slabs on piled or pier foundations.

In fill sections:

- On the fill end, the founding alternatives listed in the previous section apply. If the entire fill section is constructed by compacting a competent material, founding at shallow depth is possible.

It is important though that in spite of the guidelines given above, inspection of foundation excavations and the involvement of a competent engineer familiar with structural founding are necessary. I***t is important that the trenches for services be profiled and that a construction report be compiled for the development. The purpose of the construction report is to confirm or adapt the zoning of the site, and to provide more accurate information regarding the founding conditions.***

15.2 Excavatability

The excavatability of the materials encountered on the site was evaluated according to the South African Bureau of Standards Standardized Specification for Civil Engineering Construction DB: Earthworks (Pipe Trenches). The excavatability is considered to classify as "soft to intermediate" up to an **average** depths of 1,5 meters. *It is important to note that the evaluation is based primarily on the profiling of test pits and the interpolation of information between test pits. It is therefore possible that variations from the expected conditions can occur.*

15.3 Geohydrology

All excavations should be provided with adequate drainage. Structures should be provided with damp proofing and provision should be made to prevent the ingress of water into– and below foundations.

15.4 Construction material

The laboratory test results show that the materials encountered on the site should at least be suitable as fill. *Since a cut will be made on the site, it is recommended that the suitability of material that is to be used, be confirmed by detailed laboratory testing.*

15.5 Services

Due to the expected corrosivity, it is recommended that all services be protected.

15.6 Stability of excavations

It is recommended that all excavations be cut back or shored.

15.7 General recommendations

Water has a significant influence on the behaviour of the in-situ material. To reduce differential movements of structures it is necessary to maintain moisture equilibrium under the structures. Therefore it is recommended that the following measures regarding drainage around structures be implemented:

X No accumulation of surface water must be allowed around the perimeter of the structures and the entire development must be properly drained.

X Down pipes should discharge into a lined or precast furrow. This furrow should discharge the water 1,5 meters away from the foundation onto a paved or grassed surface sloping away from the building.

X Preferably, if no gutters or paving is to be provided around structures, a 1,5 meter wide sealed concrete apron should be cast along the perimeter of the structures the water must be channeled away from the foundation.

X Leaks in water bearing services should be attended to without undue delay.

X No large shrubs or trees should be planted closer to structures than the distances provided in the following Table:

DESCRIPTION	MATURE HEIGHT OF TREE		
	Up to 8m	8m tot 15m	Over 15m
Buildings other than single storey buildings of lightweight construction	-	0.5	1,2
Single storey buildings of lightweight construction (e.g. timber framed)	-	0.7	1,5
Free standing masonry walls	-	1,0[1] 0,5[2]	2,0[1] 1,0[2]
Drains and underground services • less than 1 meter deep • more than 1 meter deep	 0,5 -	 1,5 1,0	 3,0 2,0

Note:
1) These distances will generally avoid all direct damage
2) These distances assume that some movement and minor damage, which may be tolerated, might occur.

This table provides guidance on the acceptable proximity of young trees or new planting to allow for future growth. This table should not be taken to imply that construction work can occur at the specified distances from existing trees; as such work might damage the tree, or render it

L.J Kruger Pr. Sci. Nat.

16. REFERENCES

- "Guidelines for Urban Engineering Geological Investigations", SAIEG & SAICE, 1995
- "Home Building Manual Part 1 & 2", National Home Builders Registration Council, 1999
- "Revised Guide to Soil Profiling for Civil Engineering Purposes in Southern Africa", Jennings Brink and Williams, The Civil Engineer in SA, 1973
- "The Prediction of Soil Heave from the Plasticity Index and Percentage Clay Fraction of Soils", D.H van der Merwe, The Civil Engineer in South Africa, 1964
- "A Guide to Construction on or with Materials Exhibiting Additional Settlement due to Collapse of Grain Structure", Jennings and Knight 1975
- "A Short Workshop on Suggested Interpretation Techniques of Soil Movement with Emphasis on Heave and Collapse Conditions": SAIEG, 1999
- "The Engineering Geology of Southern Africa", Volumes 1, 2 , 3 and 4, A.B.A Brink
- "Soil Survey for Engineering", Brink, Partridge & Williams
- South African Bureau of Standards Standardized Specification for Civil Engineering Construction DB: Earthworks (Pipe Trenches) SABS 1200 DB-1982
- Technical Recommendations for Highways, TRH 14 of 1985

APPENDIX A

SOIL PROFILE

PROJECT: ERMELO

SITE: Ptn 89 Nooitdedacht 268 IT

CLIENT: PAUL VAN WYK

LOGGED BY: LK

MACHINE: TLB

DATE: 06/12/2013

TEST PIT: 1.

SAMPLE / TEST	GROUND WATER	LEGEND	DESCRIPTION
			Fill, consisting of brown sandy gravel
		0,9	Slightly moist, shattered very soft rock sandstone
		1,4	Refusal on soft rock sandstone
			No ground water

LOUIS KRUGER GEOTECHNICS PO BOX 1283 GARSFONTEIN 082 651 4819

SOIL PROFILE

PROJECT: ERMELO

SITE: Ptn 89 Nooitdedacht 268 IT

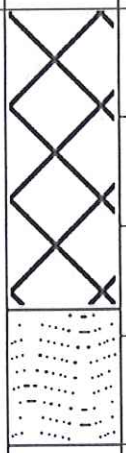
CLIENT: PAUL VAN WYK

LOGGED BY: LK

MACHINE: TLB

DATE: 06/12/2013

TEST PIT: 2.

SAMPLE / TEST	GROUND WATER	LEGEND	DESCRIPTION
			Fill, consisting of dark brown silty sand and plant roots
			1,4
			Slightly moist, shattered very soft rock sandstone
			2,0
			Refusal on soft rock sandstone
			No ground water

LOUIS KRUGER GEOTECHNICS PO BOX 1283 GARSFONTEIN 082 651 4819

SOIL PROFILE

PROJECT: ERMELO

SITE: Ptn 89 Nooitdedacht 268 IT

CLIENT: PAUL VAN WYK

LOGGED BY: LK

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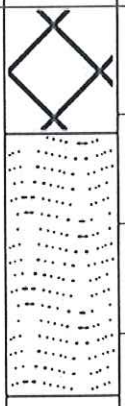
DATE: 06/12/2013

TEST PIT: 3.

SAMPLE / TEST	GROUND WATER	LEGEND	DESCRIPTION
			Fill, consisting of dark brown silty sand and plant roots
			0,6
			Slightly moist, shattered very soft rock sandstone
			1,8
			Refusal on soft rock sandstone
			No ground water

LOUIS KRUGER GEOTECHNICS PO BOX 1283 GARSFONTEIN 082 651 4819

SOIL PROFILE

PROJECT: ERMELO

SITE: Ptn 89 Nooitdedacht 268 IT

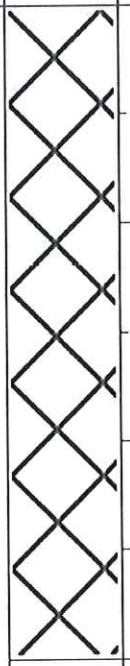
CLIENT: PAUL VAN WYK

LOGGED BY: LK

MACHINE: TLB

DATE: 06/12/2013

TEST PIT: 4.

SAMPLE / TEST	GROUND WATER	LEGEND	DESCRIPTION
			Fill, consisting of red brown to brown silty sand with abundant bricks
		3,0	No Refusal No ground water

LOUIS KRUGER GEOTECHNICS PO BOX 1283 GARSFONTEIN 082 651 4819

SOIL PROFILE

PROJECT: ERMELO

SITE: Ptn 89 Nooitdedacht 268 IT

CLIENT: PAUL VAN WYK

LOGGED BY: LK

MACHINE: TLB

DATE: 06/12/2013

TEST PIT: 5.

SAMPLE / TEST	GROUND WATER	LEGEND	DESCRIPTION
			Fill, consisting of brown silty sand with plant roots
		0,3	Slightly moist, brown, soft, shattered, gravelly silty sand with ferricrete nodules and with plant roots - Colluvium
		0,9	Slightly moist, shattered very soft rock sandstone
		1,4	Refusal on soft rock sandstone
			No ground water

LOUIS KRUGER GEOTECHNICS PO BOX 1283 GARSFONTEIN 082 651 4819

SOIL PROFILE

PROJECT: ERMELO

SITE: Ptn 89 Nooitdedacht 268 IT

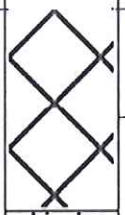
CLIENT: PAUL VAN WYK

LOGGED BY: LK

MACHINE: TLB

DATE: 06/12/2013

TEST PIT: 6.

SAMPLE / TEST	GROUND WATER	LEGEND	DESCRIPTION
			Fill, consisting of brown silty sand with plant roots
		0,9	Slightly moist, brown, soft, shattered, gravelly silty sand with ferricrete nodules and with plant roots - Colluvium
		1,4	Slightly moist, shattered very soft rock sandstone
		1,8	Refusal on soft rock sandstone
			No ground water

LOUIS KRUGER GEOTECHNICS PO BOX 1283 GARSFONTEIN 082 651 4819

SOIL PROFILE

PROJECT: ERMELO

SITE: Ptn 89 Nooitdedacht 268 IT

CLIENT: PAUL VAN WYK

LOGGED BY: LK

MACHINE: TLB

DATE: 06/12/2013

TEST PIT: 7.

SAMPLE / TEST	GROUND WATER	LEGEND	DESCRIPTION
			Fill, consisting of brown silty sand with plant roots
		0,9	Slightly moist, brown, soft, shattered, gravelly silty sand with ferricrete nodules and with plant roots - Colluvium
		1,2	Slightly moist, shattered very soft rock sandstone
		1,6	Refusal on soft rock sandstone
			No ground water

LOUIS KRUGER GEOTECHNICS PO BOX 1283 GARSFONTEIN 082 651 4819

SOIL PROFILE

PROJECT: ERMELO

SITE: Ptn 89 Nooitdedacht 268 IT

CLIENT: PAUL VAN WYK

LOGGED BY: LK

MACHINE: TLB

DATE: 06/12/2013

TEST PIT: 8.

SAMPLE / TEST	GROUND WATER	LEGEND	DESCRIPTION
			Slightly moist, brown, soft, shattered, gravelly silty sand with ferricrete nodules and with plant roots - Colluvium
		1,2	
			Slightly moist, shattered very soft rock sandstone
		2,0	Refusal on soft rock sandstone
			No ground water

LOUIS KRUGER GEOTECHNICS PO BOX 1283 GARSFONTEIN 082 651 4819

SOIL PROFILE

PROJECT: ERMELO

SITE: Ptn 89 Nooitdedacht 268 IT

CLIENT: PAUL VAN WYK

LOGGED BY: LK

MACHINE: TLB

DATE: 06/12/2013

TEST PIT: 9.

SAMPLE / TEST	GROUND WATER	LEGEND	DESCRIPTION
			Slightly moist, brown, soft, shattered, gravelly silty sand with ferricrete nodules and with plant roots - Colluvium
			0,6
			Slightly moist, shattered very soft rock sandstone
			1,4
			Refusal on soft rock sandstone
			No ground water
			3,0

LOUIS KRUGER GEOTECHNICS PO BOX 1283 GARSFONTEIN 082 651 4819

SOIL PROFILE

PROJECT: ERMELO

SITE: Ptn 89 Nooitdedacht 268 IT

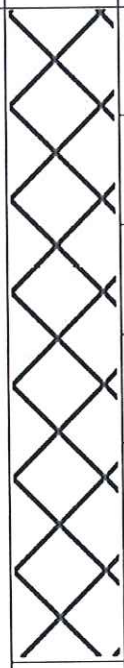
CLIENT: PAUL VAN WYK

LOGGED BY: LK

MACHINE: TLB

DATE: 06/12/2013

TEST PIT: 10

SAMPLE / TEST	GROUND WATER	LEGEND	DESCRIPTION
			Fill, consisting of red brown to brown silty sand with abundant bricks
		3,0	No Refusal No ground water

LOUIS KRUGER GEOTECHNICS PO BOX 1283 GARSFONTEIN 082 651 4819

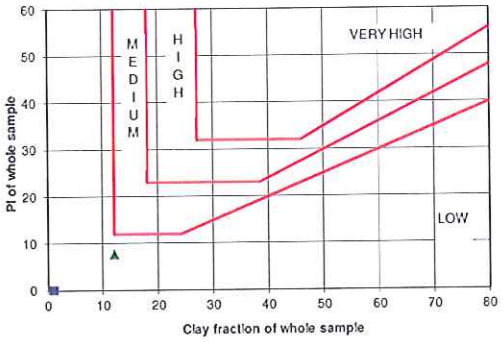
APPENDIX B

PARTICLE SIZE ANALYSIS

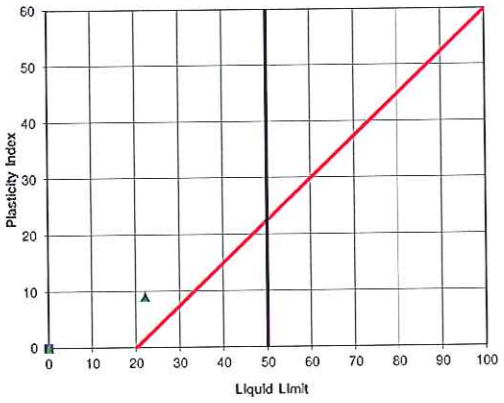
Sample No.	1	2
Soillab sample no.	S13-1520-1	S13-1520-2
Depth (m)		
Position	E1	E2
Material Description	DARK BROWN DOLERITE GRAVELLY SAND	DARK GREY SANDSTONE, ASH, SAND SILTY SAND
Moisture (%)		
Dispersion (%)		
SCREEN ANALYSIS (% PASSING) **(TMH 1 A1(a) & A5)**		
63.0 mm	100	100
53.0 mm	100	100
37.5 mm	100	100
26.5 mm	100	100
19.0 mm	100	100
13.2 mm	100	100
4.75 mm	87	98
2.00 mm	73	97
0.425 mm	51	86
0.075 mm	18	42
HYDROMETER ANALYSIS (% PASSING) **(TMH 1 A6)**		
0.040 mm	9	29
0.027 mm	7	24
0.013 mm	5	21
0.005 mm	2	15
0.002 mm	1	12
% Clay	1	12
% Silt	13	25
% Sand	59	60
% Gravel	27	3
ATTERBERG LIMITS **(TMH 1 A2 - A4)**		
Liquid Limit		22
Plasticity Index	NP	9
Linear Shrinkage (%)	0.0	4.0
Grading Modulus	1.57	0.75
Uniformity coefficient	18	-
Coefficient of curvature	0.6	-
Classification	A-2-5 (0)	A-4 (1)
Unified Classification	SM	SC
Chart Reference		

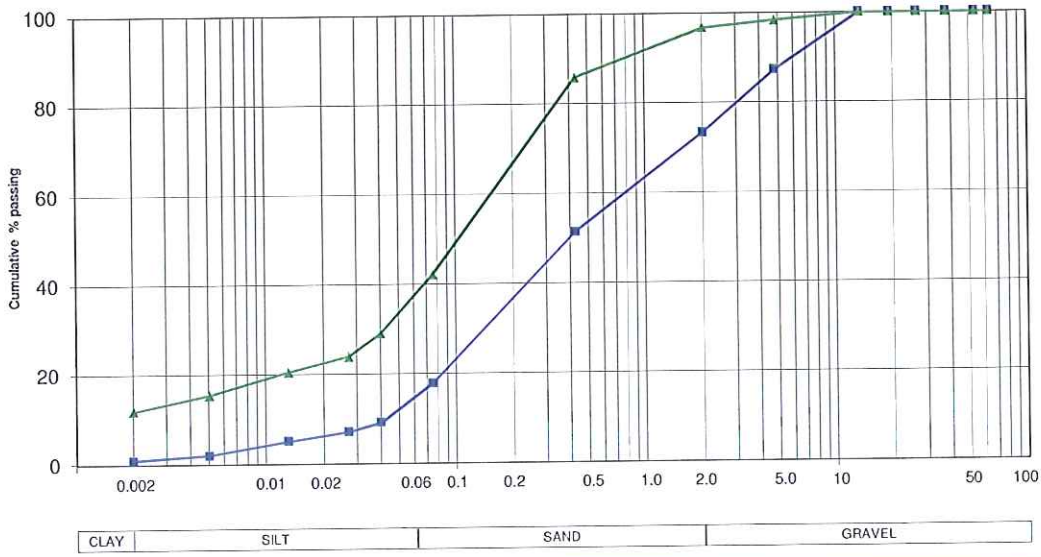
PROJECT : ERMELO
JOB No. : S13-1520
DATE : 2013-12-06

POTENTIAL EXPANSIVENESS



PLASTICITY CHART





HIDROMETER 1520-01

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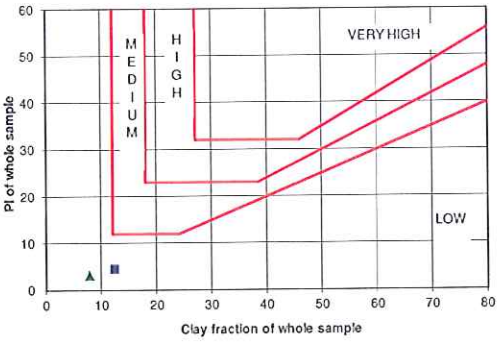
PARTICLE SIZE ANALYSIS

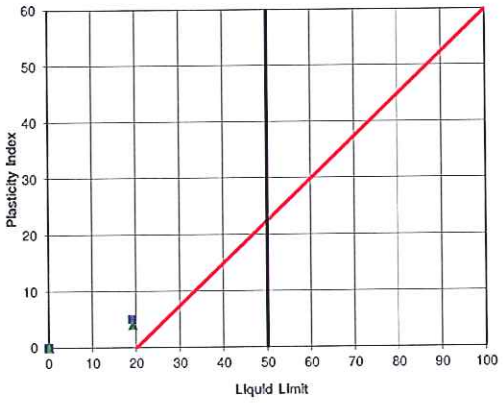
Sample No.	3	4
Soillab sample no.	S13-1520-3	S13-1520-4
Depth (m)		
Position	E3	E4
Material Description	DARK GREY SANDSTONE, ASH SILTY SAND	DARK GREY ASH, SANDSTONE SILTY SAND
Moisture (%)		
Dispersion (%)		
SCREEN ANALYSIS (% PASSING) **(TMH 1 A1(a) & A5)**		
63.0 mm	100	100
53.0 mm	100	100
37.5 mm	100	100
26.5 mm	100	100
19.0 mm	100	100
13.2 mm	100	100
4.75 mm	100	99
2.00 mm	99	97
0.425 mm	89	78
0.075 mm	43	37
HYDROMETER ANALYSIS (% PASSING) **(TMH 1 A6)**		
0.040 mm	28	23
0.027 mm	23	20
0.013 mm	19	16
0.005 mm	16	11
0.002 mm	12	8
% Clay	12	8
% Silt	24	24
% Sand	63	65
% Gravel	1	3
ATTERBERG LIMITS **(TMH 1 A2 - A4)**		
Liquid Limit	19	19
Plasticity Index	5	4
Linear Shrinkage (%)	2.5	2.0
Grading Modulus	0.69	0.88
Uniformity coefficient	-	51
Coefficient of curvature	-	3.8
Classification	A-4 (0)	A-4 (0)
Unified Classification	SM & SC	SM & SC
Chart Reference	■	▲

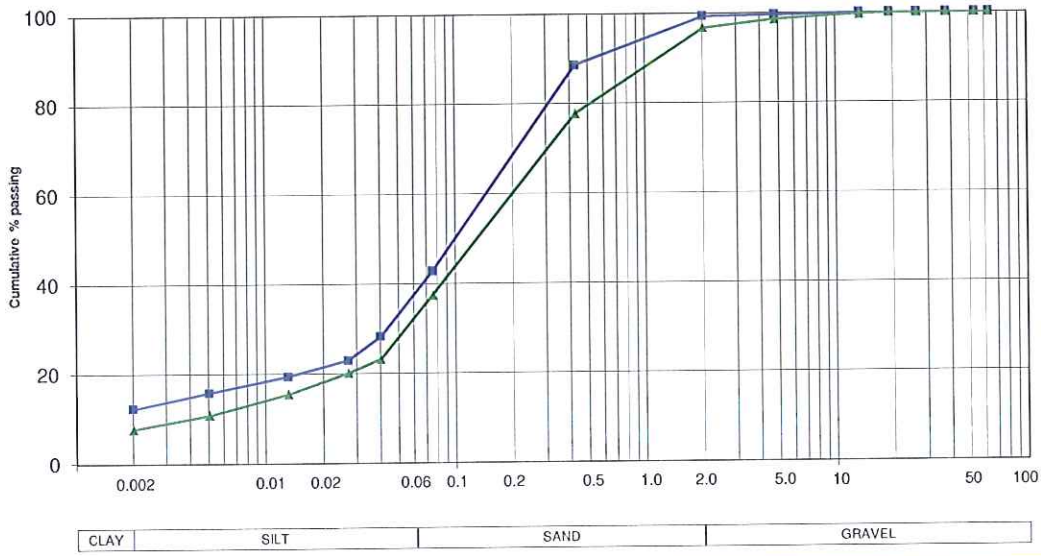
PROJECT : ERMELO
JOB No. : S13-1520
DATE : 2013-12-06

POTENTIAL EXPANSIVENESS



PLASTICITY CHART





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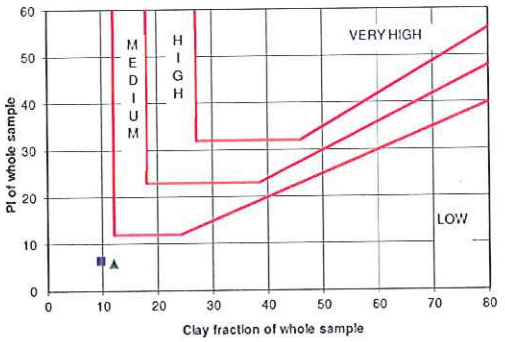
HYDROMETER 1520-02

PARTICLE SIZE ANALYSIS

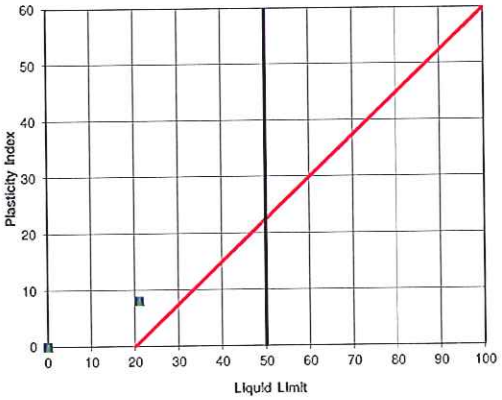
Sample No.	5	6
Soillab sample no.	S13-1520-5	S13-1520-6
Depth (m)		
Position	E5	E6
Material Description	DARK GREY SAND SILTY SAND	DARK OLIVE FERRICRETE SILTY SAND
Moisture (%)		
Dispersion (%)		
SCREEN ANALYSIS (% PASSING) **(TMH 1 A1(a) & A5)**		
63.0 mm	100	100
53.0 mm	100	100
37.5 mm	100	100
26.5 mm	100	100
19.0 mm	100	100
13.2 mm	100	100
4.75 mm	99	100
2.00 mm	97	99
0.425 mm	81	74
0.075 mm	42	38
HYDROMETER ANALYSIS (% PASSING) **(TMH 1 A6)**		
0.040 mm	27	25
0.027 mm	23	22
0.013 mm	18	19
0.005 mm	13	15
0.002 mm	10	12
% Clay	10	12
% Silt	26	20
% Sand	61	67
% Gravel	3	1
ATTERBERG LIMITS **(TMH 1 A2 - A4)**		
Liquid Limit	21	21
Plasticity Index	8	8
Linear Shrinkage (%)	4.0	4.0
Grading Modulus	0.80	0.89
Uniformity coefficient	76	-
Coefficient of curvature	5.5	-
Classification	A-4 (0)	A-4 (0)
Unified Classification	SC	SC
Chart Reference	■	▲

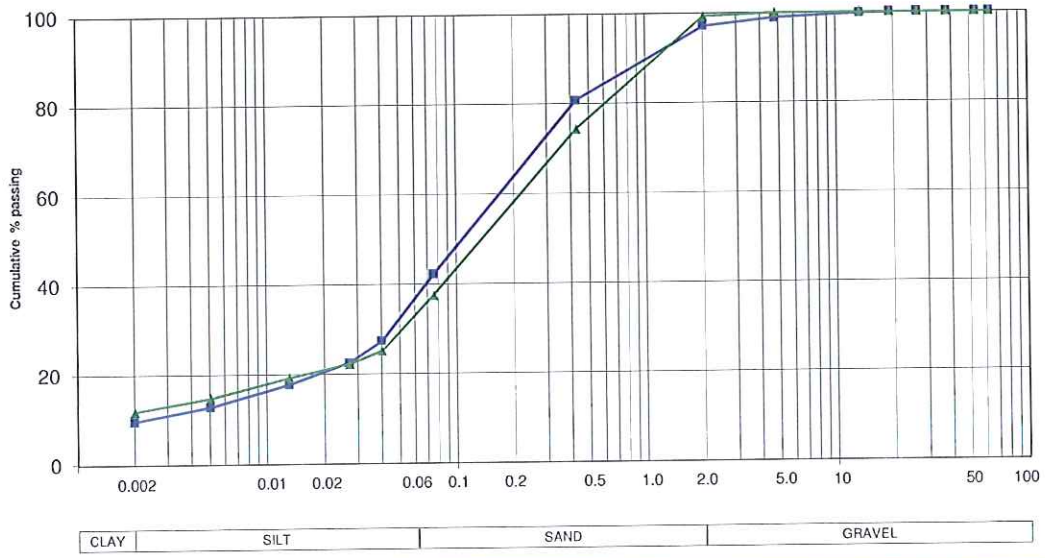
PROJECT : ERMELO
JOB No. : S13-1520
DATE : 2013-12-06

POTENTIAL EXPANSIVENESS



PLASTICITY CHART





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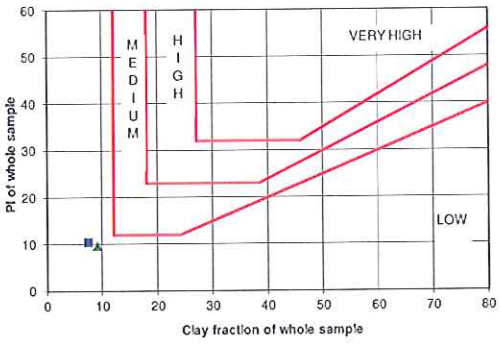
HYDROMETER 1520-03

PARTICLE SIZE ANALYSIS

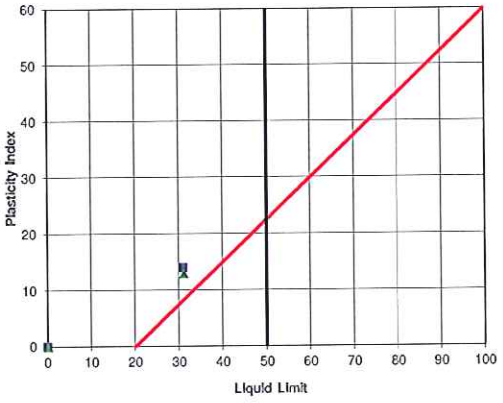
Sample No.	7	8
Soillab sample no.	S13-1520-7	S13-1520-8
Depth (m)		
Position	E7	E8
Material Description	DARK GREY SANDSTONE SILTY SAND	DARK OLIVE FERRICRETE, SAND SILTY SAND
Moisture (%)		
Dispersion (%)		
SCREEN ANALYSIS (% PASSING) **(TMH 1 A1(a) & A5)**		
63.0 mm	100	100
53.0 mm	100	100
37.5 mm	100	100
26.5 mm	100	100
19.0 mm	100	100
13.2 mm	100	100
4.75 mm	96	97
2.00 mm	90	94
0.425 mm	74	75
0.075 mm	45	46
HYDROMETER ANALYSIS (% PASSING) **(TMH 1 A6)**		
0.040 mm	28	28
0.027 mm	22	22
0.013 mm	16	19
0.005 mm	12	13
0.002 mm	7	9
% Clay	7	9
% Silt	30	30
% Sand	52	55
% Gravel	10	6
ATTERBERG LIMITS **(TMH 1 A2 - A4)**		
Liquid Limit	31	31
Plasticity Index	14	13
Linear Shrinkage (%)	7.0	6.5
Grading Modulus	0.91	0.85
Uniformity coefficient	54	71
Coefficient of curvature	2.9	4.2
Classification	A-6 (3)	A-6 (3)
Unified Classification	SC	SC
Chart Reference	▪	▲

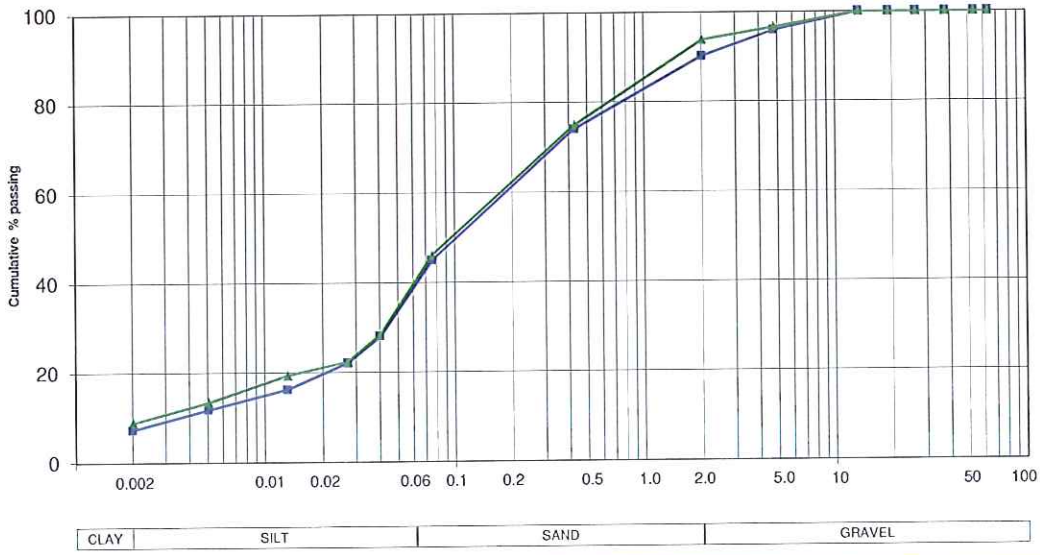
PROJECT : ERMELO
JOB No. : S13-1520
DATE : 2013-12-06

POTENTIAL EXPANSIVENESS



PLASTICITY CHART





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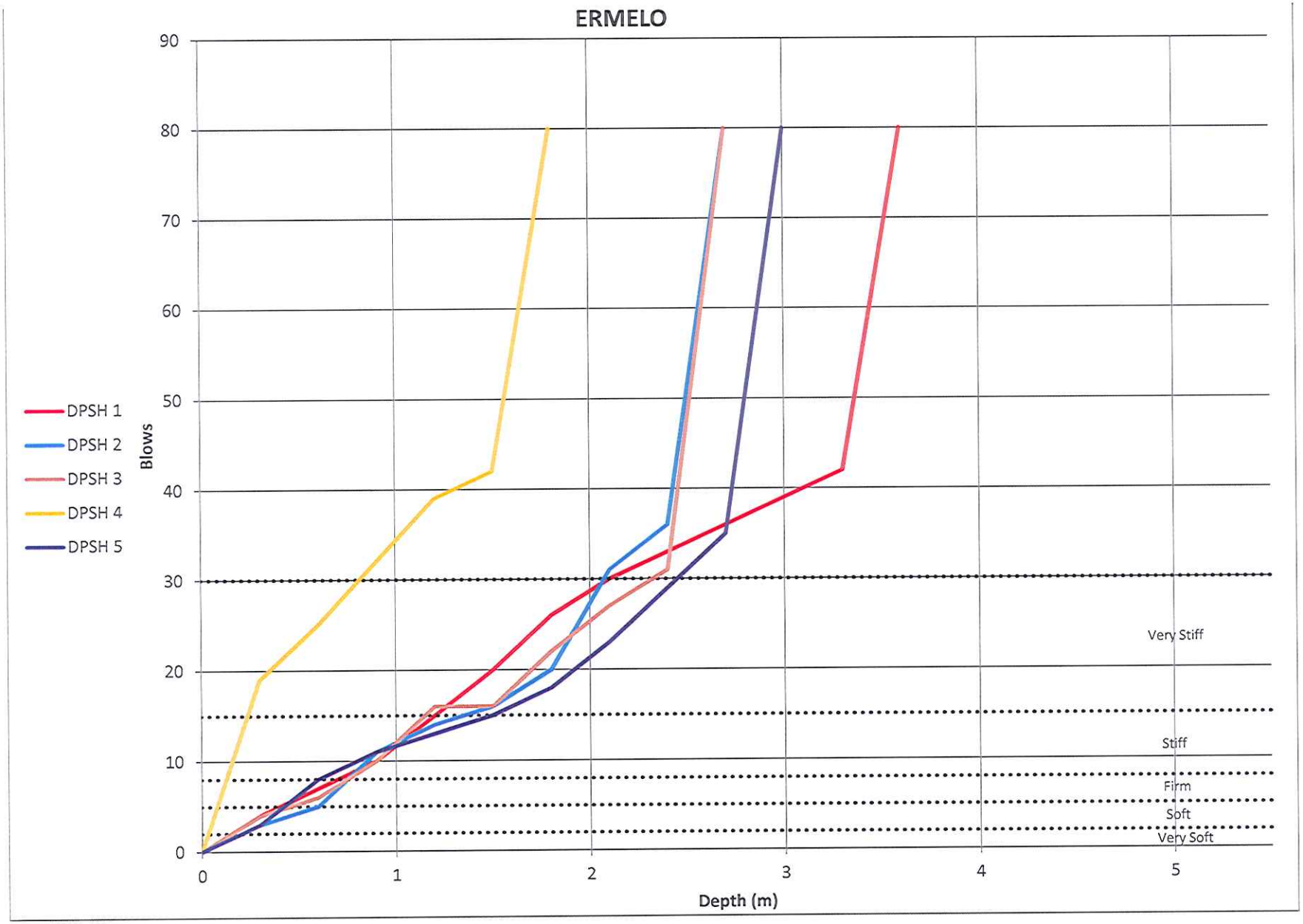
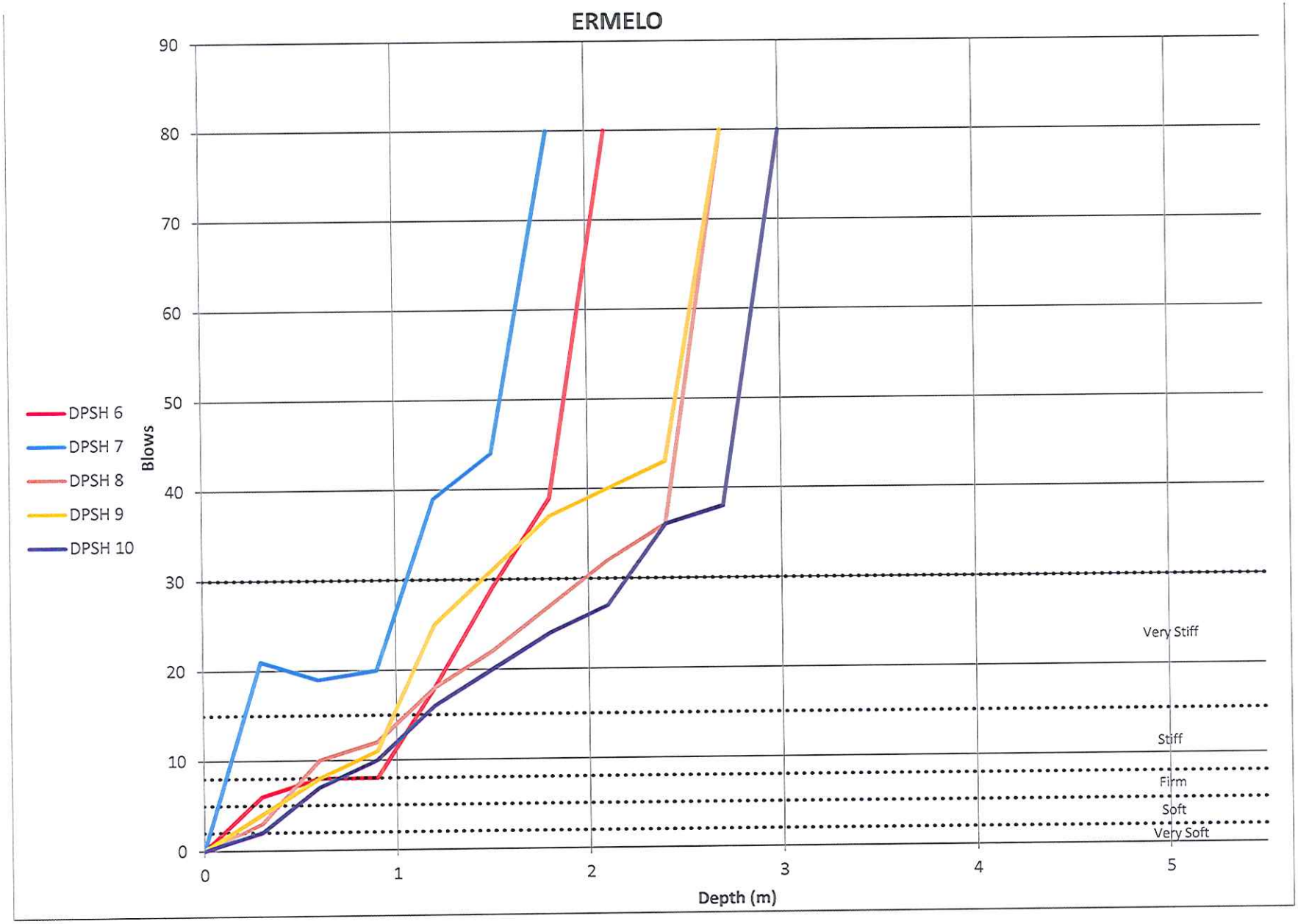
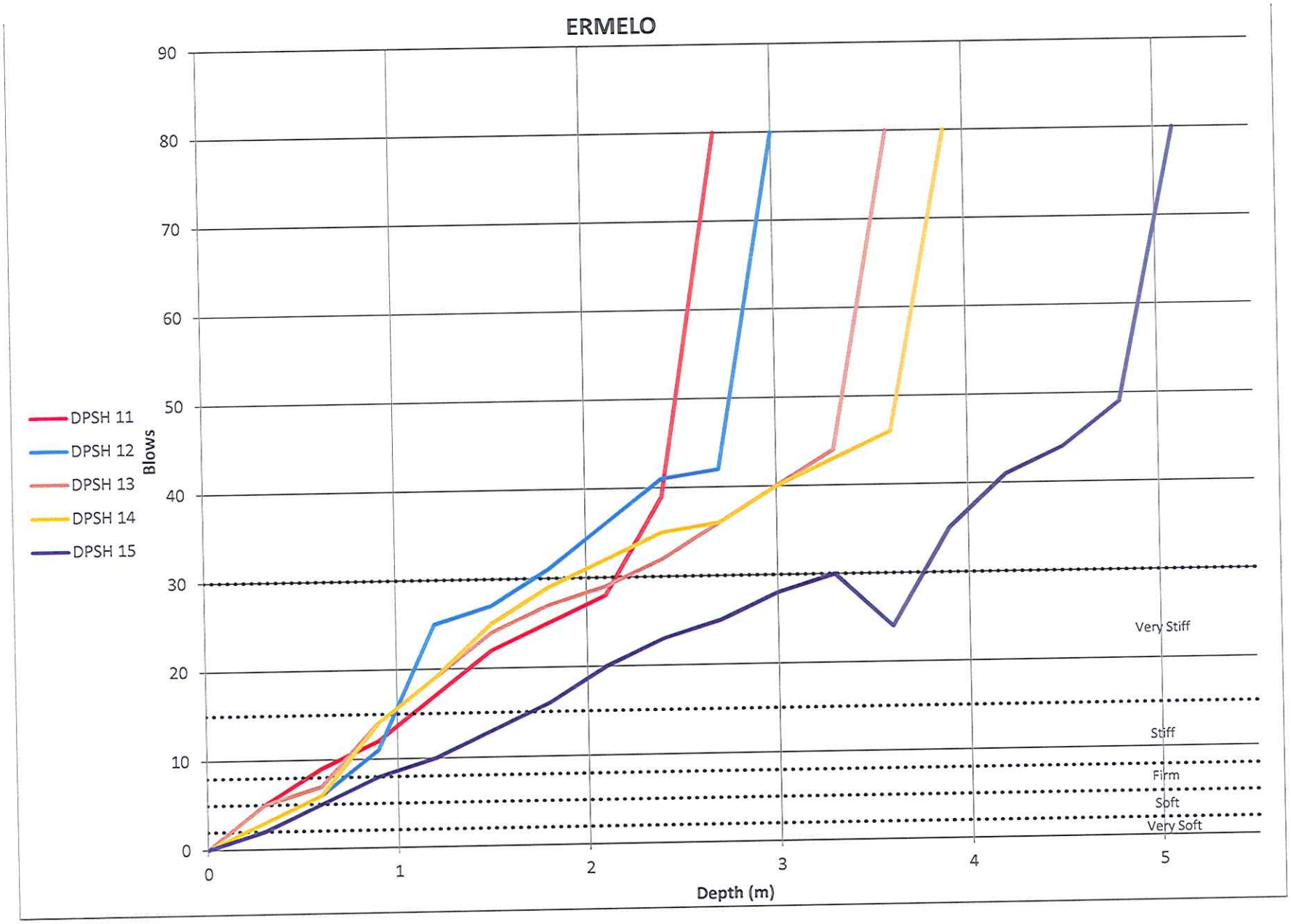
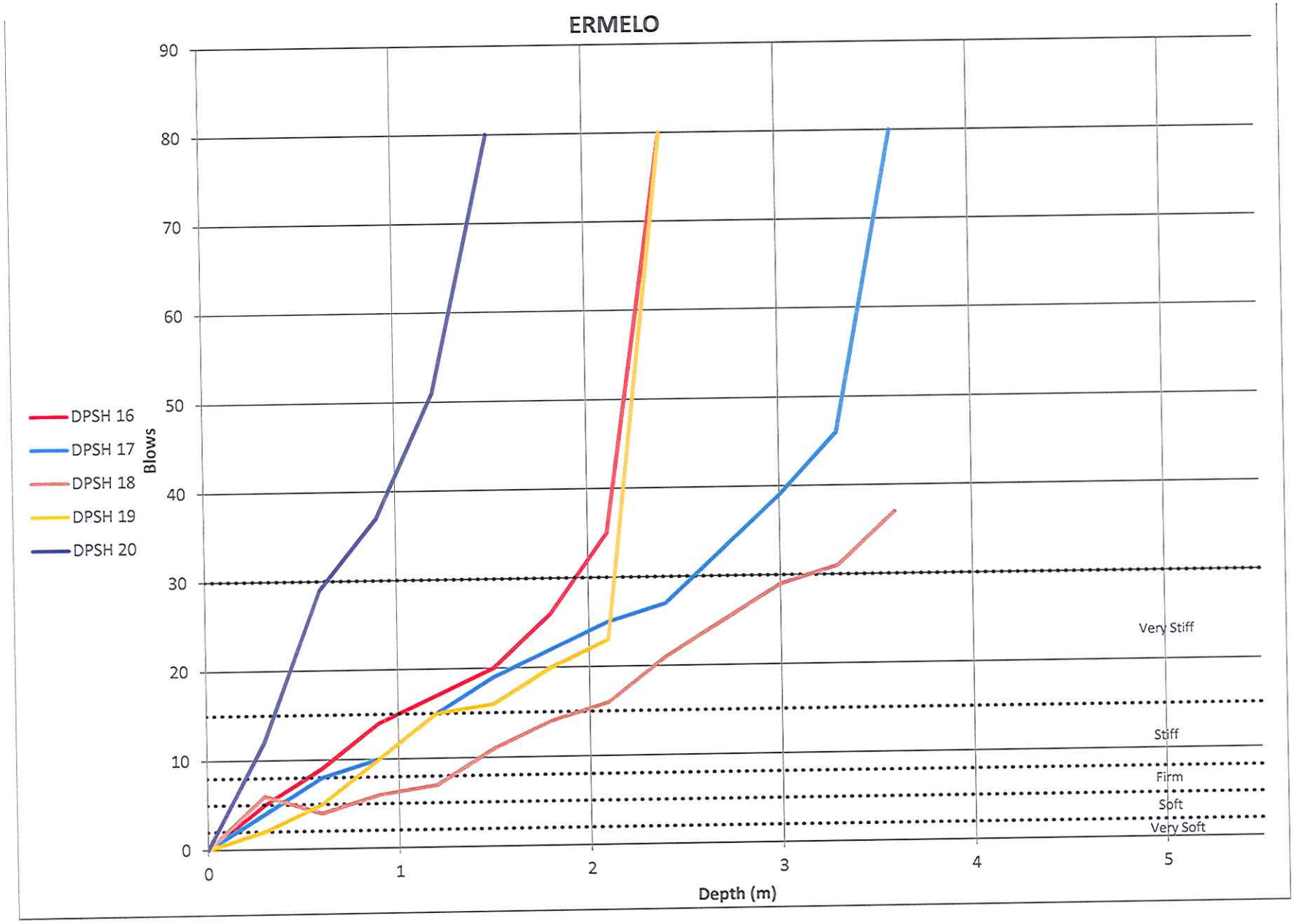
HYDROMETER 1520-04

APPENDIX C


ERMELO
DPSH 1
DPSH 2
DPSH 3
DPSH 4
DPSH 5
Blows
90
80
70
60
50
40
30
20
10
0
0
1
2
3
4
5
Depth (m)
Very Stiff
Stiff
Firm
Soft
Very Soft


ERMELO
DPSH 6
DPSH 7
DPSH 8
DPSH 9
DPSH 10
Blows
90
80
70
60
50
40
30
20
10
0
0
1
2
3
4
5
Depth (m)
Very Stiff
Stiff
Firm
Soft
Very Soft


ERMELO
DPSH 11
DPSH 12
DPSH 13
DPSH 14
DPSH 15
Blows
90
80
70
60
50
40
30
20
10
0
0
1
2
3
4
5
Depth (m)
Very Stiff
Stiff
Firm
Soft
Very Soft


ERMELO
DPSH 16
DPSH 17
DPSH 18
DPSH 19
DPSH 20
Blows
90
80
70
60
50
40
30
20
10
0
0
1
2
3
4
5
Depth (m)
Very Stiff
Stiff
Firm
Soft
Very Soft

Profile Projects

sakkiefourie@mweb.co.za

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Wapadrand
0050

Client: LOUIS KRUGER
Att: LOUIS KRUGER

Date: 04/12/2013

Site: ERMELO

	DPSH 1	DPSH 2	DPSH 3	DPSH 4	DPSH 5	DPSH 6	DPSH 7	DPSH 8	DPSH 9	DPSH 10	DPSH 11	DPSH 12
0.3	4	3	4	19	3	6	21	3	4	2	5	3
0.6	7	5	6	25	8	8	19	10	8	7	9	6
0.9	10	11	10	32	11	8	20	12	11	10	12	11
1.2	15	14	16	39	13	18	39	18	25	16	17	25
1.5	20	16	16	42	15	29	44	22	31	20	22	27
1.8	26	20	22	80	18	39	80	27	37	24	25	31
2.1	30	31	27	SOLID	23	80	SOLID	32	40	27	28	36
2.4	33	36	31		29	SOLID		36	43	36	39	41
2.7	36	80	80		35			80	80	38	80	42
3.0	39	SOLID	SOLID		80			SOLID	SOLID	80	SOLID	80
3.3	42				SOLID					SOLID		SOLID
3.6	80											
3.9	SOLID											
4.2												
4.5												
4.8												
5.1												
5.4												
5.7												
6.0												
6.3												
6.6												
6.9												
7.2												
7.5												
7.8												
8.1												
8.4												
8.7												
9.0												
9.3												
9.6												
9.9												
10.2												
10.5												
10.8												
11.1												
11.4												
11.7												
12.0												
12.3												

Profile Projects

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Client: LOUIS KRUGER
Att: LOUIS KRUGER

Date: 04/12/2013

Site: ERMELO

	DPSH 13	DPSH 14	DPSH 15	DPSH 16	DPSH 17	DPSH 18	DPSH 19	DPSH 20				
0.3	5	3	2	5	4	6	2	12				
0.6	7	6	5	9	8	4	5	29				
0.9	14	14	8	14	10	6	10	37				
1.2	19	19	10	17	15	7	15	51				
1.5	24	25	13	20	19	11	16	80				
1.8	27	29	16	26	22	14	20	SOLID				
2.1	29	32	20	35	25	16	23					
2.4	32	35	23	80	27	21	80					
2.7	36	36	25	SOLID	33	25	SOLID					
3.0	40	40	28		39	29						
3.3	44	43	30		46	31						
3.6	80	46	24		80	37						
3.9	SOLID	80	35		SOLID	80						
4.2		SOLID	41			SOLID						
4.5			44									
4.8			49									
5.1			80									
5.4			SOLID									
5.7												
6.0												
6.3												
6.6												
6.9												
7.2												
7.5												
7.8												
8.1												
8.4												
8.7												
9.0												
9.3												
9.6												
9.9												
10.2												
10.5												
10.8												
11.1												
11.4												
11.7												
12.0												
12.3												

ANNEXURE 'J'

LETTER FROM MUNICIPALITY DATED 29 APRIL 2014 CONFIRMING CAPACITY FOR CIVIL ENGINEERING SERVICES

MSUKALIGWA MUNICIPALITY

PO Box 48
Ermelo
Mpumalanga Province
South Africa
2350

Customer Care Center: 08611 MSUKA (67852)
Msukaligwa Municipality Fax: +27 17 801-3851

Civic Centre
C/o Kerk & Taute Street
Ermelo
Mpumalanga Province
South Africa
2350

Internet: www.msukaligwa.gov.za
E-Mail: msuka@msukaligwa.gov.za

TECHNICAL SERVICES DEPARTMENT

Civilconsult Consulting Engineers (Pty) Ltd
P.O.Box 12645
HATFIELD
0028
29 April 2014

Ermelo x47 (REM EXTENT OF PORTION 89 OF THE FARM NOOITGEDACHT 268) : ERMELO SHOPPING CENTRE

Ermelo x47 will consist of a shopping Centre with a floor area of up to 60 000 m2 .

We herewith confirm the following with regards to the supply of bulk services to the proposed development:

- The proposed development could connect to the municipal reticulation.
- Bulk services are available and the treatment capacity of the water purification works is adequate to supply the proposed development with water.
- The proposed development could connect to the existing sewerage reticulation to the south.
- The capacity of the sewer treatment plant/waste water treatment plant is adequate to accommodate the sewage flow from the proposed development.
- That upgrades to the existing storm water reticulation south of the proposed development will have to be carried out in order to accommodate the post development storm water run off from the proposed development

Yours Faithfully

.....

Manager Water & Sanitation

Mr. B.P. Van der Merwe

ANNEXURE 'K'

LETTER BY DIRECTOR OF COMMUNITY SERVICES DATED 25 APRIL 2014 REGARDING SOLID WASTE DISPOSAL

MSUKALIGWA MUNICIPALITY

PO Box 48
Ermelo
Mpumalanga Province
South Africa
2350

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Civic Centre
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Ermelo
Mpumalanga Province
South Africa
2350

Internet: www.msukaligwa.gov.za
E-Mail: msuka@msukaligwa.gov.za

COMMUNITY SERVICES DEPARTMENT

Enquiries : Mr. T.J. Zwane

Contact No: (017) 801 – 3580

25 April 2014

Civil Consult Consulting Engineers (PTY) LTD

451 Jorisson Street

PRETORIA

ATTENTION: LEON WENTZEL

Dear Sir,

RE: ERMELO X 47 PROSED DEVELOPMENT

Your letter dated 2014 April 15 on the above mentioned subject, bears reference.

We hereby welcome the proposed development in principle, and would like to confirm that our Municipality has the capacity to collect and transport solid waste from the said development to our Waste Disposal Site on a weekly basis as proposed by your selves, albeit at the Municipal Tariffs Rate reviewed annually by our Municipal Council. We would like to confirm that:

- Transport for such would be made available;
- Enough capacity is available at our Landfill Site; and
- Our Landfill Site is properly licensed as per license number: 162/7/C112/D1/P427

We would like to emphasize that the developer of the said property would be liable to ensure that there is enough Waste Storage Area (with controlled access) as required.

Regards,

Sibeko Bonginkosi Collen

Director: Community Services

ANNEXURE 'L'

ELECTRICAL SERVICE REPORT AND LETTER BY MUNICIPALITY DATED 24 APRIL 2014

STEYN VAN RENSBURG cc
CONSULTING ENGINEERS

MSUKALIGWA MUNICIPALITY

ENERGY AND ELECTRICITY DEVISION

PROPOSED SHOPPING CENTRE DEVELOPMENT

ERMELO X47

REMAINDER OF PORTION 89

OF THE FARM NOOITGEDACHT 268-IT

ELECTRICAL SERVICES REPORT

PREPARED BY: SVR CONSULTING ENGINEERS

APRIL 2014

Ref. 1402 Rev. 3

TABLE OF CONTENTS

1 DEVELOPER

Developer Name	Stylstar Investments
Contact Person	Lampies Lamprecht
Address	P.O.Box 72689 Lynwood Ridge 0040
Telephone	012 361 7970
Fax	086 567 0872
Email	lampies@moolmangroup.co.za

2 LOCAL AUTHORITY

This report is prepared for submission to:

Local Authority	Msukaligwa Municipality
Department	Engineering Services
Division	Energy and Electricity Division
Contact Person	Skombuza Magudulela
Address	P.O.Box 48 Ermelo 2350
Telephone	017 801 3750
Fax	017 801 3851
Email	smagudulela@msukaligwa.gov.za

3 CONSULTANT

Electrical Consultant	SVR Consulting Engineers
Contact Person	Wirjan Joubert
Address	P.O.Box 28727 Sunnyside 0132 Pretoria
Telephone	012 333 7807
Cell	082 905 3835
Fax	086 619 2761
Email	wirjan@svrengineers.co.za

4 INTRODUCTION

SVR Consulting Engineers were appointed by the Stylstar Investments to investigate the requirements for upgrading the bulk electrical supply for the purposes of the proposed development. The purpose of the report is to detail the capacity of the bulk services required and the costs of the proposed upgrade.

5 PROFESSIONAL TEAM

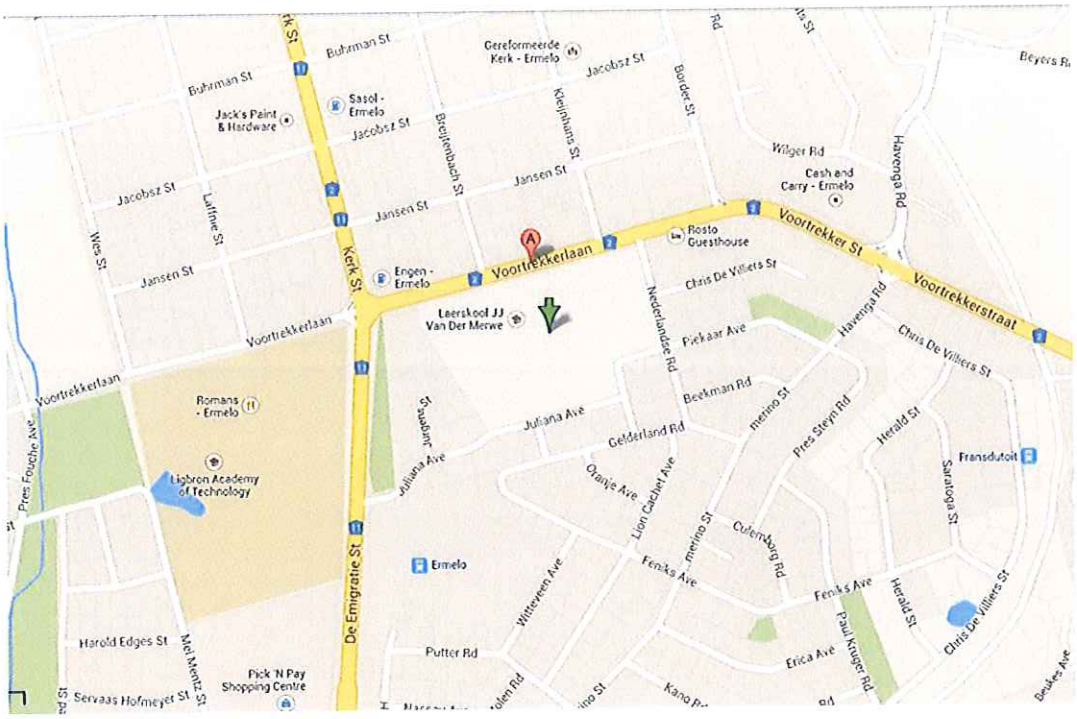
The professional team on the project consists of:

DISCIPLINE	COMPANY NAME	CONTACT PERSON
Developer	Stylstar Investments	Lampies Lamprecht
Town Planner	Paul Van Wyk Town Planners	Ola Schumacher
Electrical Consultant	SVR Consulting Engineers	Wirjan Joubert
Architect	Franzsen Architects	Lars Franzsen

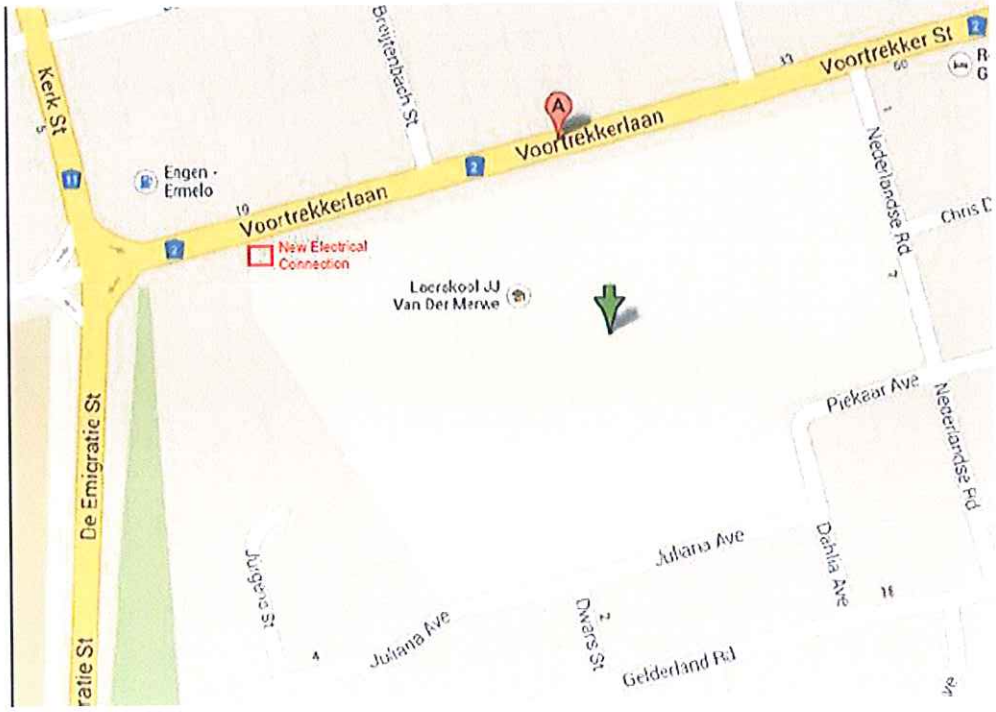
6 LOCATION

The proposed development is in Ermelo on remainder of portion 89 of the farm Nooitgedacht 268-IT.

Locality Map Site marked with Green arrow.



Required Electrical Connection Point



7 LAND USE

The proposed land use is given in the table below.

Zone Use	Erf No.	Area (Ha)	FAR	Building Area (m²)
Business (Shopping Centre)	1	8.6362	0.55	47 499.1
Business (Shopping Centre)	2	2.3314	0.55	12 822.7

The proposed master plan is attached in Annexure A

8 ELECTRICAL ENGINEERING SERVICES

8.1 Design Standards

The design standards for the electrical engineering services shall be in accordance with the following:

- Code of Practice for Wiring of Premises, SANS 10142 Parts 1 and 2
- Occupational Health and Safety Act
- The relevant Bylaws of the Msukaligwa Municipality

8.2 Ownership of Services

The bulk electrical supply services up to the boundary of the proposed township belong to the municipality and they are responsible for the maintenance of these services.

The internal electrical services must be installed by the developer. The developer will be responsible for the maintenance of these services.

8.3 Load Estimate

The electrical load for the proposed development is estimated as shown below.

Phase	Building Area (m²)	VA/m²	Maximum Demand
1	35 000 – 40 000	100	4 000 kVA
2	20 000	100	2 000 kVA
Total	60 000	100	6 000 kVA

This load estimate is based on an energy efficient building design utilising energy efficient lighting and an air conditioning system with a coefficient of performance higher than 3.0

8.4 Existing Services

The existing electrical connection to the erf comes from a 500 kVA mini-sub in Voortrekker Avenue. The site is served by three off 300 A three phase circuit breakers.

The existing electrical infrastructure is not sufficient to provide the required connection upgrade. A new feeder cable will have to be installed from the 88 kV substation to the site. The municipal engineer has confirmed that the 11 kV network at the site does not have capacity to provide a backup supply. There is an existing cable about 600 m from the site that has capacity to provide the required connection. However, this cable is not on a ring feed and cannot provide a backup supply. A new cable can be installed to make this a ring feeder so that the new supply and backup to the site can be provided from this ring.

8.5 Electrical Connection

The municipality must provide a new MV connection at 11 kV through a metering ring main unit (MRMU). The developer must provide a 6 m wide by 3 m deep area on the site boundary for the MRMU installation. The MRMU will be supplied by the developer. The MRMU will be located in Voortrekker Avenue. The developer must register a servitude over this area in favour of the municipality.

A new feeder cable will be installed from Ermelo Main 88 kV Sub-station to the corner of President Fouche and Genl. Hertzog to form a ring with the existing cable. A new T4 distribution switch will be installed at this point to connect the ring cables and provide a supply to the shopping centre from the ring. Two new cables, one main supply and one backup cable, will be installed from the T4 distribution switch to the shopping centre. The new feeder cable will be connected to one of the available feeder panels in the Main 88 kV sub-station. The current transformers in the existing feeder panel must be upgraded to provide the new supply required.

The developer must provide an 11 kV distribution switch inside the property no further than 10 m from the municipality's MRMU.

8.6 Policy

The agreement for supplying and installing electricity for the proposed township is in accordance with the Town-planning and Townships Ordinance (Ordinance 15 of 1986). This ordinance provides that among other things, the developer is responsible in terms of section 118(1)(a) for installing and providing the internal electrical engineering services and the Municipality is responsible in terms of section 118(1)(b) for providing and installing the external electrical engineering services.

The external service is the network consisting of cables and switchgear, to supply the electrical connection up to the township boundary. The Municipality charges a network cost (kVA cost) to provide the electricity supply up to the township boundary. However, if the Municipality does not have the capacity to provide and install the external services or requires the developers assistance in providing these services, the cost of the developer's contribution to the external services must be deducted from the network charge.

The municipal electrical engineer has indicated that the Municipality does not have the capacity to provide the external services and the developer must provide and install all the external services. The Municipality will assist with the connection of the new services to the main 88 kV substation. The Municipality must provide a quotation for the connection fee.

8.7 Budget Costs

Herewith the estimated cost for the developer to provide and install the external services on behalf of the Municipality. The external services consist briefly of a T4, 11 kV switch, 11 kV Metering Ring Main Unit (MRMU), approximately 3,8 km of 11 kV cables and upgrading of switchgear in the 88 kV Main substation.

Our preliminary budget estimate for the electrical services, excluding the internal reticulation, is as follows.

Connection Fee	R 9 200.00
Feeder cables and switchgear	R 4 042 000.00
Sub-Total	R 4 051 200.00
Professional Fees	R 363 780.00
Sub-Total	R 4 414 980.00
VAT @ 14%	R 618 097.20
Total for External Electrical Engineering Services incl. VAT	R 5 033 077.20

ANNEXURE A

ERMELO X47

Proposed Main Feeder Cable Route

ANNEXURE B

ERMELO X47

Site Layout Plan

MSUKALIGWA MUNICIPALITY

PO Box 48
Ermelo
Mpumalanga Province
South Africa
2350

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2350

Internet: www.msukaligwa.gov.za
E-Mail: msuka@msukaligwa.gov.za

TECHNICAL SERVICES

Enquiries: **Z C Mpofu**

Reference: 16/R/2

To: Steyn Van Rensburg CC Consulting Engineers

Attention: Wirjan Joubert

Date: 24 April 2014

To Developers

ERMELO PROPOSED SHOPPING CENTRE DEVELOPMENT

I, Mr. S.R Magudulela, Technical Director in Msukaligwa Municipality, have been informed on your Shopping Centre Development on site: Portion R/89 of the Farm Nooitgedacht 268-IT. This development will consume 6000 KVA at 11KV for the Shopping Complex 40 000m² to 60 000m². We appreciate this new development in our town and herewith provide a quotation to connect the new install 185mm2 cable at the Main 88KV Substation and connect the existing cable to the new install T4. The cost for the above connection shall be R 24 000.00.

The Developers should supply, install and connect all the items at their cost. After official handover the electricity supply then become the property of the municipality and we will undertake to maintain it.

.....

Director Technical Services

S.R Magudulela

ANNEXURE 'M'

ENVIRONMENTAL SUMMARY

LEAP

Gwen Theron
PrLArch No 97082

Landscape Architect
Environmental Planner

Imbrilinx cc 2010/089810/23

P.O. Box 13185
Hatfield 0028

012 343 2751
083 302 2116

gwen.theron@telkomsa.net

March 2014

Proposed Shopping Centre & Township establishment on the Remainder of Portion 89 of the farm Nooitgedacht 268 I.T, Ermelo, Mpumalanga
Ref no.: 17/2/3 GS-228

Environmental Summary

Submitted for
Stylestar Investments (Pty) Ltd
P.O Box 72689, Lynnwood Ridge, 0040
Tel: (012) 361 7970

Submitted by
LEAP
Dr Gwen Theron
P.O Box 13185, Hatfield, 0028
Tel: (012) 343 2751

Document Control Record

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Fax 086 606 6130
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www www.leapviro.co.za

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Document ID						
File Path	Y:\Main data\PROJECTS\E\Ermelo Shopping centre\Draft Basic Assessment\Ermelo- Draft BA Section D Report.docx					
Client	Stylestar Investments (Pty) Ltd		**Client Contact**		P Beyers, Tel: (012) 361 7970	
Revision	**Date**	**Revision details/Status**	**Prepared by**	**Author**	**Verifier**	**Approved by**
0						
1						
2						
Current Revision						
APPROVAL						
Signature						
Name	Dr Gwen Theron		**Name**			
Title	Environmental Practitioner		**Title**			

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Contents

Herewith a description of the environment that may be affected by the proposed activity and the manner in which the geographical, physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed activity.

1. Groundwater, Soil and Geological stability of the site

There is potential shallow water table, but no dolomite, sink holes, seasonally wet soils, unstable rock, dispersive soils or any other unstable soil conditions on the site. However, the site has been transformed with several platforms created with cut and fill.

2. Topography and Drainage

The available information shows that the site slopes at an average of 5% towards the south-west. The natural ground level has been largely disturbed by the construction of terraces and platforms. Since the topography was disturbed extensively, it is extremely difficult to provide a general slope for the site. It should be noted that the south western corner of the site is approximately 20 metres lower than the eastern part of the site. Surface water drains by means of sheet wash to the south west.

3. Geotechnical Report

An Engineering Geological Investigation was completed by *Louis Kruger Geotechnics CC*

According to the 1:250 000 scale geological map the site is underlain by sandstones and mudrocks of the Vryheid Formation, Ecca Group, Karoo. This was confirmed during the investigation, sandstone bedrock was encountered in eight of the test pits made by the Geologist. The following materials were encountered on the site:

- Fill – four types of fill were encountered on site
    - Type 1 Fill consisting of brown, sandy gravel.
    - Type 2 Fill consisting of dark brown silty sand and plant roots.
    -
    - Type 3 Fill consisting of red brown to brown silty sand with abundant bricks,
    - Type 4 Fill consisting of brown silty sand with plant roots.
- Colluvioum – Slightly moist, brown, soft, shattered, gravelly silty sand with ferricrete nodules and with plant roots. This material predominantly occurs on the eastern and southern part of the site.
- Quartzite – slightly moist, cream, very soft rock sandstone.

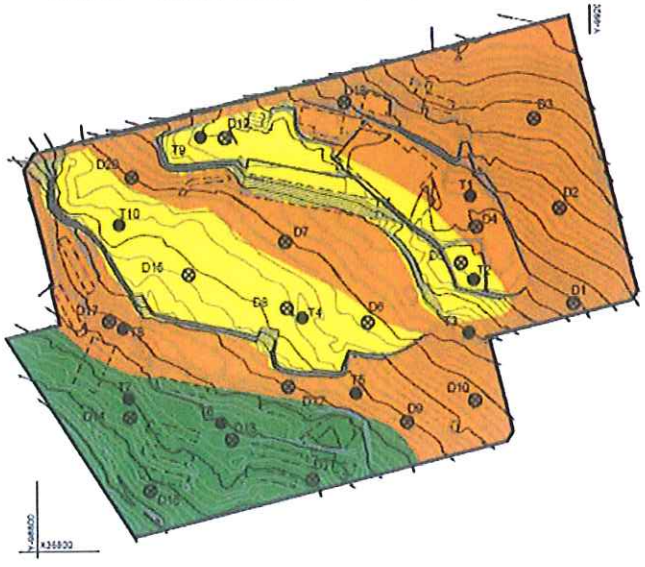

Figure 1: Engineering Geological Zoning (see geological report for legend)

The investigation shows that a perched water table can be expected during and after periods of high rainfall. This is confirmed by the high moisture content in several test pits and the presence of the pedogenic material.

4. Groundcover

Name of the specialist:	Galago Environmental Biodiversity and Aquatic Specialists		
Postal address:	638 Turf Street, Wingate Park		
Postal code:	0181		
Telephone:	012 345 4891	Cell:	
E-mail:	vanessam@lantic.net	Fax:	086 675 6136
Are any further specialist studies recommended by the specialist?		YES	NO

The groundcover present on the site and include 60% transformed veld in the form of sport fields, exhibitions areas and 40 % buildings used for agricultural show activities. The study site does not have suitable habitat for any of the species that are considered threatened or those that of conservation concern known to occur in the quarter degree square.

Mucina & Rutherford (2003) classified the area as Eastern Highveld Grassland, comprising slightly to moderately undulating plains, including some low hills and pan depressions. The vegetation is short, dense grassland dominated by the usual Highveld grass composition with small scattered rocky outcrops with wiry, sour grasses, and some woody species. The soils are red to yellow sandy soils found on shales and sandstones of Madzaringwe Formation. This vegetation unit has a strongly seasonal summer rainfall with very dry winters. Incidences of frost occur from 13 to 42 days but higher at high elevations. This vegetation unit is considered endangered.

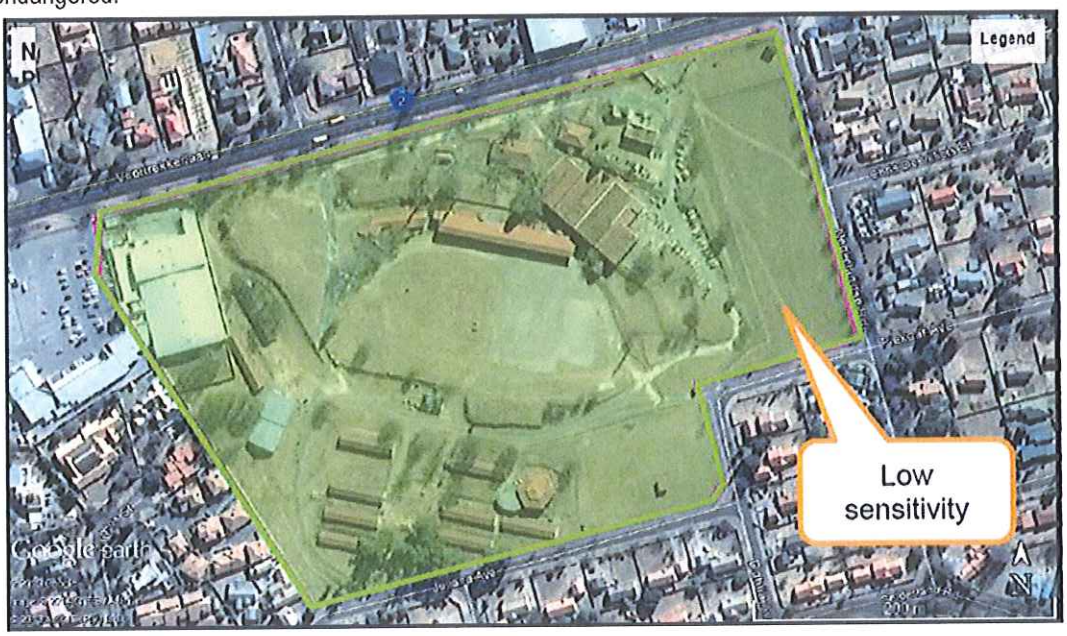

Figure 2: Combined sensitivity map

Most of the site comprised of grassland that had been mown short over a long period of time and that was used as a public open space and as pasture for animals.

Kikuyu grass had been introduced in some areas. Stabling for horses and other outbuildings were seen as well as a cleared area used as an arena.

Large exotic trees, mostly oaks and poplars, were grouped between the buildings. A single study unit, "Mixed alien and indigenous vegetation", was identified. The study site does not have suitable habitat for any of the species that are considered threatened or those that are considered not threatened but of conservation concern known to occur in the quarter degree square.

- **Mammals:**
  The local occurrences of mammals are closely dependent on broadly defined habitat types, in particular terrestrial, arboreal (tree-living), rupiculous (rock-dwelling) and wetland-associated vegetation cover. It is thus possible to deduce the presence or absence of mammal species by evaluating the habitat types within the context of global distribution ranges.

  No natural habitat type for mammals is present on the study site. Small portions of three man-made habitat types are present on the study site. Small portions of three man-made habitat types for mammals are present, namely terrestrial, rupiculous and wetland.

  All the terrestrial areas are disturbed either by exotic plant cover such as Kikuyu grass or by buildings, roads, etc. Most of the grass cover is very short and would not provide refuge for terrestrial mammals.

  There are no indigenous trees and arboreal mammal species should occur on the proposed site.

  There are numerous buildings on site providing habitat for some common mammals. The fish pond observed on site is too small to provide habitat for water-dependent mammals.

  There are no caves on the proposed site and there is thus no suitable habitat for cave-dwelling bats, although some of the buildings may act as substitute daytime roosts.

  No indigenous mammal species were encountered during the site visit, but horses were observed.

  The study site is small and as such a low species richness should occur at any given time and connectivity is very poor.

- **Avifauna**
  The entire site is disturbed by past development and completely transformed. No natural vegetation is left.

  Only the more common avifaunal species that are able to adapt to areas changed by man are likely to occur on the study site.

- **Herpetofauna**
  No natural habitat type for herpetofauna is present on the proposed site. All the terrestrial areas are disturbed either by exotic plan cover such as Kikuyu grass or by buildings, roads, etc. Most of the grass cover is very short and would not provide refuge for terrestrial herpetofauna.

- **Faunal Red Data Species Assessment**
  No threatened or IUCN RDL faunal species were identified during the site survey.

  A very small possibility exists that some Red Data shrews, some Red Data bats and the Southern African hedgehog can occur on the proposed site, but in general the site has a very low sensitivity.

  The avifaunal study found that the proposed development will not have a negative effect on any Red Data avifaunal species recorded for the 2629DB q.d.g.c. due to a lack of suitable habitat for the species. The entire study site is transformed and no natural habitat remains.

  The herpetological study found that the study site has no important topographical features and contains no natural habitat types.

5. **Cultural Heritage Resources Impact Assessment**

A Heritage Impact Assessment was completed by *African Heritage Consultants CC* Six structures represent typical 1950's agriculture show facilities were recorded on the proposed site. They are given a rating of General Protection B (Field rating IV B). They should be recorded before destruction.

The Heritage Impact Assessment concluded that none of the possible heritage structures on the proposed site exhibit any outstanding architectural features and was rather built as cheap functional facilities. The exact dates of the erected buildings are also unknown. They represent a typical agricultural show facility and should be recorded before destruction. The site is a typical agricultural show ground site with buildings for exhibitions, housing of animals and arena and pavilion.

The earliest buildings erected on the site are as follows:

- The KWB Building (Korporatiewe Wolboer Beperk), is near the gate entrance and houses the show office. The building is well maintained and was used to exhibit wool produced by wool farmers.
- Vroue Landbou Unie Saal was originally built for the Vroue Landbou Unie to exhibit the products produced by the women, such as embroidery, preserves, etc.
- Poultry building was originally the restaurant but later changed to house the poultry.
- Horse stables are two rows of horse stables. Of these the one row was built in the 1950's
- Pavilion including the performance surface in front of the pavilion was built in the 1950's

The abovementioned structures were all developed after 1952 and shortly afterwards but the accurate dates are not known. Some of these structures may be sixty years old or just younger than sixty years.

The recorded structures represent typical 1950's agriculture show facility. They are given a rating of General Protection B (Field rating IV B). They should be recorded before destruction.

The recorded buildings represent the typical structures built in rural towns for the annual Agricultural Show. Though their exact date of construction is not known they should be recorded in a Phase II Cultural Heritage Resources Impact Assessment before they are demolished.

No artefacts, faunal, botanical, burial grounds and graves, or any other features were found on the proposed site.

The Heritage Impact Assessment concluded that none of the possible heritage structures on the proposed site exhibit any outstanding architectural features and was rather built as cheap functional facilities. The exact dates of the erected buildings are also unknown. They represent a typical agricultural show facility and should be recorded before destruction.

A Phase II Heritage Impact Assessment is currently being undertaken by Engela White

6. Socio-economic context

- The proposed development promotes the use and development of land that optimizes the use of existing resources.
- The proposed development will contribute to the Ermelo area by creating job opportunities during and after the construction phase and an increased tax base for the Town.
- The proposed Shopping Centre Services as a Driver to promote further economic growth in Ermelo

7. Environmental impact statement

Taking the assessment of potential impacts into account, the environmental impact statement sums up the impact that the proposal potentially could have on the environment after the management and mitigation of impacts have been taken into account with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

7.1 Inputs and Recommendations made by Galago

The following recommendations in respect of mitigation measures have been made:

- An appropriate management authority (e.g. the body corporate) that must be contractually bound to implement the Environmental Management Plan (EMP) and Record of Decision (ROD) during the operational phase of the development should be identified and informed of their responsibilities in terms of the EMP and ROD.
- Indigenous plant species, preferably species that are indigenous to the natural vegetation of the area, should be used for landscaping in communal areas as far as possible.
- As far as possible, large trees growing on the development site (especially the oak trees), but would otherwise be destroyed during clearing for development purposes, should be incorporated into landscaped areas. Forage and host plants required by pollinators should also be planted in landscaped areas.
- Should any Southern African hedgehog or any other faunal species be encountered or exposed during the construction phase, they should be removed and relocated to natural areas in the vicinity. The contractor must ensure that no mammal species are disturbed, trapped, hunted or killed during the construction phase. Any mammals that are inadvertently killed during earthmoving operations should be preserved as museum voucher specimens. Conservation-orientated clauses should be built into contracts for construction personnel, complete with penalty clauses for non-compliance.
- The contractor must ensure that no fauna is disturbed, trapped, hunted or killed during the construction phase. Conservation-orientated clauses should be built into contracts for construction personnel, complete with penalty clauses for non-compliance.

- In order to minimise artificially generated surface storm water runoff, total sealing of paved areas such as parking lots, driveways, pavements and walkways should be avoided. Permeable material should rather be utilised for these purposes.

7.2 Inputs and Recommendations made by African Heritage Consultants in respect of the Cultural Resources Heritage Impact Assessment

The recorded six buildings represent the typical structures built in rural towns for the annual Agricultural Show. Though their exact date of construction is unknown, they should be recorded in a Phase II Cultural Heritage Resources Impact Assessment before they are demolished.

I during construction any cultural heritage resources or graves are unearthed all work has to stopped until the site has been inspected and mitigated by a cultural heritage practitioner.

8. Conclusion and Recommendation of Practitioner

There are no ecologically significant areas on site.
There are no red data species on the site
There are 6 buildings older than 60 years, but are not of historic significance. These buildings must be documented as a second phase historical assessment.

Recommendations

- The species used in rehabilitation of the proposed development should be endemic and indigenous to lessen the impact of exotic plant species on existing fauna and flora systems.
- Regulations in the EMP should be adhered to, to protect receiving landscape.
- Permeable Paving should be used to reduce runoff and increase infiltration and ground water recharge
- All specialist report recommendations must be adhered to.
- Construction must take place according to the EMP

ANNEXURE 'N'

DFA DEVELOPMENT PRINCIPLES ASSESSMENT AND FINDINGS

ANNEXURE 'N'

ASSESSMENT OF TOWNSHIP APPLICATION AGAINST GENERAL PRINCIPLES FOR LAND DEVELOPMENT OF SECTION 3 OF DEVELOPMENT FACILITATION ACT, 1995 (ACT 67 OF 1995) ['THE DFA']

1. STATUTORY REQUIREMENT

In terms of Section 2(c) of the DFA all decision-making authorities, including Municipalities, are obliged to test all townplanning applications and its underpinning development proposals against the general principles for land development as set out in Section 3 of the DFA. Section 2(c) reads as follows :

> *"The general principles set out in Section 3 apply throughout the Republic and –*
> *(a) ...*
> *(b) ...*
> (c) *serve as guidelines by reference to which any competent authority shall exercise any discretion or take any decision in terms of this Act or any other law dealing with land development, including any such law dealing with the subdivision, use and planning of or in respect of land ..."* (pp 9,10).

2. RELEVANT PRINCIPLES

Not all of the 13 development principles recorded are necessarily relevant to every land development project, and furthermore are there some principles and sub-principles listed which overlap in function and meaning. This is evident from the interpretation of these principles by the National Development and Planning Commission in a document (DPC 27/99) titled :-

> *"Resource Document. Principles of the Facilitation Act, 1995"* (February 1999).

Based on a similar structure as that of Chapter 4 of this document the applicant has proceeded to conduct the necessary assessment required to inform its application for township establishment on the subject property. The result is contained in the balance of this Annexure to the Town Planning Memorandum.

3. DISCUSSION

In this section of the Annexure the township establishment application for regional shopping centre purposes is measured against each of the relevant development principles for its contribution towards creating a better life for all.

3.1. <u>Principle 3(1)(c) : Efficient and integrated land development.</u>

"Policy, administrative practice and laws should promote efficient and integrated development in that they –

(i) Promote the integration of social, economic, institutional and physical aspects of land development".

The development project will be efficient and well-integrated with existing social, economical and physical aspects of the part of Ermelo town where it is situated, within the context of a well-functioning institutional establishment. The new shopping centre will *inter alia* :-

- provide an up-scale venue for social interaction, entertainment and general mingling of inhabitants of the town and its surrounds, from all walks of life.

- serve to provide a (more or less) one-stop shopping experience for consumers, ranging from high-threshold durables to low-threshold consumables of a wide range of products and services.

- be linked to and integrated with the existing municipal infrastructural services (roads, water, sanitation, electricity and stormwater) prevalent in the area.

"*(ii) Promote integrated land development in rural and urban areas, in support of each other*".

The proposed new shopping centre will have a mutually supportive relationship with its surrounding hinterland outside the Ermelo town, in the following way:

- It will provide a service in the tertiary sector to the farming community (farmers, labourers) and inhabitants of smaller settlements and towns in the surrounding area. The nature and extent of these rural beneficiaries are elucidated in great detail in the executive summary of the market study for the project (refer Annexure "H"). Part of the primary, and the entire secondary trade area of the shopping centre will be located in the rural area outside the urban development boundary.

- The shopping centre may serve as market outlet for produce produced in rural areas, e.g. a butchery in the centre may sell meat produced on farms in the vicinity.

- The functional linkage between the shopping centre and households in surrounding rural areas will be further reinforced and integrated by families visiting the centre for entertainment and recreation purposes.

The integration of land development in rural and urban areas outside and in Ermelo town will be enhanced by the above average accessibility through high-order transportation routes converging on the town, serving an important regional link-function in support of this development principle. Such roads include links to Standerton, Amersfoort, Piet Retief, Amsterdam, Chrissiesmeer, Breyten and Hendrina.

Although functionally highly integrated, the urban environment will not as a consequence of the present development encroach onto the rural environment. There are therefore no need for physical and/or aesthetic interventions to ensure a desirable outcome.

<u>(iii) to (vii): Integrated employment and living opportunities; optimization of resources, diverse land-use and urban sprawl</u>.

"*3(1)(c) Policy, administrative practice and laws should promote efficient and integrated development in that they –*

(iii) *Promote the availability of residential and employment opportunities in close proximity to, or integrated with, each other.*

(iv) *Optimise the use of existing resources including such resources relating to agriculture, land, minerals, bulk infrastructure, roads, transportation and social facilities.*

(v) *Promote a diverse combination of land uses, also at the level of individual erven or sub-divisions of land.*

(vi) *Discourage the phenomenon of urban sprawl in urban areas and contribute to the development of more compact towns and cities.*

(vii) *Contribute to the correction of the historically distorted spatial patterns of settlement in the Republic and to the optimum use of existing infrastructure in excess of current needs*".

The proposed new shopping centre will serve to improve the prevailing historic growth and development pattern of the part of town where it is situated through compliance with these five development principles in the following way, *viz*:

- Increased efficiency and integration due to the close proximity of residential neighbourhoods. Many households will now for the first time be situated in close proximity (within walking distance) of a shopping and entertainment / recreation facility.

- The shopping centre will offer a variety of new employment opportunities, both during the construction and operational phases of the development project. The market study – Executive Summary, p18 confirms a total of 1 973 on-site employment opportunities (refer Annexure "H"). These job opportunities will also be within walking distance of a variety of residential uses in its vicinity.

- The new development will constitute in-fill development, substituting a single extensive land-use within the urban edge and fabric with an intensive land-use, comprising of a diversity of individual activities / functions / services in support of a more diverse combination of land-uses. This intensification is in line with the 'smart growth' principle of compaction and densification.

- The development of a new regional shopping centre on the site in accordance with industry norms and standards and in compliance with the town-planning-scheme-in-operation will represent the optimum use of the subject property as a scarce natural resource, in context of the surrounding development pattern / structure. The property is currently grossly under-utilized and ideally suited for its intended purposes.

- Existing bulk infrastructure, roads and social facilities will also be better utilized as a result of the new shopping centre. The Municipality has

confirmed in writing that excess capacity exists in the bulk infrastructure serving the area, with or without minor upgrade requirements.

- The development will reinforce the spine function of Voortrekker Avenue as a mixed-use development corridor, which will have the added advantage of improved public transport for which certain taxi layby and on-site taxi terminal and parking facilities have been provided.

- No appeals would be made on scarce and /or valuable agricultural land, conservation land or otherwise threatened land for the new development since it is situated within the urban edge and is already completely surrounded by urban development, linked to the municipal engineering supporting services. Urban sprawl will therefore not come into play.

- The development will serve the mixed-use principle well, contributing to enhanced convenience for people with lower energy consumption and lower pollutive emissions due to shorter travelling distances. The different uses in the area are / will be broadly compatible, and the new shopping centre will serve to create additional small-scale economic opportunities in its immediate vicinity.

- By locating along Voortrekker Avenue as a movement corridor (flows of people, finance, goods), intensive uses are diverted from homogenous residential areas, thereby reinforcing the privacy qualities and amenity of residential areas.

(3)(1)(c)(viii): Environmental sustainability
"Policy, administrative practice and laws should promote efficient and integrated development in that they-

(viii) Encourage environmentally sustainable land-use development practices and processes."

To ensure environmental sustainability of the project the development proposal and townplanning process have been informed on specialist level by an environmental practitioner and several specialist inputs and public participation outcomes. The site has low environmental sensitivity confirming high environmental sustainability (refer para 6.2.9 and Annexure 'M' of Townplanning Memorandum).

The applicant has furthermore proved a sustainable stormwater run-off solution, on-site buffer areas and screen-walls *vis-a-vis* adjoining residential uses (social, visual) and other mitigating measures to enhance environmental sustainability. The site is not underlain by hazardous geological sub-strata or affected by the floodplains of watercourses.

3.2. Principle 3(1)(d). Public participation
"3(1)(d) Members of communities affected by land development should actively participate in the process of land development".

The proposal is undergoing a public participation process in both the townplanning and the environmental authorization processes. Apart from

the requirements of Section 69(6) of the Townplanning and Townships Ordinance, 1986 the application has also been advertised and brought to the attention of possible participants in the process in the following way:

- In terms of Section 21 and 21A of the Local Government : Municipal Systems Act, 2000 (Act 32 of 2000) – included in the site notices, and other media.
- By posting notices in Afrikaans and English at the Municipal Library –
- By up-loading notices in Afrikaans and English on the Municipal website.
- Five site notices – one on each street front.

In the environmental authorization process the EAP has had one public meeting already, with a second one scheduled for 22 May 2014.

The applicant is aware of the importance of public input in the decision-making process and intends pursuing constructive participation to its fullest consequence through compromise and mitigation measures.

3.3. Principle 3(1)(e) : Capacity building
"3(1)(e) The skills and capacities of disadvantaged persons involved in land development should be developed".

The applicant intends hiring and training local labour during the construction phase of the development. The skills and capacity development initiatives will empower employees to work in similar fields after completion of the building and landscaping contracts.

It is foreseen that several other similar capacity building situations would occur during the operational phase of the shopping centre, initiated and driven by future tenants in the centre.

3.4. Principle 3(1)(h) : Sustainable land development.
"3(1)(h) "Policy, administrative practice and laws should promote sustainable land development at the required scale in that they should –

(i) Promote land development which is within the fiscal, institutional and administrative means of the Republic;
(ii) Promote the establishment of viable communities;
(iii) Promote sustained protection of the environment;
(iv) Meet the basic needs of all citizens in an affordable way; and
(v) *Ensure the safe utilization of land by taking into consideration factors such as geological formations and hazardous condemned areas".*

The application complies with these development principles in the following way :

- Since the development is a private initiative with no appeal on public funding sub-principle (i) is not applicable.

- The proposed new regional shopping centre is foreseen to add to the vibrancy of both the urban and rural communities through offering of an up-scale shopping and entertainment destination. In addition will the centre supply much needed job opportunities and also a wider variety of retail and related facilities under one roof. Welfare levels will be enhanced and cost savings to households who would not need to attend to further-located shopping centres (e.g. Middelburg) with similar variety and choice options.

- The centre will generate revenue for the Municipality through electricity consumption, sewer connection levies, water consumption, refuse removal and rates and taxes. These monies can contribute to enhancement and upgrading of social facilities and infrastructure in previously disadvantaged communities.

- The shopping centre will be built and operated under strict environmental scrutiny through an (yet to be) approved record of decision (ROD) and environmental management plan (EMP). Its on-going maintenance and management under the ROD and EMP will ensure the sustained protection of the environment.

- The safe utilization of the land has been confirmed as result of an *in loco* geotechnical investigation which has proven the sub-surface soil conditions to be suitable for the proposed development. The report (refer Annexure 'I') prescribes certain engineering solutions to counter potentially adverse conditions which will be complied with.

3.5. Principle 3(1)(k) : Security of tenure

"3(1)(k) 'Land development should result in security of tenure, provide for the widest possible range of tenure options, including individual and communal tenure and, in cases where land development takes the form of upgrading an existing settlement, not deprive beneficial occupiers of homes or land, or where it is necessary for homes or land occupied by them to be utilized for other purposes, their interests in such land or homes should be reasonably accommodated in some other manner".

There are no residents, permanent or otherwise presently occupying the development site. No alternative arrangements or accommodation options need therefore be considered.

The shopping centre will be owned and managed by the applicant, leaving no tenure options available in same.

3.6. Principle 3(1)(m) : Promotion of open markets and competition.

"3(1)(m) 'Policy administrative practice and laws relating to land development should stimulate the effective functioning of a land development market based on open competition between suppliers of goods and services' ".

The applicant is *ad idem* with this development principle and believes that the best way to structure the economy is through a free-market system where maximum competition will ensure the best value / price-ratio for consumers.

The National Development and Planning Commission in their earlier-mentioned document makes the following noteworthy remarks on this development principle:

> *"This principle places a limit on the degree to which there can be public intervention in the market. Neither policies nor other instruments such as LDO's may exceed these limits. It is also anti-monopolistic and anti-price collusion in orientation. To the extent that any dimension of the land market is dominated and manipulated by one, or a limited number, of actors at the expense of the consumer, public authorities are required to act, in order to promote competition".* (pp 54,55)

4. SYNTHESIS

It is evident from the aforegoing assessment based on the interpretation of the development principles by the National Development Planning Commission, that the proposed new township for a regional shopping centre on Portion R/89 of the farm Nooitgedacht 268-IT (current show grounds) would be in compliance with the majority of these principles (i.e. all those applicable to the situation) as set out in Section 3 of the DFA.

It has been demonstrated that the principles of efficiency, integration, diversification, mixed-use, reinforcement of urban structure in accordance with Municipal SDF, compaction through intensification, curbing of urban sprawl, sustainable environmental practice, public participation, skills development and capacity building, viable community building, safe utilization of land and the promotion of open markets and competition in the best interest of consumers, have been / will be complied with. The applicant is a staunch supporter of improved conditions for all members of society and is committed to contribute towards this goal through proactive pursuing of these development principles.

In short has the applicant proved that the township application process and resultant regional shopping centre would be sustainable from an institutional, social, spatial / physical, environmental and economic point of view.

J PAUL VAN WYK Pr Pln (A089/1985)
08 APRIL 2014

ANNEXURE 'O'

IMPACT ON SURROUNDING LAND-USES

ANNEXURE 'O'

IMPACT OF SHOPPING CENTRE ON SURROUNDING LAND-USES

1. CONTEXT

In this Annexure to the Town Planning Memorandum the applicant elaborates on the potential impact of the proposed new shopping centre on Portion R/89 of the farm Nooitgedacht 268-IT (current show grounds) on surrounding land-uses and *vica-versa*. The Annexure sets out to amplify certain sub-sections of the Memorandum for a better understanding of the desirability of the development proposal in spatial context (i.e. ± 1 km radius around the site). Examples of such sub-sections include para 6.2.2. (p 31). 6.2.3. (p 31), 6.2.4. (p 32), para 6.2.6. (pp 34, 35), para 6.2.10 (pp 42 – 44) and para 6.2.11 (p 44) read with figures 3a, 3b, 4, 5 and 6 – all included in the Town Planning Memorandum. Figure 4 specifically shows the present land-uses situated within a radius of one kilometre around the proposed development site.

This assessment is done in compliance with Regulation 18(1)(b)(ii)(bb)(aaa) of the Townplanning and Townships Ordinance, 1986 (Ord 15 of 1986)

2. NATURE OF APPLICATION

To enable the establishment of a regional shopping centre of up to 60 000m² gross leasable building floor area the applicant is undertaking the township establishment process in terms of Section 96(1) of the Townplanning and Townships Ordinance, 1986 (Ord 15 of 1986).

3. POTENTIAL IMPACT OF SHOPPING CENTRE

3.1. Northwards

The area to the north of the development site comprises a mixed bag of land-uses varying from single residential uses to businesses. Directly opposite Voortrekker Avenue is found several business concerns conducted from converted dwelling-houses. Church Street is also host to a variety of higher-order non-residential land-use activities.

This area has been earmarked in the LSDF for Ermelo (refer fig 6) as the "CBD Transitional Area", i.e. a transient zone where current residential uses are in process of being replaced by higher-order non-residential land-uses.

The proposed new shopping centre is foreseen to have a negligible impact on land-uses within this transitional area. The area is already interspersed with a proliferation of business-related uses which are fully compatible with the shopping centre use of the subject property. Remaining residents in this area are presumably aware of the future planning proposals and considering their options in this regard.

It can be expected that the transformation process of the affected area may be enhanced and speeded up by the new shopping centre, since history has proven that shopping centres usually give rise to several new small-scale business operations in close proximity to the entrances / exists of shopping centre sites to capitalise on the enlarged market potential created by patrons to the centre.

The impact of existing and future uses in the area up to a kilometre north of the development site will not have any noticeable impact on the proposed new shopping centre.

3.2. Westwards

The northern half of the western boundary of the development site bounds an established smaller specialist shopping centre. Due to differences in hierarchical order (and hence diversity and range of shops / services) and the specialist anchor (Game) of the neighbouring centre, the two centres are seen to be complementary in nature and function with little (if any) impact on each other. It is indeed envisaged that the Game centre may benefit financially from market spin-offs of the new shopping centre, thereby strengthening its economic sustainability in future.

Adjoining land-uses along the southern half of the western boundary of the site represent residential functions. These properties can be expected to come under increased pressure for redevelopment purposes, either for non-residential purposes to capitalise on the advantages of a locality within a short distance of a highly accessible and highly visible intersection of the high-order N11 and N2 (extension) roads and for the agglomeration economies on offer, or for high-density residential uses in support of this emerging development node.

Uses further westwards (up to a kilometre) include a school and associated sports fields. The school is however situated to the west of De Emigratie Street (N11), the latter which forms a well-defined buffer between the school and the development site. The applicant does not envisage any negative impact of the new shopping centre on the school, and *vice versa*. The new shopping centre is further buffered from the school by the Game centre as well as the residential uses alluded to above.

The potential impact of the new shopping centre on the existing residential uses along (or in close proximity to) the western boundary of the development site will be predominantly visual in nature, which can be mitigated through erection of a perimeter wall of sufficient height, supplemented by appropriate landscaping of the site in its proximity.

3.3. Southwards

The area to the south of the development site (up to a kilometre) is predominated by residential uses. The effect of these households in close proximity to the site is positive as it reinforces the primary trade area of the new shopping centre. The shopping centre will support the mixed-use principle in a sensible way, i.e. being situated along a high-order spine road adjacent to a residential neighbourhood (as opposed to embedded in same). The close proximity of these uses will facilitate pedestrian patronage for residents in this area.

Special care has been taken to protect families living near the development site from possible aesthetic and functional adversities which may arise from the shopping centre on the development site. This includes walls of a feasible height, building set-backs form the south-boundary and appropriate landscaping proposals.

The impact of the new shopping centre on the residential function has been largely protected from commercial traffic by positioning of the two accesses to the site on the north-lying Voortrekker Avenue. There will therefore be no additional traffic generated by the shopping centre which will traverse the area and potentially threaten the amenity and safety of the area, save for that originating locally. No accesses are being planned on Nederlandse Road, Piekaar Avenue, Dahlia Avenue or Juliana Avenue.

3.4. Eastwards

The immediate east is characterised by residential uses, similar to the uses to the south of the site, and similar mitigation measures are being planned to protect these dwellings from any potentially adverse impacts caused by the new shopping centre.

Further eastwards, northeastwards and southeastwards (up to a kilometre) are found established industrial / commercial uses of a strictly non-residential nature. Industrial / commercial uses and retail / trade uses are not incompatible and it is foreseen that neither of these uses would have any impact on the other.

4. TRAFFIC GENERATION

The vast amount of new trips to be generated by the new shopping centre has the potential to impact negatively on the function and character of the area and the functionality of the receiving road and street system. Since major improvements (e.g. traffic signals) and road upgrades (e.g. additional traffic lanes, resurfacing of exiting road sections) will accompany the implementation of the shopping centre, these potentially adverse effects will be largely compensated for.

The positioning of the accesses to the development site will furthermore serve to protect and preserve the character of the south-lying residential areas since no additional traffic would penetrate these areas. The additional traffic will be contained to existing higher-order roads which will be improved to ensure adequate levels of service on same. The area along these roads already portrays a commercial and mixed-use character which will not be affected by the additional traffic traversing these roads.

5. SENSE OF PLACE

Although it could be argued that the show-grounds at present provides visual relief for urban dwellers to its south and south-east, this advantage is spoiled by the foul odours, flies and other adversities associated with farming activities adjacent to a residential area. A shopping centre is a complementary use to residential land-use activities and lower-order centres are often embedded within such areas.

From the above it is evident that although the prevailing sense of place may be altered, it will not necessarily be for the worse. The sense of place created by the show grounds is not unique (and hence preservation worthy) and will be altered in a way befitting of the area – also from a future planning vision perspective.

6. SYNTHESIS

It can be concluded from the above that neither the proposed new shopping centre, nor the existing land-use activities in the surrounding area would have a detrimental

impact on each other. The advantages outweighs the potential disadvantages by far, and furthermore can the latter be mitigated to reduce any such impacts to an absolute minimum.

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