

## Thabang Sekele

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**From:** Garry Paterson <Garry@arc.agric.za>  
**Sent:** Wednesday, January 06, 2016 8:51 AM  
**To:** Thabang Sekele  
**Subject:** RE: Taunus Diepkloof 132 kV Powerline and two substations  
**Attachments:** Decl Taunus\_Diepkloof Envirolution.doc

*Dear Garry,*

*Can you also kindly fill in the attached declaration of interest for and send it back along with the amended report.*

*Regards,  
Thabang Sekele*

Dear Thabang,

Here is the specialists' declaration. As for the report, at the scale of our soils coverage (1:50 000), there is little or nothing that I can add regarding the deviation that will make any difference. In any case, as far as I can see, the area is covered by the "urban" map unit, so there was no soil mapping carried out there.

Regards,

Garry

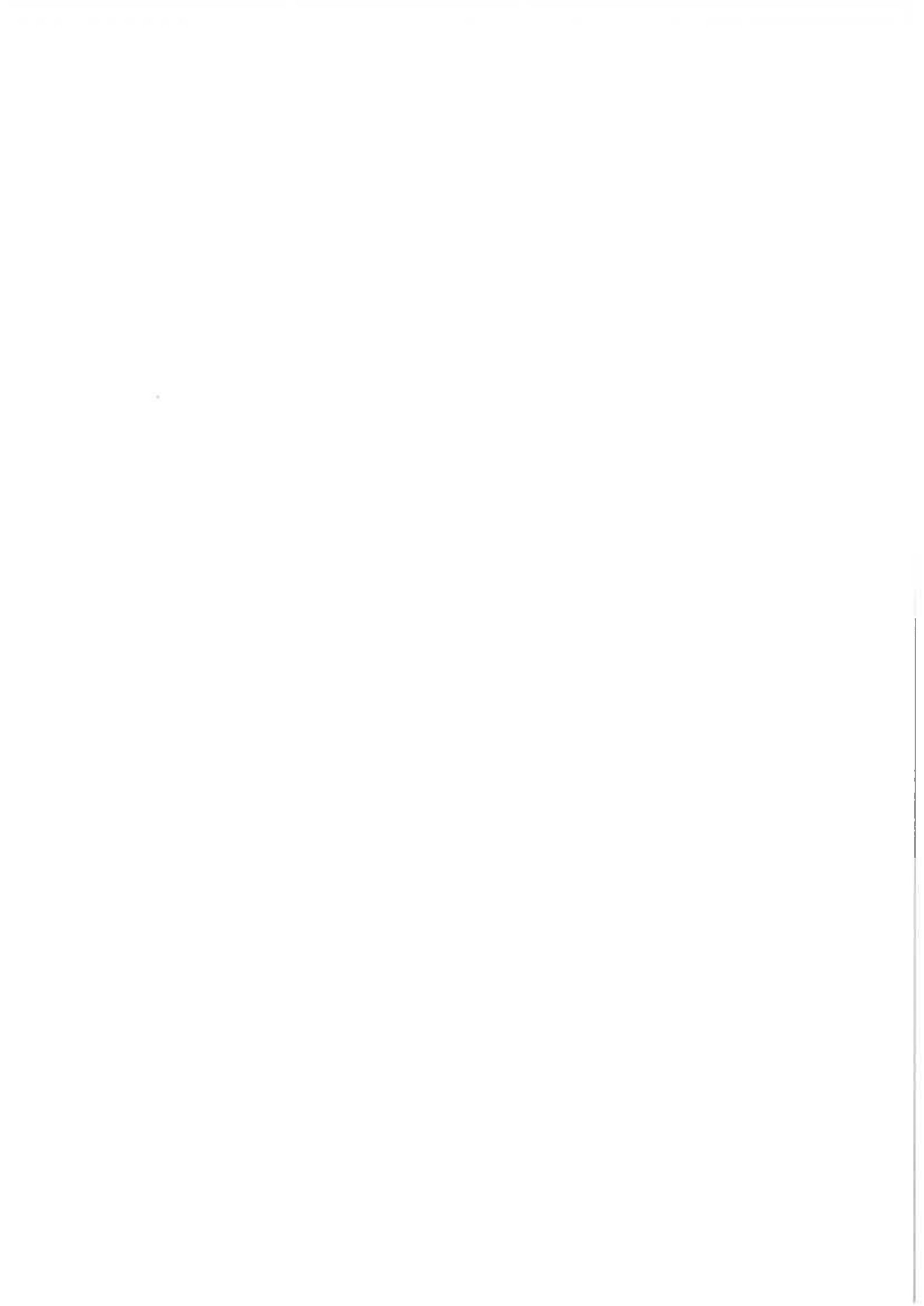
**Dr Garry Paterson (Pr. Sci. Nat.)**  
**ARC-Institute for Soil, Climate and Water**  
**Private Bag X79, Pretoria 0001**

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***"Don't treat soils like dirt!"***



## Thabang Sekele

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**From:** Thabang Sekele <thabang@envirolution.co.za>  
**Sent:** Wednesday, September 23, 2015 9:00 AM  
**To:** 'Garry Paterson'  
**Subject:** RE: Taunus Diepkloof 132 kV Powerline and two substations

Good Morning Garry,

That is acceptable given the circumstances. Wishing a speedy recovery to your wife.

*Regards,*  
*Thabang Sekele*  
*223 Columbine Avenue*  
*Mondeor*  
*2091*  
[www.envirolution.co.za](http://www.envirolution.co.za)  
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*Tel: 0861 44 44 99*  
*Fax: 0861 62 62 22*



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**From:** Garry Paterson [mailto:Garry@arc.agric.za]  
**Sent:** 23 September 2015 07:58 AM  
**To:** Thabang Sekele  
**Subject:** Re: Taunus Diepkloof 132 kV Powerline and two substations

**That's fine. However, please note that I am working from home for the next week or so due to my wife having had a foot operation, so I will generally only be checking my e-mails once per day or so and I will only be able to look at reports etc when I get back to work (some time next week, in all probability)..**

**Regards,**

**Garry**

Dr Garry Paterson  
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**From:** Thabang Sekele <[thabang@envirolution.co.za](mailto:thabang@envirolution.co.za)>  
**Sent:** 22 September 2015 08:22 AM  
**To:** Garry Paterson  
**Subject:** RE: Taunus Diepkloof 132 kV Powerline and two substations

Good Morning Garry,

Alright noted. Can you kindly conduct an updated desktop soils and agricultural potential report for this Basic Assessment.

*Regards,*  
*Thabang Sekele*  
*223 Columbine Avenue*  
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**From:** Garry Paterson [<mailto:Garry@arc.agric.za>]  
**Sent:** 22 September 2015 06:57 AM  
**To:** Thabang Sekele  
**Subject:** Re: Taunus Diepkloof 132 kV Powerline and two substations

**Dear Thabang,**

**For such a small detour, at the scale of our soils information, it would make little or no difference to our report.**

**Regards,**

**Garry**

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**Subject:** Taunus Diepkloof 132 kV Powerline and two substations

Good day Gary,

Envirolution was once appointed by Eskom do conduct an EIA for Taunus Diepkloof powerline and two substations in 2010, Eskom's Environmental Authorisation has now expired.

The project description and background information is still the same, however Eskom is still in negotiations with City Power in regarding servitude near the area where the powerline crosses Chris Hani/M68 (Potchefstroom Rd) towards the Diepkloof substation. This may imply a slight 20 m deviation of the line either side pending these negotiations.

Can you kindly inform as to the implications of updating your desktop soils and agricultural potential study to make it relevant for purposes of a new Basic Assessment in terms of 2014 EIA Regulations?

*Regards,*

*Thabang Sekele*

*223 Columbine Avenue*

*Mondeor*

*2091*

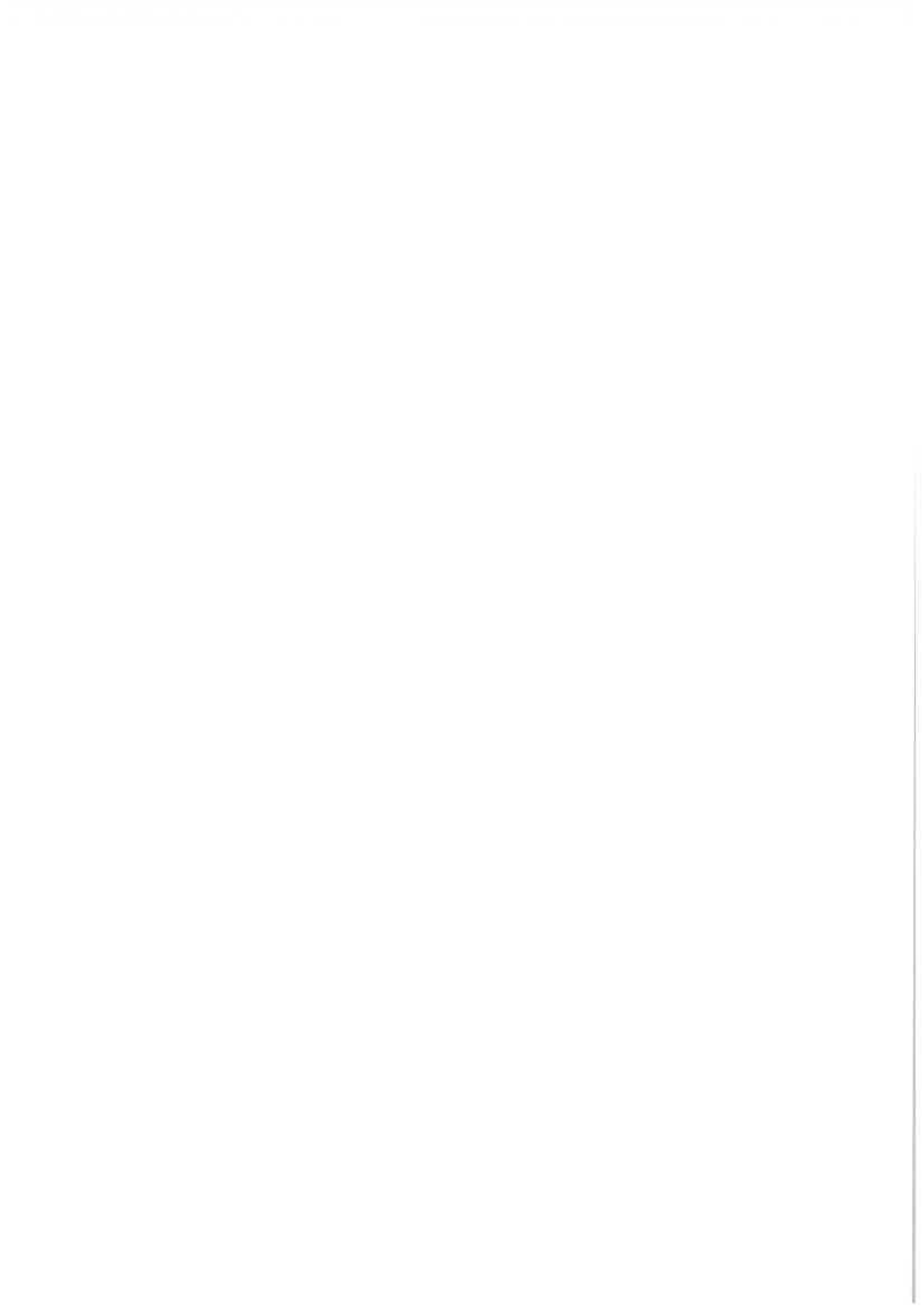
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**REPORT**

for Envirolution

by

**INSTITUTE FOR SOIL CLIMATE AND WATER  
AGRICULTURAL RESEARCH COUNCIL**



**SOILS AND AGRICULTURAL POTENTIAL  
ALONG THE PROPOSED  
TAUNUS-DIEPKLOOF 132 kV  
POWER LINE, GAUTENG PROVINCE**

June 2010

By

**D.G. Paterson**

Report Number GW/A/2010/xx

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## **1. TERMS OF REFERENCE**

The Institute for Soil, Climate and Water of the Agricultural Research Council (ARC-ISCW) was requested by Envirolution to carry out an investigation along the route of a proposed power line in the south-west of Gauteng. The investigation was to describe and map the soils occurring, as well as to assess their broad agricultural potential.

## **2. STUDY AREA**

### **2.1 Location and Terrain**

The proposed route runs from the proposed existing Taunus substation, lying to the west of Soweto, round the West Rand Agricultural Holdings to a proposed near the N12/R558 junction. From there, the proposed line follows the southern edge of Soweto, before turning north to the Diepkloof substation in the east of Soweto itself.

There are two identified potential deviations, namely Deviation 1, to the south of the West Rand Agricultural Holdings and Deviation 2, to the south of the Klip River near Lenasia. The position of all the alternatives is shown on the map in the Appendix.

The area of the routes lies at around 1 550 to 1 600 metres above sea level, and consists of generally flat to gently undulating topography. The route runs close to the Klip River and crosses the Klip Spruit, south of Soweto.

### **2.2 Parent Material**

The underlying geology consists mainly of dolomite and chert of the Malmani Subgroup, of the Transvaal Sequence in the west, with small patches of shale and sandstone of the Eccia Group. The eastern part is underlain by lava and tuff of the Klipriviersberg Formation (Geological Survey, 1986).

### **2.3 Climate**

The main characteristics (Koch, 1987) are shown in Table 1 below.

**Table 1. Climate Data**

Month	Rainfall (mm)	Min. Temp (°C)	Max. Temp (°C)	Average frost dates
Jan	128.1	14.3	26.3	Start date: 05/06 End date: 15/8 Days with frost: ±16
Feb	103.3	13.9	25.6	
Mar	90.0	12.8	24.3	
Apr	43.6	10.3	22.1	
May	21.9	6.9	19.1	
Jun	6.6	4.1	16.5	
Jul	9.7	4.1	16.4	
Aug	8.6	6.5	19.8	Heat units (hrs > 10°C)
Sep	21.4	9.1	22.8	
Oct	59.8	11.8	25.0	Summer (Oct-Mar): 1559  Winter (Apr-Sept): 495
Nov	110.4	12.6	25.3	
Dec	115.4	13.7	26.1	
Year	718.8 mm	16.2°C (Average)		

The climate of the area can be described as typical of the highveld, with cool to cold, dry winters and moist, warm to hot summers. Most of the rainfall (84.4%) falls between October and March, and frost is common, especially in the lower-lying parts.

### 3. METHODOLOGY

The area was covered by existing soil maps, at 1:50 000 scale, of the PWV peri-urban soil survey (Yager, 1990). The soils were classified (MacVicar *et al*, 1977) and similar soils were grouped into map units. This information was digitised in ArcGIS and each soil map unit was allocated a class of broad agricultural potential (Section 5).

The soil boundaries are shown on the map in Appendix 1.

### 4. SOILS

The soils in the study area are generally of mixed agricultural potential (see Section 5 below).

The soils of the western portion are predominantly reddish-brown to red and belong to the Hutton form (orthic topsoil on red apedal subsoil, usually on rock). They are predominantly light textured (15-25% clay) and vary in depth, from less than 300 mm in places to over 1.2 metres deep. In some places, the soils are yellow-brown to brown, with a structured subsoil horizon on mottled plinthite or rock, and belong to the Avalon or Swartland forms. Occasional patches of

shallow, brown soils, directly overlying the bedrock, belonging to the Mispah form, also occur.

## 5. AGRICULTURAL POTENTIAL

The map units shown on the map have been divided by broad agricultural potential class, corresponding to the colours used on the map. The potential, as referred to here, takes soil factors into account and not climatic conditions.

**Table 2** Agricultural Potential

Potential Class	Dominant Soils	Main soil characteristics
High	Hutton (>1200 mm) Shortlands (600-1200 mm)	Deep, medium-textured soils with few or no limitations for agriculture
Moderate	Swartland (600-1200 mm) Hutton (300-1200 mm)*	Medium (occasionally heavy-) textured soils with somewhat of a depth restriction to underlying rock
Low	Hutton (300-600 mm) Mispah (100-400 mm)	Medium-textured, sometimes stony soils with a severe depth restriction to underlying rock
Rocky areas	Hutton (0-250 mm) Mispah (0-250 mm)	Shallow soils with abundant (>40%) surface rock outcrops. Often steeper terrain.
Wetland areas	Rensburg (>1000 mm) Dundee (>1000 mm)	Loamy to clayey soils in low-lying areas, close to stream beds. Significant flood hazard
Urban areas	-	Areas not mapped: residential, commercial, industrial, mining, transport etc.

\* Areas containing great variation in soil depth over a short distance, making it very difficult to map specific areas with deeper and shallower soils separately.

From the map, it can be seen that the majority of the western part of the route crosses red soils with a variable soil depth (xHu map unit). There will be deep, high potential soils in this area, but the soil depth changes over a short distance and the deeper areas are difficult to map.

Much of the route close to Soweto skirts the wetland associated with the Klip River and care will have to be taken not to disturb these fragile soils unnecessarily.

As far as the two alternative deviations are concerned, from a soils perspective, Deviation 1 possibly crosses more shallow soils (with lower agricultural potential) than the primary route, so Deviation 1 would probably be preferred.

However, Deviation 2 crosses a large area of wetland soils, while the primary alignment has shallow, rocky soils of little or no agricultural value, so Deviation 2 would not be preferred.

## 6. IMPACTS

### Agricultural Land

The main impact would be the loss of potentially high potential agricultural land. This would be relevant to the map units that are coloured green (and to a lesser extent, yellow) on the map in the Appendix.

However, a power line will have only a limited impact, due to the occasional placement of the pylons. Most cultivated agriculture can take place below power lines.

**Table 3** Impact on agricultural land

Impact	Intensity	Extent	Duration	Probability	Consequence	Confidence
Loss of agric. land	Low	Local	Short-term	Improbable	Low	High

As far as mitigation is concerned, the actual area of agricultural land that would be lost is quite small, namely the pylons of the line and any substations that are constructed. This would be permanent, so no mitigation is possible.

In the construction phase, however, as well as for the maintenance of any access roads that might be required to service the power line, care should be taken to minimise any possible soil erosion. No significantly erodible soils are expected in the area, and most of the steeper slopes are rocky, which adds to the soil stability. However, measures should involve minimal vegetation removal and construction of contours and drainageways on any areas with steeper slopes.

Where the power line (and any service road) crosses a waterway, as long as normal mitigation measures are followed in the construction of a bridge (avoiding excess sedimentation, avoiding disturbing normal stream flow etc), there should be no adverse impact.

**Table 4** Significance rating

Impact	Consequence	Probability	Significance	Confidence
Loss of Agricultural Land	Low	Probable	LOW	High
With mitigation	Low	Probable	LOW	High

## REFERENCES

**Geological Survey**, 1986. 1:250 000 scale geological map 2626 Wes-Rand. Department of Mineral and Energy Affairs, Pretoria.

**Kotze, A.V. and Lonergan, A.T.**, 1984. Climate data. In Land types of the maps 2626 Wes-Rand and 2726 Kroonstad. *Mem. Agric. nat. Res. S. Afr.* No. 4. Department of Agriculture, Pretoria.

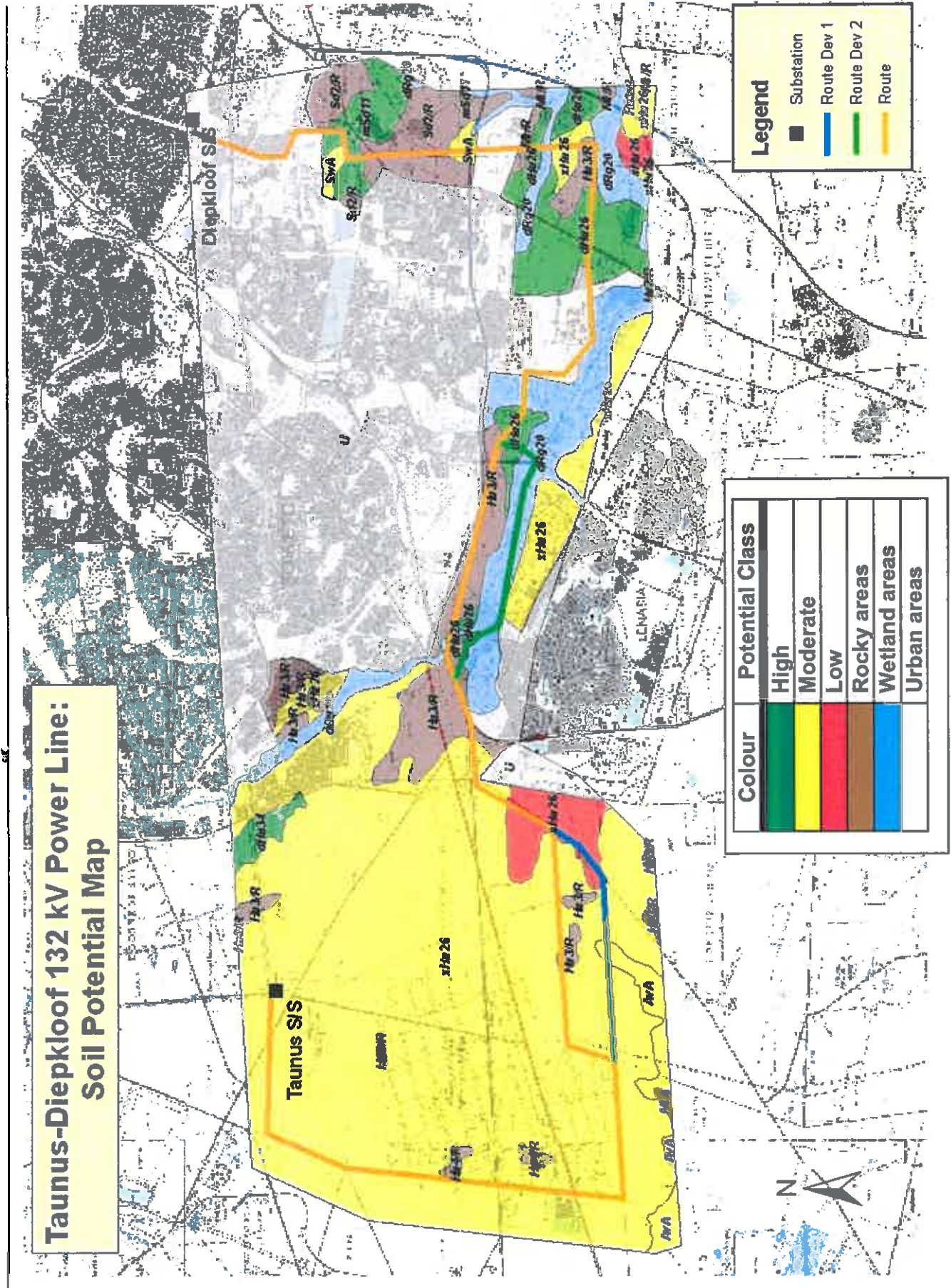
**MacVicar, C.N., De Villiers, J.M., Loxton, R.F., Verster, E., Lambrechts, J.J.N., Merryweather, F.R., Le Roux, J., Van Rooyen, T.H. & Harmse, H.J. von M.**, 1977. Soil classification. A binomial system for South Africa. Dept Agricultural Technical Services, Pretoria.

**Yager, T.U.**, 1990. 1:50 000 scale peri-urban soil survey of the Pretoria-Witwatersrand-Vereeniging area. ARC-Institute for Soil, Climate and Water, Pretoria.

**APPENDIX:**

**SOIL MAP**

# Taanus-Diepkloof 132 kV Power Line: Soil Potential Map



Colour	Potential Class
Green	High
Yellow	Moderate
Red	Low
Brown	Rocky areas
Blue	Wetland areas
Grey	Urban areas

Legend	
Black square	Substation
Blue line	Route Dev 1
Green line	Route Dev 2
Orange line	Route

