

REPORT

Compiled By
Rehab Green Monitoring Consultants cc
Environmental and Rehabilitation Monitoring Consultants



Broad Soil and Agricultural Potential Assessment of 2 Study Areas for 2 Additional Proposed 765kV Transmission Power Lines

Requested By
Arcus Gibb (Pty) Ltd

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 Figure 2: Land use map of the Perseus-Hydra 2 study area
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1. TERMS OF REFERENCE

Rehab Green Monitoring Consultants cc was requested by Arcus Gibb (Pty) Ltd to conduct a desktop study in order to assess the soil and agricultural potential of 2 additional study areas for 2 proposed 765 kV transmission power lines.

2. PURPOSE OF THE SURVEY

The purpose of the survey is to determine the soil physical characteristics and derived agricultural potential in order to evaluate the potential impacts of the proposed transmission power lines.

3. STUDY AREA

The study involves 2 additional proposed transmission power lines as follows:

- A 12 km single 765 kV transmission power line between Perseus and Beta substations.
- A 33 km single transmission power line between Perseus to a point on the existing 400 kV Beta-Hydra power line.

The 2 study areas surrounding these proposed power lines are referred to as and the Beta-Perseus and Perseus-Hydra 2 study areas respectively and are shown in Figures 1-4.

4. METHODOLOGY

Land Type Data of the Land Type Survey, which has been carried out by the ARC-Institute for Soil, Climate and Water at a scale of 1:50 000 and published at a scale of 1:250 000 was used for the derivation of soil and agricultural potential.

Erosion sensitive areas were identified using Land Type soil information and existing erosion occurrences were identified from the National Land Cover database.

Land uses were derived from the National Land Cover database.

5. STUDY RESULTS

5.1 Perseus-Hydra 2 Study Area

5.1.1 Agricultural Potential

Two land type units, Ae46 and Db3 occur in the Perseus-Hydra 2 study area with respectively moderate and low average agricultural potential (Figure1). The area and percentage comprised by each agricultural potential class are shown in Table 1.

Table 1: Agricultural potential of Perseus-Hydra 2 study area

Agricultural Potential of the Perseus-Hydra 2 Study Area			
Average Agricultural Potential	Land Type Zone	Area (ha)	Area (%)
Moderate	Ae46	4196.83	15.26
Low	Db3	23300.53	84.74
	Total	27497.36	100.0

5.1.2 Erosion Sensitivity

Land Type unit Ae46 comprises 15.26% of the Perseus-Hydra 2 study area. This land type is dominated by red freely drained high base status soils, usually deeper than 300mm with stable physical properties.

Land Type unit Db3 comprises 84.74% of the Perseus-Hydra 2 study area. This land type is dominated by duplex soils with prominent textural contrast between a sandier topsoil and a blocky to prismatic structured subsoil. These soils are erosion sensitive.

5.1.3 Land Use

The Land Cover distribution and derived land uses of the Perseus-Hydra 2 study area is shown in Figure 2. The derived land uses are summarized in Table 2.

Table 2: Derived land uses of the Perseus-Hydra 2 study area

Land Cover Description	Derived Land Use	Unit Count	Area (ha)	Area (%)
Cultivated, commercial, dry land	Cultivation	21	421.71	1.53
Cultivated, commercial, irrigated		7	53.64	0.20
Cultivated, subsistence, irrigated		5	42.42	0.15
Subtotal: Cultivation		33	517.77	1.88
Unimproved (natural) Grassland	Grazing	107	23321.84	84.81
Shrubland and Low Fynbos		45	28.92	0.11
Thicket, Bushland, Bush Clumps, High Fynbos		5	78.34	0.28
Degraded Unimproved (natural) Grassland		531	1539.96	5.60
Degraded Shrubland and Low Fynbos		109	214.89	0.78
Subtotal: Grazing		797	25183.95	91.58
Urban / Built-up, (industrial / transport)	Residential	2	44.67	0.16
Subtotal: Residential		2	44.67	0.16
Mines & Quarries (surface-based mining)	Mining	1	3.27	0.01
Subtotal: Mining		1	3.27	0.01
Wetlands	Probably grazing	28	1687.84	6.14
Subtotal: Wetlands		28	1687.84	6.14
Bare Rock and Soil (erosion : sheet)	Probably grazing	98	59.92	0.22
Subtotal: Bare rock/Soil/Erosion		98	59.92	0.22
Grand Total		959	27497.42	100.0

5.2 Beta-Perseus Study Area

5.2.1 Agricultural Potential

Two land type units, Ae46 and Db3 occur in the Beta-Perseus study area with respectively moderate and low average agricultural potential (Figure 3). The area and percentage comprised by each agricultural potential class are shown in Table 3.

Table 3: Agricultural potential of the Beta-Perseus study area

Agricultural Potential of the Beta-Perseus Study Area			
Average Agricultural Potential	Land Type Zone	Area (ha)	Area (%)
Moderate	Ae46	2577.32	87.16
Low	Db3	379.7	12.84
	Total	2957.02	100.0

5.2.2 Erosion Sensitivity

Land Type unit Ae46 comprises 87.16% of the Beta-Perseus study area. This land type is dominated by red freely drained high base status soils, usually deeper than 300mm with stable physical properties.

Land Type unit Db3 comprises 12.84% of the Beta-Perseus study area. This land type is dominated by duplex soils with prominent textural contrast between a sandier topsoil and a blocky to prismatic structured subsoil. These soils are erosion sensitive.

5.2.3 Land Use

The Land Cover distribution and derived land uses of the Beta-Perseus study area is shown in Figure 4. The derived land uses are summarized in Table 4.

Table 4: Summary of the derived land use of the Beta-Perseus study area

Land Cover Description	Derived Land Use	Unit Count	Area (ha)	Area (%)
Cultivated, subsistence, irrigated	Cultivation	2	23.11	0.78
Cultivated, commercial, dry land		7	32.18	1.09
Subtotal: Cultivation		9	55.29	1.87
Unimproved (natural) Grassland	Grazing	2	2779.95	94.01
Thicket, Bushland, Bush Clumps, High Fynbos		1	0.43	0.01
Degraded Unimproved (natural) Grassland		45	67.63	2.29
Subtotal: Grazing		48	2848.01	96.31
Urban / Built-up, (industrial / transport)	Residential	2	53.63	1.81
Subtotal: Residential		2	53.63	1.81
Bare Rock and Soil (erosion : sheet)	Probably grazing	1	0.05	0.00
Subtotal: Bare rock/Soil/Erosion		1	0.05	0.00
Grand Total		60	2956.98	99.99

6. CONCLUSION

Perseus-Hydra 2 study area:

- Soils with moderate agricultural potential and low erosion susceptibility comprise 15.26% of the study area.
- Soils with low agricultural potential and moderate to high erosion susceptibility comprise 84.74% of the study area.
- Land uses are dominated by grazing (91.58%), wetlands (6.14%) and cultivation (1.88%)

Beta-Perseus study area:

- Soils with moderate agricultural potential and low erosion susceptibility comprise 87.16% of the study area.
- Soils with low agricultural potential and moderate to high erosion susceptibility comprise 12.84% of the study area.
- Land uses are dominated by grazing (96.31%), cultivation (1.87%) and residential (1.81%).

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Figures







